

File No. 220268

Committee Item No. 2

Board Item No. _____

COMMITTEE/BOARD OF SUPERVISORS

AGENDA PACKET CONTENTS LIST

Committee: Budget and Finance Committee Date April 6, 2022

Board of Supervisors Meeting Date _____

Cmte Board

- | | | |
|-------------------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Motion |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Resolution |
| <input type="checkbox"/> | <input type="checkbox"/> | Ordinance |
| <input type="checkbox"/> | <input type="checkbox"/> | Legislative Digest |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Budget and Legislative Analyst Report |
| <input type="checkbox"/> | <input type="checkbox"/> | Youth Commission Report |
| <input type="checkbox"/> | <input type="checkbox"/> | Introduction Form |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Department/Agency Cover Letter and/or Report |
| <input type="checkbox"/> | <input type="checkbox"/> | MOU |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Grant Information Form |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Grant Budget |
| <input type="checkbox"/> | <input type="checkbox"/> | Subcontract Budget |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Contract/Agreement |
| <input type="checkbox"/> | <input type="checkbox"/> | Form 126 – Ethics Commission |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Award Letter |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Application |
| <input type="checkbox"/> | <input type="checkbox"/> | Public Correspondence |

OTHER (Use back side if additional space is needed)

- | | | |
|-------------------------------------|--------------------------|-----------------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>Climate Action Plan - 2021</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | _____ |
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Completed by: Brent Jalipa Date March 30, 2022

Completed by: Brent Jalipa Date _____

1 [Accept and Expend Grant - Retroactive - California Energy Commission - Alternative and
2 Renewable Fuel and Vehicle Technology Program - Electric Vehicle Ready Blueprint -
3 \$2,384,797]

3 **Resolution retroactively authorizing the Department of the Environment to accept and**
4 **expend a grant in the amount of \$2,384,797 from the California Energy Commission's**
5 **Alternative and Renewable Fuel and Vehicle Technology Program to implement an**
6 **Electric Vehicle Ready Blueprint to accelerate local vehicle electrification for the period**
7 **of March 28, 2022, through March 29, 2024.**

8
9
10 WHEREAS, The City and County of San Francisco is a long-standing leader in local
11 and regional vehicle electrification program development and implementation; and

12 WHEREAS, On July 16, 2019, Mayor London N. Breed adopted the Citywide Electric
13 Vehicle (EV) Roadmap, a plan with six strategies to make all forms of transportation electric
14 by 2040; and

15 WHEREAS, On December 08, 2021, Mayor London N. Breed released a new Climate
16 Action Plan to make San Francisco net-zero greenhouse gas (GHG) emissions city by 2040;
17 and

18 WHEREAS, According to 2019 emissions data, the transportation sector is currently
19 the single largest contributor to GHG emissions and air pollution in San Francisco, with cars
20 and trucks representing over 90% of these emissions; and

21 WHEREAS, On April 2018, the California Energy Commission (CEC) Alternative and
22 Renewable Fuel and Vehicle Technology Program (ARFVTP) awarded San Francisco with
23 \$199,398 to the Department of the Environment to create and develop a plan to implement
24 the EV Roadmap strategies; and

1 WHEREAS, The plan, EV Ready Blueprint, articulates the City’s vision and plan to
2 expand the EV market by removing market barriers, and serves as a “to do” list for City staff,
3 private sector partners, community members, and other stakeholders; and

4 WHEREAS, On November 26, 2020, the Department of the Environment submitted an
5 application to the CEC requesting funding to implement activities from the EV Ready Blueprint
6 that will increase public awareness of EVs, expand charging infrastructure, and accelerate
7 mode shift by getting delivery-app workers out of cars and onto e-bikes to make deliveries;
8 and

9 WHEREAS, On September 13, 2021, the CEC announced proposed awards under the
10 Alternative and Renewable Fuel and Vehicle Technology Program, which included an award
11 of \$2,384,797 to the Department of the Environment to implement proposed activities; and

12 WHEREAS, The grant does not require an Annual Salary Ordinance (ASO)
13 amendment and partially reimburses the Department of the Environment for several existing
14 positions; and

15 WHEREAS, The term of this grant is from March 28, 2022, to March 29, 2024; and

16 WHEREAS, The grant budget includes provision for indirect costs of \$269,331; now,
17 therefore, be it

18 RESOLVED, That the Director of the Department of the Environment is hereby
19 authorized to accept and expend the Alternative and Renewable Fuel and Vehicle Technology
20 Program grant award of \$2,384,797 on behalf of the City, in accordance with the purposes
21 and goals for the funding as generally set forth by the ARFVTP; and, be it

22 FURTHER RESOLVED, That the Director of the Department of the Environment is
23 hereby authorized to enter into and execute all agreements, and amendments thereto,
24 between the City and various agencies consistent with the aforementioned proposal and
25 necessary to carry out the purpose of the grant.

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Recommended:

_____/s/_____

Department Head

Approved: _____/s/_____

Mayor

Approved: _____/s/_____

Controller

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|---|--|
| Item 2 File 22-0268 | Department: Department of the Environment (ENV) |
| EXECUTIVE SUMMARY | |
| <p style="text-align: center;">Legislative Objectives</p> <ul style="list-style-type: none"> • The proposed resolution would authorize the Department of the Environment to: (1) accept and expend a grant in an amount not to exceed \$2,384,797 from the California Energy Commission (CEC) Alternative and Renewable Fuel and Vehicle Technology Program to increase public awareness of electric vehicles and expand charging infrastructure and other modes of clean transportation for the period of March 2022 through March 2024 and (2) authorizes the Department of Environment to execute interagency agreements related to the grant. <p style="text-align: center;">Key Points</p> <ul style="list-style-type: none"> • The proposed grant would fund two projects: (1) installation of at least one fast charging plaza in a disadvantaged community and eight fast electric vehicle charging stations and (2) a pilot program to provide electric bicycles to 35 app-based delivery workers to use in making their deliveries. • The Department of Environment plans to contract with EVgo, a business based in Los Angeles, CA, to construct and operate the fast charging plaza and stations and with GRID Alternatives, a non-profit based in Oakland, CA, to manage the electric bicycle program. The Department of Environment selected both contractors on a sole source basis because the because the application period (August 12, 2020 to October 23, 2020) did not allow enough time for a competitive solicitation process. In addition, the Department intends to create a map tool to show existing electric vehicle charging stations and obtain input on future stations. <p style="text-align: center;">Fiscal Impact</p> <ul style="list-style-type: none"> • The total cost of the projects is \$3.4 million. The proposed grant would provide \$2.4 million while matching funds from Google, EVgo, the San Francisco Local Agency Formation Commission, the Department of Environment, and the San Francisco Public Utilities Commission total \$1.0 million to cover the remaining costs. • The proposed grant funds 2.47 FTE at the Department of Environment to manage and provide analytical support to the projects. <p style="text-align: center;">Recommendation</p> <ul style="list-style-type: none"> • Approve the proposed resolution. | |

MANDATE STATEMENT

City Administrative Code Section 10.170-1 states that accepting Federal, State, or third-party grant funds in the amount of \$100,000 or more, including any City matching funds required by the grant, is subject to Board of Supervisors approval.

BACKGROUND

As directed in Executive Order B-48-18, California established a goal in 2018 to increase the number of zero-emission vehicles on the road from approximately 1.3 million as of December 2018 to five million by 2030 and achieve 250,000 electric vehicle charging stations by 2025. To meet this goal, in April 2018, the California Energy Commission (CEC) awarded nine cities and organizations approximately \$1.8 million for Phase 1 of the Electric Vehicle Ready Community Challenge. The Challenge is funded by CEC’s Alternative and Renewable Fuel and Vehicle Technology Program. Phase 1 of the program focused on grantees developing a city-wide planning document to expand public electric vehicle (EV) charging and other modes of clean transportation. The Department of the Environment was one of the awardees of the CEC’s Phase 1 grant. Consequently, in October 2018, the Board of Supervisors approved the Department of Environment to accept and expend a grant in the amount of \$199,398 from the CEC’s Alternative and Renewable Fuel and Vehicle Technology Program to develop an Electric Vehicle Ready Blueprint to accelerate regional vehicle electrification for the period of July 1, 2018, through June 30, 2019 (File 18-0740). San Francisco’s Electric Vehicle Ready Community Blueprint planning document was finalized in July 2019.

In September 2021, the CEC announced awards for Phase 2 of the Electric Vehicle Ready Communities Challenge to fund implementation projects developed and identified in Phase 1, Blueprint Development of the Electric Vehicle Ready Communities Challenge. The Department of the Environment was awarded \$2,384,797 to implement high priority projects identified in Phase 1, which included increasing public awareness of electric vehicles and expanding charging infrastructure and other modes of clean transportation.

According to the July 2019 San Francisco Electric Vehicle Ready Community Blueprint, there are 700 electric vehicle charging ports or 0.7 ports per electric vehicle registered in San Francisco, the majority of which are privately owned and managed.

DETAILS OF PROPOSED LEGISLATION

The proposed resolution would authorize the Department of the Environment to: (1) accept and expend a grant in an amount not to exceed \$2,384,797 from the CEC Alternative and Renewable Fuel and Vehicle Technology Program to implement activities from the Electric Vehicle Ready Blueprint that will increase public awareness of electric vehicles, and expand charging infrastructure and other modes of clean transportation for the period of March 28, 2022 through March 29, 2024 and (2) authorizes the Department of Environment to execute interagency agreements related to the grant.

The CEC's Alternative and Renewable Fuel and Vehicle Technology Program grant solicitation required a minimum 25 percent total match share as a condition of application and subsequent award, which the Department of the Environment meets through its total match funding of \$1,013,198 from the Department, SFPUC, Google, EVgo, and the San Francisco Local Agency Formation Commission, which is 29.8 percent of the project cost. According to the CEC grant solicitation, matching funds include cash or in-kind contributions provided by the recipient, subcontractors, or other parties.

According to Lowell Chu, EV Program Manager, the proposed grant does not require retroactive approval because it is not effective until acceptance is approved by the Board of Supervisors. The Department therefore intends to request a correction to the proposed resolution to remove the references to retroactive approval.

Services Provided

The CEC's Alternative and Renewable Fuel and Vehicle Technology Program grant funds will be primarily used to implement the following CEC Electric Vehicle Ready Communities Phase II strategies: (1) expanding charging infrastructure; (2) increasing public awareness of electric vehicles; and (3) accelerating transportation mode shift by establishing a pilot for app-based workers to use electric bicycles to make deliveries.

EV Fast Charging Plaza & Stations

The proposed scope of work includes construction of one EV fast charging plaza in a designated Disadvantaged Community¹ and eight fast chargers² in San Francisco. An EV fast charging plaza is a location open to the general public that contains fast charging stations. An EV charging station is equipment that transfers electricity to an electrical vehicle. According to EV Program Manager Chu, possible locations include South of Market, Civic Center, and Bayview-Hunters Point.

The Department of Environment plans to contract with EVgo, a business based in Los Angeles, to construct and operate the fast charging plaza and stations. According to EV Program Manager Chu, EVgo was selected on a sole source basis by the Department of the Environment because the application period (August 12, 2020 to October 23, 2020) did not allow enough time for a competitive solicitation process. The Department of the Environment selected the vendor because of an existing relationship with EVgo and their experience in building electric vehicle fast charging plazas and installing fast charging stations.

¹ Disadvantaged communities are defined as the top 25 percent scoring areas from CalEnviroScreen (a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects) along with other areas with high amounts of pollution and low populations.

² Fast chargers, or stations, are devices for charging electric vehicles that are rated between 7kW and 22kW of electricity. They draw electrical current from the grid and supply the current through a cord and connector into the vehicles' batteries at higher rates than mid- and low-level chargers.

The grant will also fund the Department of the Environment's public-private partnership³ with Google to enhance the online Electric Vehicle Mapping Tool designed in Phase I for use by the public and charging site developers. According to EV Program Manager Chu, the proposed new electric vehicle module within the online tool will show users where existing public charging locations and stations are available in the City and allow users to indicate where they would like to see new public charging locations and stations.

E-Bicycles

The grant will also fund a pilot program to provide electric bicycles to 35 app-based delivery workers to use in making their deliveries instead of using personal vehicles. The program will collect data from delivery workers on how the bicycles are used and the capabilities of electric bicycles for completing local food deliveries and may help inform a larger pilot program in the future. Participants will be able to keep the electric bike after completion of the pilot program.

The E-Bicycle pilot will be administered by GRID Alternatives, a non-profit based in Oakland. GRID Alternatives will be responsible for procuring, maintaining the e-bikes, and selecting delivery workers for the pilot. According to EV Program Manager Chu, EVgo was selected on a sole source basis by the Department of the Environment because the application period (August 12, 2020 to October 23, 2020) did not allow enough time for a competitive solicitation process. The Department of the Environment selected the vendor because of an existing relationship with GRID Alternative and their experience in implementing clean mobility deployments. App-based data collection and reporting will be completed by Driver's Seat Cooperative, a business organization, and safety training will be provided by the San Francisco Bicycle Coalition, a non-profit organization.

Other Services

The Department will collaborate with Google to launch the Electric Vehicle Mapping Tool in January 2023. Concurrently, the Department plans to open the required charging stations by the end of March 2024.

The grant budget also includes \$150,000 to hire a community-based organization to engage residents and businesses in neighborhoods that would be impacted by the new charging plaza and fast-chargers. The community-based organization would also gather information from the communities on how to improve access to public charging and increase electric vehicle uptake.

Department of Environment Staff

The following 2.47 FTE of existing positions will be funded by the CEC grant: 0.25 FTE 5644 Environmental Principal, 1.0 FTE 5642 Environmental Specialist, and two 5640 Environmental Specialists (1.22 FTE).

- The 5644 Environmental Principal responsibilities include the following: (1) grant administration, invoicing, reporting and point of contact for the grant funder, (2) lead the

³ Google is the technical lead (coding, prototyping, etc.) on the online tool, and the Department of the Environment provides consultancy on user experience and testing.

hiring, onboarding and development of the 5642 Electric Vehicle Ombudsperson, and (3) serve as the project leader.

- The 5642 Environmental Specialist will serve as the Electric Vehicle Ombudsperson to manage the fast charging and e-bicycle projects and launch the electric bicycle pilot in September 2022.
- The two 5640 Environmental Specialists responsibilities include the following: (1) one position will serve as the project leader responsible for the development of the Electric Vehicle Mapping Tool and (2) another position will serve as the project leader for the implementation of the e-bicycle pilot program.

Performance Monitoring

The California Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program grant funds are subject to compliance with standard reporting and monitoring requirements, such as monthly phone calls and quarterly progress reports for the duration of the grant. Data collection and quarterly reporting requirements for the grant project include reporting on the following:

- 1) Significant milestones and accomplishments;
- 2) Challenges and potential agreement changes;
- 3) Report on subrecipients and vendors;
- 4) Status of milestones and deliverables;
- 5) Pictures and identifying information of installed or delivered equipment;
- 6) Fiscal status of project funds; and
- 7) Evaluation of E-Bike pilot to assess impact on vehicles miles traveled and worker earnings

FISCAL IMPACT

The total budget for the CEC Electric Vehicle Ready Communities Phase 2 – Blueprint Implementation grant project is \$3,397,997. The CEC grant will fund \$2,384,799, and matching funds from Google, EVgo, the San Francisco Local Agency Formation Commission, and the SFPUC total \$1,013,198. The source of the SFPUC's matching funds is the Power Enterprise's Utility Distribution Engineering funds, which is funded by Power Enterprise's capital funds. The source of the Department of Environment's matching funds is the San Francisco Clean Cities Coalition, which is a program of the U.S. Department of Energy.⁴

Exhibit 1 below shows the total costs for the CEC Electric Vehicle Ready Communities Phase 2 – Blueprint Implementation project.

⁴ Administered and implemented by the Department of the Environment, the San Francisco Clean Cities Coalition works with vehicle fleets, fuel providers, community leaders, and other stakeholders to save energy and promote the use of domestic fuels and advanced clean vehicle technologies in transportation.

Exhibit 1. CEC Electric Vehicle Ready Communities Phase 2 – Blueprint Implementation Project Costs

| Cost Category | Proposed CEC Grant Funds | Matching Funds | Total (\$) |
|--------------------------------------|---------------------------------|-----------------------------|--------------------|
| Direct Labor | \$615,181 | \$62,069 | \$677,250 |
| Fringe Benefits | 269,331 | 27,931 | 297,262 |
| <i>Subtotal, Labor</i> | <i>\$884,512⁵</i> | <i>\$90,000⁶</i> | <i>\$974,512</i> |
| Materials/Miscellaneous ⁷ | 24,691 | 0 | 24,691 |
| Subcontractors | | | 2,155,523 |
| EvGo | 526,141 | 634,390 | 1,160,531 |
| GRID Alternatives | 469,684 | 0 | 469,684 |
| Drivers Seat Coop. | 80,000 | 0 | 80,000 |
| SF Bike Coalition | 6,500 | 0 | 6,500 |
| Outreach Org TBD | 150,000 | 0 | 150,000 |
| Google (Map Tool) | 0 | 150,000 | 150,000 |
| <i>Subtotal, Subcontractors</i> | <i>\$1,232,325</i> | <i>\$784,390</i> | <i>\$2,016,715</i> |
| SFPUC Technical Assistance | 0 | 125,308 | 125,308 |
| LAFCo Technical Assistance | 0 | 13,500 | 13,500 |
| Indirect Costs (18%) ⁸ | 243,271 | 0 | 243,271 |
| Total Cost | \$2,384,799 | \$1,013,198 | \$3,397,997 |

Source: Department of the Environment

Exhibit 2 below details the total matching funds budget of \$1,013,198 for the project.

⁵ The following positions will be funded by the CEC grant: 0.25 FTE 5644 Environmental Principal, 1.0 FTE 5642 Environmental Specialist (two-year term for Electric Vehicle Ombudsperson), and two 5640 Environmental Specialists (2.0 FTE).

⁶ A 5640 Environmental Specialist will be partially funded using Department of the Environment funds of \$90,000. See Exhibit 2 for details.

⁷ This includes additional database licenses and upgrades, graphics and report production, bicycle safety helmets, raincoats, panniers and security locks, and incentives for participants to share data and opinions on using electric bicycles for deliveries.

⁸ The 18% rate was calculated using the 2 Step Method of the U.S Office of Management and Budget. The amount was calculated multiplying for the estimated hours to be performed by staff times the labor rate times 18%.

Exhibit 2. Matching Funds Budget for CEC Electric Vehicle Ready Communities Phase 2 – Blueprint Implementation Project

| Funder | Purpose | Match Amount |
|--------------------------------------|--|---------------------|
| EVgo | Build charging plaza in or adjacent to a disadvantaged community | \$634,390 |
| Google | Enhance, update and maintain the Blueprint Mapping Tool, provide data collection and digital analysis | 150,000 |
| SFPUC | Provide technical assistance with electric bicycle pilot and assist with establishing the Electric Vehicle Ombudsperson | 125,308 |
| Department of the Environment | Conduct stakeholder engagement via Clean Cities Coalition’s “Listening Sessions” (through helping to fund a 5640 Environmental Specialist) | 90,000 |
| SF Local Agency Formation Commission | Provide technical assistance to the electric bicycle pilot project | 13,500 |
| Total Matching Funds | | \$1,013,198 |

Source: Department of the Environment

According to EV Program Manager Chu, no grant funds have been encumbered or expended. The Department of the Environment does not anticipate incurring any ongoing staff costs once the project is complete and grant funds expire. The 2.47 FTE positions funded by this grant are temporary exempt positions. Once the project is over, the positions will be either be terminated or funded by other grants or sources of funding if available.

EV Fast Charging Plaza & Stations

According to EV Program Manager Chu, the cost to build one fast charging plaza and installing eight (8) stations is \$1.16 million. CEC grant funding totals \$526,141, and EVgo’s match is \$634,390. Ongoing maintenance costs for the grant-funded EV charging plaza will be paid for by EVgo.

E-Bicycles

According to EV Program Manager Chu, the cost of purchasing, shipping, temporary storage, assembly, and road-testing of 35 e-bikes with data and safety equipment is \$80,000 and will be paid for by the proposed grant. GRID Alternatives is responsible for obtaining the e-bikes and will complete its own procurement process to obtain them. The projected total maintenance cost of the e-bikes through the grant period is \$2,000. At the end of the grant term, GRID Alternatives will no longer be responsible for maintaining the e-bikes, which will be property of the program participant (app-based delivery work). Ongoing maintenance costs are estimated to be zero.

RECOMMENDATION

Approve the proposed resolution.

File Number: 220268
(Provided by Clerk of Board of Supervisors)

Grant Resolution Information Form
(Effective July 2011)

Purpose: Accompanies proposed Board of Supervisors resolutions authorizing a Department to accept and expend grant funds.

The following describes the grant referred to in the accompanying resolution:

1. Grant Title: Electric Vehicle Ready Communities Phase 2 – Blueprint Implementation
2. Department: Department of the Environment
3. Contact Person: David Kashani Telephone: 415-355-3704
4. Grant Approval Status (check one):
 Approved by funding agency Not yet approved
5. Amount of Grant Funding Approved or Applied for: \$ 2,384,797
6. a. Matching Funds Required: \$ 1,153,201
b. Source(s) of matching funds (if applicable): Department of the Environment, San Francisco Public Utilities Commission, San Francisco Local Agency Formation Commission & Subcontractors
7. a. Grant Source Agency: California Energy Commission (CEC)
b. Grant Pass-Through Agency (if applicable):
8. Proposed Grant Project Summary: This grant project increases public awareness of EVs, expands charging infrastructure, and accelerates transportation mode shift by getting delivery-app workers out of cars and onto e-bikes to make deliveries
9. Grant Project Schedule, as allowed in approval documents, or as proposed:
Start-Date: 3/28/2022 End-Date: 3/29/2024
10. a. Amount budgeted for contractual services: \$1,232,325
b. Will contractual services be put out to bid? No
c. If so, will contract services help to further the goals of the Department’s Local Business Enterprise (LBE) requirements?
d. Is this likely to be a one-time or ongoing request for contracting out? One-time
11. a. Does the budget include indirect costs?
 Yes No
b. 1. If yes, how much? \$ 243,271
b. 2. How was the amount calculated? The 18% rate was calculated using the 2 Step Method of the U.S Office of Management and Budget. The amount was calculated multiplying for the estimated hours to be performed by staff times the labor rate times 18%.
c. 1. If no, why are indirect costs not included?
 Not allowed by granting agency To maximize use of grant funds on direct services
 Other (please explain):

c. 2. If no indirect costs are included, what would have been the indirect costs?

12. Any other significant grant requirements or comments:

A large, empty rectangular box with a double-line border, intended for the user to provide answers to the questions above or to add any other significant grant requirements or comments.

****Disability Access Checklist***(Department must forward a copy of all completed Grant Information Forms to the Mayor's Office of Disability)**

13. This Grant is intended for activities at (check all that apply):

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Existing Site(s) | <input checked="" type="checkbox"/> Existing Structure(s) | <input type="checkbox"/> Existing Program(s) or Service(s) |
| <input type="checkbox"/> Rehabilitated Site(s) | <input type="checkbox"/> Rehabilitated Structure(s) | <input type="checkbox"/> New Program(s) or Service(s) |
| <input type="checkbox"/> New Site(s) | <input type="checkbox"/> New Structure(s) | |

14. The Departmental ADA Coordinator or the Mayor's Office on Disability have reviewed the proposal and concluded that the project as proposed will be in compliance with the Americans with Disabilities Act and all other Federal, State and local disability rights laws and regulations and will allow the full inclusion of persons with disabilities. These requirements include, but are not limited to:

1. Having staff trained in how to provide reasonable modifications in policies, practices and procedures;
2. Having auxiliary aids and services available in a timely manner in order to ensure communication access;
3. Ensuring that any service areas and related facilities open to the public are architecturally accessible and have been inspected and approved by the DPW Access Compliance Officer or the Mayor's Office on Disability Compliance Officers.

If such access would be technically infeasible, this is described in the comments section below:

Comments:

Departmental ADA Coordinator or Mayor's Office of Disability Reviewer:

Claudia Molina

(Name)

Payroll and Personnel Coordinator

(Title)

Date Reviewed: 2/4/22


(Signature Required)

Department Head or Designee Approval of Grant Information Form:


Deborah O. Raphael

(Name)

Director, Department of the Environment

(Title)

Date Reviewed: 2/4/2022


(Signature Required)

**ATTACHMENT 1
GFO APPLICATION FORM**

This document provides the Energy Commission with basic information about the Applicant and its subcontractors. Each Applicant must complete, sign and include this attachment in its Application.

| | |
|--|--------------------------|
| Applicant's Legal Name | Federal ID Number |
| Department of the Environment-City and County of San Francisco | 94-6000417 |

| | |
|----------------------|-----------------|
| Proposed Term | |
| Start Date | End Date |
| 04/01/2021 | 3/31/2024 |

| | | | |
|----------------------------------|--------------|-------------------------|------------------|
| Funding | | | |
| Amount of Funds Requested | \$2,392,473 | | |
| Match Funding | \$ 1,013,198 | Source of Match: | X Cash X In-Kind |

| |
|--|
| Title of Project |
| Implementing San Francisco's Community EV Blueprint and Accelerating EV Adoption |

| | |
|---|--------------------------|
| Project Location | |
| Group 1: Bay Area (<i>City of Santa Clara, Contra Costa Transportation Authority, and San Francisco Department of the Environment</i>) | XX |
| Group 2: Central California (<i>Kern Council of Governments, Tierra Resource Consultants (Fresno), and City of Sacramento</i>) | <input type="checkbox"/> |
| Group 3: Southern California (<i>City of Long Beach Harbor Department, County of Los Angeles, and Ventura County Regional Energy Alliance</i>) | <input type="checkbox"/> |

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| Project Description (brief paragraph, see instructions in Application Manual) |
| San Francisco's Community EV Blueprint Implementation builds upon the work performed and needs identified in Phase I. For Phase II, San Francisco has identified three Phase I strategies as having the greatest near term (4-year) potential to accelerate EV adoption and reduce congestion and greenhouse gas emissions—1) Public Awareness, 2) Charging Infrastructure, and 3) Fleet & Emerging Mobility Electrification. It will continue its public-private partnership with Google to enhance the EV Mapping Tool created in Phase I for use by the public and charging site developers. It will create a short-term (2 year) EV Ombudsperson position to work with relevant city departments to streamline and institutionalize EV charging site development, as well as provide outreach and education. It will work with EVgo to develop at least 3 charging plazas, one will be located in Bayview Hunters Point, a DAC that has identified access to EVs as a need. And, it will launch a pilot project to help app-based delivery workers transition from internal combustion engine vehicles to electric bikes (e-bikes) for deliveries. |

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| California Environmental Quality Act (CEQA) Compliance |
| 1. Would the proposed project be considered a "Project" under CEQA (PRC 21065 and 14 CCR 15378)? XX Yes: skip to question 2 <input type="checkbox"/> No: Explain why proposed project is not considered a "Project" and complete the following: Proposed project will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because . |
| 2. If proposed project is considered a "Project" under CEQA, has environmental review been completed? <input type="checkbox"/> Yes (if so, provide documentation in application) XX No |

| | |
|--|--------------------------------------|
| Applicant's Project Manager (serves as point of contact for all communications) | |
| Name: | Lowell Chu, Energy Programs Manager, |
| Address: | SF Environment 1455 Market #12 |
| City, State, Zip: | San Francisco, CA 94103 |
| Phone/ Fax: | 415-355-3700 |
| E-Mail: | lowell.chu@sfgov.org |

ATTACHMENT 1 GFO APPLICATION FORM

| | |
|--------------------------|--|
| Applicant Is | |
| <input type="checkbox"/> | Private Company <i>(including non-profits)</i> |
| <input type="checkbox"/> | CA State Agency <i>(including UC and CSU)</i> |
| <input type="checkbox"/> | Government Entity <i>(i.e. city, county, federal government, air/water/school district, joint power authorities, university from another state)</i> |

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| Is Applicant subcontracting any services? | <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes |
| Driver's Seat Cooperative | |
| Grid Alternatives | |
| EVgo | |
| SF Bike Coalition | |
| TBD – grant agreements with Community based organization(s) for outreach and engagement | |
| | |
| | |

Certifications:

I hereby authorize the California Energy Commission to make any inquiries necessary to verify the information I have presented in my Application.


I hereby authorize the California Energy Commission to obtain business credit reports and make any inquiries necessary to verify and evaluate the financial condition of the applicant.

I hereby certify that this application does not contain any confidential or proprietary information.

I hereby certify to the best of my knowledge and belief that I have read, understand, and do hereby accept the terms and conditions contained in this solicitation, including the provisions of the Agreement Terms and Conditions and, further, I am willing to enter into an agreement with the Commission to conduct the proposed project according to the terms and conditions without negotiation.

I hereby certify any required licenses (such as copyrights or trademarks) applicable to the submitted application are in place.

I hereby certify to the best of my knowledge, and under penalty of perjury, that the information contained in this Application is correct and complete.

| | | | |
|--|--|-------|----------|
| Signature of Authorized Representative |  | Date: | 10/23/20 |
|--|--|-------|----------|

**Attachment 2
Exhibit A
SCOPE OF WORK**

SF Department of the Environment

TECHNICAL TASK LIST

| Task # | Task Name |
|---------------|---|
| 1 | Administration |
| 2 | Add Additional Datasets and Functionalities to Mapping Tool |
| 3 | Establish the EV-Ombudsperson |
| 4 | Open 3 New Public Fast Charging Plazas |
| 5 | Electric Bike Program for App-Based Delivery Workers |
| 6 | Outreach and Dissemination |

KEY NAME LIST

| Task # | Key Personnel | Key Subcontractor(s) | Key Partner(s) |
|---------------|---|--|---|
| 1 | Lowell Chu – SFE | - | - |
| 2 | Nicole Appenzeller – SFE | Nicole Lombardo – Google | Google & SFPUC |
| 3 | Lowell Chu – SFE | | EVgo, SFPUC |
| 4 | Lowell Chu – SFE | | EVgo, PG&E & SFPUC |
| 5 | Suzanne Loosen – SFE | Linda Khamoushian – GRID Hays Witt – Driver's Seat | LAFCO, SFMTA, SFPUC, GRID Alternatives, Driver's Seat Cooperative |
| 6 | Lowell Chu, Suzanne Loosen, Nicole Appenzeller -SFE | GRID Alternatives, LAFCo, Clean Cities, Community Based Organization | Google, SFPUC |

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

| Term/ Acronym | Definition |
|--------------------------|--|
| App-based Delivery | A consumer can order food or goods delivered via an application hosted by a third-party company. |

<Insert Recipient/Applicant Name>

| Term/ Acronym | Definition |
|------------------------------|--|
| API | Application Program Interface |
| Beta-testing | A field test of the beta version of a software by testers outside of the company developing it and conducted prior to commercial release. |
| BEV | Battery Electric Vehicle |
| Caltrans | California Department of Transportation |
| CAM | Commission Agreement Manager |
| CARB | California Air Resources Board |
| CBO | Community Based Organization |
| CCA | Community Choice Aggregator |
| CEQA | California Environmental Quality Act – In San Francisco, environmental impact documents, agendas, and notices are filed with the Office of the County Clerk and are posted for 30 calendar days. |
| CleanPowerSF | CleanPowerSF is San Francisco’s community choice aggregator, and it is a program of the SFPUC. |
| Clean Transportation Program | Formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program |
| CPR | Critical Project Review |
| CPUC | California Public Utilities Commission |
| CVRP | Clean Vehicle Rebate Project promotes clean vehicle adoption in California by offering rebates of up to \$7,000 for the purchase or lease of new, eligible zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles. |
| DAC | Disadvantage Communities refers to the areas throughout California which most suffer from a combination of economic, health, and environmental burdens. |
| DPW | Department of Public Works – It is a public agency with many responsibilities include sidewalk and sidewalk vault maintenance and public street signage production and installation. |
| E-Bike | Battery-electric Bicycle |
| EIE | Environmental Insights Explorer |
| EV | Electric Vehicle |

<Insert Recipient/Applicant Name>

| Term/ Acronym | Definition |
|--------------------------|--|
| FCEV | Fuel Cell Electric Vehicle - It is a type of EV that primarily uses high pressure hydrogen stored in a fuel cell, instead of fuel tank, to power the vehicle's electric motor. A fuel cell has higher bursting capacity than a fuel tank. |
| FTD | Fuels and Transportation Division |
| GO-Biz | California Governor's Office of Business and Economic Development |
| ICA | Integration Capacity Analysis is a digital map designed, maintained and updated by PG&E to assist contractors, developers and other stakeholders to find information on potential project sites for distributed energy resources, including EV-charging. The ICA map show hosting capacity, grid needs, and other information about PG&E's electric distribution grid. |
| ICCT | International Council on Clean Transportation is an independent nonprofit organization that provides technical and scientific analysis to environmental regulators and select local governments. |
| ICE | Internal Combustion Engine |
| LAFCO | Local Agency Formation Commission – It is an independent regulatory body that oversee changes to the boundaries of cities and special districts. In San Francisco, LAFCO's primary functions are to provide oversight and research on forming a community choice aggregator. and to conduct special studies regarding municipal services. |
| LD | Light Duty – LD vehicles include cars, vans, and trucks (classes 1 to 2a). |
| Mapping Tool | Blueprint Mapping Tool developed in Phase 1 of the EV-Ready Community Blueprint. |
| MHDEV | Medium- (classes 2b to 6) and Heavy-Duty (classes 7 and 8) Electric Vehicles |
| PG&E | Pacific Gas and Electric is San Francisco's investors-owned utility. |
| Recipient | An applicant awarded a grant under a California Energy Commission solicitation. |
| RCA | Root Cause Analysis – Methodology applied to treat and remedy the institutional problems delaying EV-charging projects. |
| SFCTA | San Francisco County Transportation Authority – It is a public agency, chartered by the State of California to provide sub-regional transportation planning and programming agency for San Francisco County. The agency primarily works to reduce congestion. |

<Insert Recipient/Applicant Name>

| Term/ Acronym | Definition |
|--------------------------|--|
| SFDBI | San Francisco Department of Building Inspections – It is the public regulatory building safety agency responsible for overseeing the effective and efficient enforcement of building, electrical, plumbing, disability access and housing codes for the City and County of San Francisco. |
| SFMTA | San Francisco Municipal Transportation Authority – It is a public agency created by consolidation of the San Francisco Municipal Railway, the Department of Parking and Traffic, and the Taxicab Commission. The agency oversees public transport, taxis, bicycle infrastructure, pedestrian infrastructure, and paratransit for the City and County of San Francisco. |
| SFO | San Francisco International Airport |
| SFPUC | San Francisco Public Utilities Commission – It is a public agency of the City and County of San Francisco that provides water, wastewater, and electric power services to the city and an additional 1.9 million customers within three San Francisco Bay Area counties. |
| SFE | SF Environment - Also known as the San Francisco Department of the Environment, SFE is responsible for drafting the City’s Climate Action Plan, including the strategies, objectives, and tactics, as well as for tracking emissions and ensuring environmental justice is served. |
| The City | City & County of San Francisco |
| TNC | Transportation Network Companies, typically known as Lyft and Uber, but there are others |
| UAT | User Acceptance Testing is the last phase of software testing to ensure that the software conforms to the engineering specifications, and prior to beta-testing. |
| Vehicle | A vehicle is a thing that transport people and goods from one location to another on land, such as a car, truck, motorcycle, scooter, motor-driven cycle, or bicycle. |
| Working Group | A committee or group appointed to study and report on a particular question and make recommendations based on its findings. |
| ZEV | A zero-emission vehicle is one that does not directly produce atmospheric pollutants. A ZEV can be powered by a number of fuels, include electricity, natural gas, and hybrids fuels. |

Background

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change, clean air, and alternative energy policies. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the Clean Transportation Program through January 1, 2024. The Clean Transportation Program has an annual budget of approximately \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

Problem Statement:

As stated in the Phase 1 Community EV Blueprint, transportation electrification is primarily hindered by a lack of access to convenient public charging. Moreover, TNC vehicles are causing major congestion and increasing emissions in San Francisco.

The Public Fast Charging Problem - EV-adoption is hindered by a lack of access to convenient public charging infrastructure. The City is falling behind in expanding public charging infrastructure, particularly fast-chargers. ICCT published a report in September, 2020, that indicates the City needs 156 fast-chargers in order to meet its 2030 EV goal of 100% of new passenger vehicle registrations. To date, the City has 39 public fast-chargers, averaging three new charging installation per year. In high density cities, like San Francisco, private charging options are limited, and EV-drivers must rely on public charging.

<Insert Recipient/Applicant Name>

- **INSTITUTIONAL** - The construction of public fast chargers is slowed by myriad institutional issues. Zoning and permitting add significant costs and time delay to proposed projects. Currently, charging providers do not have a single point of contact with the City, and must engage with multiple staff, across several agencies, many of whom are new the world of EVs.
- **GRID**- The construction of public fast chargers can be complicated by various grid-related issues. A developer may lack critical information about grid hosting capacity for potential charging sites and must rely on the utility technicians to determine available capacity. Where capacity is insufficient, upgrades may be necessary, increasing developer costs. The process for applying for utility interconnections can also be complicated by the fact that San Francisco's grid is managed by both PG&E and SFPUC, adding delays to a project schedule that result in mounting soft costs for developers. Finally, fast charger projects have a high-potential of unexpected issues, not only because of their power-demand, but also because the chargers and ancillary equipment require a large amount of space thereby impacting land-use.
- **ECONOMICS** - The construction of public fast chargers is expensive because of their upfront costs. Prospecting for land and/or site host is a tedious, time-consuming and expensive process. Once the site is identified, the charging provider is faced with a protracted process to evaluate electrical capacity and to identify interconnection issues such as moratorium on street excavation and right-of-way disputes. Until institutional challenges are addressed, public fast charging costs will remain prohibitively high, delaying implementation by businesses who would otherwise be interested in participating.

The Emerging Mobility Problem - The operation of TNC and food delivery vehicles is a major cause of congestion in San Francisco. In 2018, the SFCTA found that TNC vehicles accounted for approximately 50% of the rise in congestion in San Francisco between 2010 and 2016. TNCs also caused the greatest increases in congestion in the densest parts of the city - up to 73% in the downtown financial district - and along many of the city's busiest corridors.

Further, as the number of TNC and food delivery vehicles and their miles driven on City streets increase, emissions and the likelihood for traffic accidents will rise. Emissions from the transportation sector increased 1% from 2017 to 2018. Overall, this sector was responsible for nearly half of the City's 2018 emissions. Additionally, increased TNC and food delivery operations increase the potential for accidents. This is because the vehicle accident rate calculation is dependent on mileage driven for a given period of time plus the number of vehicles.

<Insert Recipient/Applicant Name>

- **MARKET** - Few app-based delivery workers know about the benefits of e-bikes. E-bikes have many innovative and practical characteristics that benefit gig-workers: thoughtfully integrated batteries and drivetrain to supplement human motive power, avoidance of congestion and parking, and reduction in expenditure, including maintenance. According to a recent report by UC Santa Cruz, few app-based delivery drivers are aware of these benefits, however, once they learn more, are interested in the potential.
- **ECONOMICS** - E-bikes are too expensive for many app-based delivery workers. A report in 2019 found that a app-based delivery worker earned an average of \$624 per month. This low wage forces many to work multiple gigs in order to maintain their livelihoods. With new e-bike prices ranging from \$1,000 to \$10,000, despite the interest, even at the low end of the price spectrum, e-bikes are cost-prohibitive to many app-based delivery workers.

Goals of the Agreement:

The goal of the Agreement is to successfully implement three strategies from Phase 1 of the EV Ready Community Blueprint—Increase Public Awareness, Expand Charging Infrastructure and accelerate Mode Shift. More specifically, San Francisco will to build three public fast-charging plazas (one in or adjacent to a DAC), find additional sites for more plazas and installations, get delivery-app workers out of cars and onto e-bikes to make app-deliveries and create processes to streamline development of infrastructure while increasing public awareness and participation.

Objectives of the Agreement:

The objectives of this Agreement are to:

- A. Reduce time spent on siting public fast-charger installations and capacity analysis by 20% and their associated costs by 10%.
- A. Reduce time spent on permitting, planning, and interconnection by 20%, and their associated costs by 10%.
- B. Install 200 Level 2 and 50 DCFC across the City, with a focus on underutilized sites and underserved communities
- C. Complete three public fast-charging plazas, with one located near or in a DAC.
- D. Identify and recruit under-utilized or vacant lots and petroleum stations for more public fast-charging plazas and installations, prioritizing those near MUDs and DAC/DAC-adjacent and major thoroughfares.

<Insert Recipient/Applicant Name>

- E. Establish a pilot program to shift app-based workers, particularly those driving for TNCs, from vehicles to e-bikes for deliveries, to determine if e-bike operation improves efficiency, improves worker safety, reduces demand on the curb, reduces GHG emissions, VMT, and vehicle congestion, and creates workforce development opportunities.
- F. Update the “EV-Ready Community Blueprint Playbook” with new best practices, findings, analysis, and Mapping Tool. The Playbook will instruct Bay Area jurisdictions and beyond, on how to replicate and scale the implementation of transportation electrification initiatives.
- G. Disseminate information about the project to stakeholders, including other municipalities.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement. The CAM shall designate the date and location of this meeting and provide an agenda to the Recipient prior to the meeting.

The Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Agreement Manager, the Grants Officer, and a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the Commission Agreement Manager to this meeting.
- Discuss the following administrative and technical aspects of this Agreement:
 - Agreement Terms and Conditions
 - Critical Project Review (Task 1.2)
 - Match fund documentation (Task 1.6) No reimbursable work may be done until this documentation is in place.
 - Permit documentation (Task 1.7)
 - Subcontracts needed to carry out project (Task 1.8)
 - The CAM’s expectations for accomplishing tasks described in the Scope of Work
 - An updated Schedule of Products and Due Dates
 - Monthly Progress Reports (Task 1.4)

<Insert Recipient/Applicant Name>

- Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
- Final Report (Task 1.5)

Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits

Commission Agreement Manager Product:

- Kick-Off Meeting Agenda

Task 1.2 Critical Project Review (CPR) Meetings

CPRs provide the opportunity for frank discussions between the CEC and the Recipient. The goal of this task is to determine if the project should continue to receive CEC funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

The Commission Agreement Manager may schedule CPR meetings as necessary, and meeting costs will be borne by the Recipient.

Meeting participants include the CAM and the Recipient and may include the Commission Grants Officer, the Fuels and Transportation Division (FTD) program lead, other CEC staff and Management as well as other individuals selected by the CAM to provide support to the CEC.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the CEC, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. Prepare a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see section 8 of the Terms and Conditions). If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Lead Commissioner for Transportation for his or her concurrence.

<Insert Recipient/Applicant Name>

- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the CAM and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

CAM Products:

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

Recipient Product:

- CPR Report(s) Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with CEC staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Recipient, the Commission Grants Office Officer, and the Commission Agreement Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Agreement Manager.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The Commission Agreement Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Agreement Manager and the Grants Officer about the following Agreement closeout items:

- What to do with any equipment purchased with CEC funds (Options)

<Insert Recipient/Applicant Name>

- CEC’s request for specific “generated” data (not already provided in Agreement products)
- Need to document Recipient’s disclosure of “subject inventions” developed under the Agreement
- “Surviving” Agreement provisions
- Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.

Products:

- Written documentation of meeting agreements
- Schedule for completing closeout activities

Task 1.4 Monthly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

The Recipient shall:

- Prepare a Monthly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Agreement Manager within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Section 6 of the Terms and Conditions of this Agreement.
- In the first Monthly Progress Report and first invoice, document and verify match expenditures and provide a synopsis of project progress, if match funds have been expended or if work funded with match share has occurred after the notice of proposed award but before execution of the grant agreement. If no match funds have been expended or if no work funded with match share has occurred before execution, then state this in the report. All pre-execution match expenditures must conform to the requirements in the Terms and Conditions of this Agreement.

Product:

- Monthly Progress Reports

Task 1.5 Final Report

The goal of the Final Report is to assess the project's success in achieving the Agreement's goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further projects and improvements to the FTD project management processes.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the CEC and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

The Recipient shall:

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Final Report following the latest version of the Final Report guidelines which will be provided by the CAM. The CAM shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed at least 60 days before the end of the Agreement Term.
- Submit one bound copy of the Final Report with the final invoice.

Products:

- Outline of the Final Report, if requested
- Draft Final Report
- Final Report

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the CEC budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of CEC funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

<Insert Recipient/Applicant Name>

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the CEC awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the CEC awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.
 - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.
- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured. For match funds provided by a grant a copy of the executed grant shall be submitted in place of a letter of commitment.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Agreement Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Agreement Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR meeting.

Products:

- A letter regarding match funds or stating that no match funds are provided
- Copy(ies) of each match fund commitment letter(s) (if applicable)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

<Insert Recipient/Applicant Name>

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the CEC budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditure for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies the:
 - Type of permit
 - Name, address and telephone number of the permitting jurisdictions or lead agencies
 - The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Agreement Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Agreement Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Agreement Manager within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required
- A copy of each approved permit (if applicable)

<Insert Recipient/Applicant Name>

- Updated list of permits as they change during the term of the Agreement (if applicable)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable)
- A copy of each final approved permit (if applicable)

Task 1.8 Obtain and Execute Subcontracts

The goal of this task is to ensure quality products and to procure subcontractors required to carry out the tasks under this Agreement consistent with the Agreement Terms and Conditions and the Recipient's own procurement policies and procedures. It will also provide the CEC an opportunity to review the subcontracts to ensure that the tasks are consistent with this Agreement, and that the budgeted expenditures are reasonable and consistent with applicable cost principles.

The Recipient shall:

- Manage and coordinate subcontractor activities.
- Submit a draft of each subcontract required to conduct the work under this Agreement to the Commission Agreement Manager for review.
- Submit a final copy of the executed subcontract.
- If Recipient decides to add new subcontractors, then the Recipient shall notify the CAM.

Products:

- Draft subcontracts
- Final subcontracts

TASK 2 – ADD ADDITIONAL DATASETS, FUNCTIONALITIES, AND FEATURES TO MAPPING TOOL

The goal of this task is to add new datasets and functionalities to the Blueprint Mapping Tool to inform Tasks 3 and 4.

The Recipient shall:

- Evaluate and scrub electrical grid, traffic, socio-economic and under-utilized/vacant lots datasets for integration into the mapping tool.
- Integrate clean datasets into the Blueprint Mapping Tool, and establish a process and intervals to refresh data.
- Develop and enable new functionalities:
 - a. Enable public-users to nominate and upvote sites or locations for EV charging via uploading photographs, location description, or address.

<Insert Recipient/Applicant Name>

- b. Enable business and property owners to express interest in becoming a site-hosts for EV charging by uploading contact and locational information for follow-up.
- Establish open data-sourcing model to bridge connection with EV charging providers to direct inbound site-leads, from public and business/property owners to and establish a process for following up.
 - Conduct UAT (testing performed by the end users to verify/accept the software system before moving to beta-tests) and then beta-tests with limited users from the public, the ombudsperson, the SFPUC, and EVgo.
 - Move Blueprint Mapping Tool from prototype to production in Google's EIE Labs.
 - Draft a workplan to bring the Blueprint Mapping Tool to the public.
 - Move the Blueprint Mapping Tool from EIE Labs to the core EIE site and include functionality for select cities.

Products:

- Beta-version of prototype with Datasets and Enabled Functionalities
- Product-to-Market Plan
- Production-version of the Blueprint Mapping Tool

TASK 3 – ESTABLISH THE EV-OMBUDSPERSON

The goal of this task is to increase public awareness, eliminate institutional barriers to developing public fast-charger installation and identify new sites and hosts for additional fast-chargers so that up to 200 Level 2 and 50 DCFC are installed or in progress by the end of the grant.

The Recipient shall:

Recruit and fill a full-time ombudsperson position. Responsibilities include, but not limited to, the following:

1. Represent Public Interests – The ombudsperson shall manage the EV Help Desk by answering EV-related inquiries from the public. In this capacity, the ombudsperson also advocates for the installation of new charging infrastructure in DACs, low-income communities, and areas where constituents have upvoted via the Mapping Tool.
2. Represent Charging Providers Interests – The ombudsperson shall act as the City's single-point-of-contact for new charging projects, particularly focusing on large-scale deployment of Level 2 and fast-chargers. The ombudsperson shall assist the charging providers by

<Insert Recipient/Applicant Name>

breaking down institutional barriers, resulting in expedited zoning and permitting times and reduced project costs. The ombudsperson will:

- a. Work with DBI and Planning to establish best-in-class permit streamlining for all levels of EV charging stations (Level 1, Level 2, and DCFC)
 - b. Incorporate best practices from GO-Biz's Electric Vehicle Charging Station Permitting Guidebook including an updated website, standardized timelines, pre-application meetings, and concurrent reviews
 - c. Establish a baseline of challenges confronted by charging providers and compile them into a summary report.
 - d. Complete an Root Cause Analysis (RCA) Report for each challenge. Each RCA includes, but is not limited to, the following:
 - i. Description of the Challenge
 - ii. Impact Level (on project advancement)
 - iii. Likely Root Cause and Responsible Party / Agency
 - iv. Mitigation Strategies
 - v. Potential Risks (caused by the strategies)
 - vi. Recommendation and Responsible Party / Agency
 - vii. Measure of Success
 - viii. Implementation Schedule
 - e. Present recommendation(s) to the responsible party / agency, including PG&E, and develop a timeline for implementation / resolution.
 - f. Establish a system of communication, such as monthly check-ins, with the City's utility providers: PG&E and SFPUC.
 - g. Coordinate with DPW to ensure compliance with Caltrans EV-charging signage requirements.
3. Reduce the upfront cost of project development:
- a. Conduct user acceptance testing (UAT), beta-tests, and provide feedback.
 - b. Collaborate with the SFPUC and EVgo, conduct beta-testing of the Mapping Tool by creating a Citywide Fast-charging Site Plan. The Site Plan includes, but not limited to, the following:
 - i. Geo-location Data - address, parcel block and lot identifications
 - ii. Electrical Capacity and Interconnection Accuracy
 - iii. Hardware Upgrades Required

<Insert Recipient/Applicant Name>

- iv. Quantity of Charging Stations and Ports
- v. Develop a process to follow-up with sites upvoted by the public and businesses and properties interested in becoming charging site-host
- vi. Field validate the sample results from the Mapping Tool
- c. Develop a system to track all public EV-charging installation projects. The tracking system includes, but is not limited to, the following:
 - i. Geo-location – address, block and lot
 - ii. Project Milestone to indicate the various phases of the project, from project development to completion
 - iii. Quantity of Charging Stations and Ports
 - iv. Project Lead and Team Members and Contact Information
 - v. Issues Log and Follow-up Date(s)
 - vi. Anticipated Completion Date
 - vii. Estimated Initial and Final Project Costs, where available – installation labor, engineering, legal, admin, permitting, material (hardware), software, signage, and etc.
- d. Implement feedback from charging station providers to improve process.
 4. Provide as-needed technical assistance to charging-providers to facilitate CEQA-compliance and notices.
 5. Identifying additional site hosts:
 - a. Provide as-needed support to SFO and the Port of San Francisco in an effort to initiate fast-charging projects at those locations
 6. Liaise between the SFPUC, PG&E, EV charging providers and other stakeholders to explore a smart charging pilot program that informs tactics to balance the electrical grid.
 7. Develop a dynamic guidebook for internal city stakeholders and “sunset” the ombudsperson position after two years.
 8. Assist with the development and maintenance of a “one-stop shop” website to assist charging providers and the public with EV charging project development.

Products:

- Challenges Summary Report
- RCA Report
- One-stop Shop Website
- Guidebook for City Stakeholders

<Insert Recipient/Applicant Name>

TASK 4 - OPEN 3 PUBLIC FAST-CHARGING PLAZAS

The goal of this task is to open three public fast-charging plazas, with one installed in or near a DAC.

The Recipient shall:

- Follow the “Public Engagement Plan” from Phase 1 and conduct three community meetings to engage stakeholders prior to project development phase to bring in community organizations, residents, and businesses potentially impacted by the plazas.
 - Part of this activities includes securing at least one community based organization to assist with outreach and engagement.
- Incorporate feedback into planning.
- Use product from Task 2 to expedite site identification and conduct field verification.
- Use processes and products from Task 3 to expedite permitting, zoning, interconnection processes.
- Develop a Summary Report demonstrating how products from Task 2 and 3 improved charging plaza development in cost and time reductions.

Products:

- Documentation of Community Meetings
- List and description of selected sites
- Summary Report documenting Charging Plaza Development.

TASK 5 – ELECTRIC BIKE PROGRAM FOR APP-BASED DELIVERY WORKERS

The Recipient shall:

Finalize program design and implementation plan with key partners to include:

- Coordinating committee schedule and communications plan
- Procurement and asset management program for e-bikes and participant safety equipment
- Participant recruitment plan and participation agreements
- Data collection and participant survey elements and schedule
- Recruitment of local bike shop to provide maintenance services
- Bike safety training plan and schedule

Program Launch

August 2020

<Insert Recipient/Applicant Name>

- Recruit Program participants: 50% e-bike and 50% car based
- Launch Cohort #1
 - Host kick off meeting for participants
 - Provide bike safety training and two week test period for participants
 - Administer pre-program survey
 - Data collection period using Driver's Seat app for cohort #1
 - Evaluate and adjust data collection
 - Administer participant survey #2
- Launch Cohort #2
 - Host kick off meeting for participants
 - Provide bike safety training and two week test period for participants
 - Administer pre-program survey
 - Data collection period using Driver's Seat app for cohort #2
 - Administer participant surveys at 6 and 12 months
- Transfer title of bikes to participants upon completion of surveys
- Complete final project report and case study:
 - Review, analyze, synthesize study results
 - Identify challenges and best practices
 - Recommend incentive levels for future programs

Products:

- Implementation Plan
- Documentation of Cohort Kick off Meeting (agenda, notes, attendees)
- Participant surveys
- Final Project Report

TASK 6 – OUTREACH AND DISSEMINATION

The Recipient shall:

Increase public awareness of EVs and mode shift and disseminate information about the project to a range of stakeholders

- Conduct outreach via SFCCC to promote EVs and mode shift, including coordinating EV 101 workshops.

<Insert Recipient/Applicant Name>

- Promote the use of the Blueprint Mapping Tool’s crowd-sourcing feature by the public through SF Environment’s robust social media network, as well as through partners
- Work with Greenstacks, the collaboration between SF Environment and SF Public Libraries to promote the Mapping Tool and provide webinars and other activities to increase awareness of the accessibility of EVs to all residents of the City.
- Update San Francisco’s EV Ready Playbook to include:
 - The updated Mapping Tool
 - Guidelines for implementing an Ombudsperson process to streamline charging station installations and promote EVs, focusing on replicating processes (since some municipalities may not have the resources or inclination to create a new position, we are focusing on how to replicate the process rather than the position).
 - Findings from research, reports, and studies conducted.
- Develop case study and presentation, to disseminate information about the project, and in particular ensure that other municipalities access the Mapping Tool.
- Develop case study and presentation on e-bike pilot results to help public- and private-sector actors improve and scale bike delivery programs.
- Organize at least three webinars to share case studies and results with California local governments and community choice aggregators, individually and through networks such as the Clean Cities Coalitions, Green Cities CA, Urban Sustainability Directors Network, C40, and California Community Choice Association.

Products:

- Case study and presentation for Blueprint Mapping Tool
- Case study and presentation for e-bike program
- Final, Updated EV Ready Playbook
- Documentation of Webinars

Schedule of Products and Due Dates

| Task Number | Task Name | Product(s) | Due Date |
|--------------------|---|--|--|
| 1.1 | Attend Kick-off Meeting | | |
| | | <u>Updated Schedule of Products</u> | 2 days before the kick-off meeting |
| | | <u>Updated List of Match Funds</u> | 2 days before the kick-off meeting |
| | | <u>Updated List of Permits</u> | 2 days before the kick-off meeting |
| | | Kick-Off Meeting Agenda (CEC) | 2 days before the kick-off meeting |
| 1.2 | Critical Project Review Meetings | 1st CPR Meeting <u>CPR Report</u> | TBD Commission |
| | | <u>Written determination (CEC)</u> | TBD Commission |
| 1.3 | Final Meeting | <u>Written documentation of meeting agreements</u> | |
| | | <u>Schedule for completing closeout activities</u> | |
| 1.4 | Monthly Progress Reports | | |
| | | <u>Monthly Progress Reports</u> | The 10th calendar day of each month during the approved term of this Agreement |
| 1.5 | Final Report | <u>Final Outline of the Final Report</u> | 1/30/2024 |
| | | <u>Draft Final Report (no less than 60 days before the end term of the agreement)</u> | 3/30/2024 |
| | | <u>Final Report</u> | 5/30/2024 |
| 1.6 | Identify and Obtain Match Funds | <u>A letter regarding match funds or stating that no match funds are provided</u> | 3/30/2021 |
| | | <u>Copy(ies) of each match fund commitment letter(s) (if applicable)</u> | 3/30/2021 |
| | | <u>Letter(s) for new match funds (if applicable)</u> | Within 10 days of identifying new match funds |
| | | <u>Letter that match funds were reduced (if applicable)</u> | Within 10 days of identifying reduced funds |
| 1.7 | Identify and Obtain Required Permits | <u>Letter documenting the permits or stating that no permits are required</u> | 3/30/2021 |
| | | <u>A copy of each approved permit (if applicable)</u> | Within 10 days of receiving each permit |
| | | <u>Updated list of permits as they change during the term of the Agreement (if applicable)</u> | Within 10 days of change in list of permits |

Attachment 4

| | | |
|------------|--|--|
| | Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable) | Within 10 days of change in schedule for obtaining permits |
| 1.8 | Obtain and Execute Subcontracts | |
| | Letter describing the subcontracts needed, or stating that no subcontracts are required | 3/30/2021 |
| | Draft subcontracts | 15 days prior to the scheduled execution date |
| | Final subcontracts | to |
| 2 | ADD ADDITIONAL DATASETS AND FUNCTIONALITIES TO MAPPING TOOL | |
| | Beta-version of prototype with Datasets and Enabled Functionalities | 7/30/2021 |
| | Product-to-Market Implementation Plan | 10/30/2021 |
| | Production-version of Mapping Tool | 12/30/2021 |
| 3 | ESTABLISH THE EV OMBUDSPERSON | |
| | Challenges Summary Report | 7/30/2021 |
| | RCA Report | 9/30/2021 |
| | One Stop Shop Website | 12/30/2021 |
| | Draft Guidebook for internal stakeholders | 9/30/2022 |
| 4 | OPEN THREE NEW PUBLIC FAST CHARGING PLAZAS | |
| | Documentation of Community Meetings | 9/30/2021 |
| | List and Description of Selected Sites | 1/30/2022 |
| | Summary Report Documenting Charging Plaza Development | 9/30/2023 |
| 5 | ELECTRIC BIKE PROGRAM FOR APP-BASED DELIVERY WORKERS | |
| | Final Implementation Plan | 6/30/2021 |
| | Cohort Kick Off Meeting agenda, notes, and list of attendees | 8/30/2021 |
| | Draft of participant surveys | 1/30/2022 |
| | Final Project Report | 3/30/2023 |
| 6 | OUTREACH AND DISSEMINATION | |
| | Documentation of EV 101 Workshops | 12/30/2021 |
| | Case Study and Presentation for Mapping Tool | 6/30/2022 |
| | Case Study and Presentation for Ebike Program | 4/30/2023 |
| | Final Updated EV Ready Playbook | 9/30/2023 |
| | Documentation of Dissemination Webinars | 3/30/2024 |

Attachment 5

General Budget Worksheet Instructions

1. A separate set of complete budget forms, including the full set of worksheets, is required for the Contractor/Recipient and for each subcontract containing: 1) \$100,000 or more of Energy Commission funds; or 2) 25% or more of the total Energy Commission funds requested.
2. For each worksheet, only identify the expenses to be incurred by the organization to which the budget forms pertain.
3. Only complete information for non-shaded cells; all other information will be automatically filled or calculated.
4. When more rows are required, copy an existing row and "insert the copied cells" between existing rows to keep template formulas accurate.
5. Budgeted Energy Commission funds and match share must be in whole dollars. Rates (labor, fringe, indirect or profit) and unit costs for materials/equipment must be in dollars and cents (two decimal places only).
6. Do not create new formulas in the tables as they may cause rounding discrepancies.
7. Each worksheet has specific instructions located below the form.
8. All rates (labor, fringe, indirect, and profit) included in these forms are caps, or the maximum amount allowed to be billed. The Energy Commission will only reimburse for actual expenses incurred, not to exceed the rates specified in these forms.
9. All costs (including indirect costs) must adhere to the Agreement Terms and Conditions, Generally Accepted Accounting Principles (GAAP) and the Office of Management and Budget (OMB) Circular or Federal Acquisition Regulations applicable to your organization.
10. Never delete Rows, Columns or Worksheets. Leave unused cells blank.

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Attachment 5

Category Budget (see instructions)

| | |
|-----------------------------|----------------------------|
| Name of Organization | GRID Alternatives Bay Area |
|-----------------------------|----------------------------|

| Cost Category | Energy Commission Reimbursable Share | Match Share | Total |
|---|--------------------------------------|-------------|-------------------|
| Direct Labor | \$ 198,283 | \$ - | \$ 198,283 |
| Fringe Benefits | \$ 48,103 | \$ - | \$ 48,103 |
| Total Labor | \$ 246,386 | \$ - | \$ 246,386 |
| Travel | \$ 3,600 | \$ - | \$ 3,600 |
| Equipment | \$ 70,000 | \$ - | \$ 70,000 |
| Materials/Miscellaneous | \$ 10,000 | \$ - | \$ 10,000 |
| Subcontractors | \$ 97,000 | \$ - | \$ 97,000 |
| Total Other Direct Costs | \$ 180,600 | \$ - | \$ 180,600 |
| Indirect Costs | \$ 42,699 | \$ - | \$ 42,699 |
| Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - |
| Total Indirect and Profit | \$ 42,699 | \$ - | \$ 42,699 |
| Grand Totals | \$ 469,684 | \$ - | \$ 469,684 |

Category Budget Instructions

Attachment 5

1. Insert name of the organization (either Contractor/Recipient or Subcontractor). All subcontracts containing: a) \$100,000 or more of Energy Commission funds; or b) 25% or more of the total Energy Commission funds awarded must complete a full set of budget forms.

2. Check appropriate box to identify whether the budget forms are for the Contractor/Recipient or a Subcontractor.

3. Check appropriate box(es) to identify whether entity is a small business, micro business, and/or Disabled Veteran Business Enterprise.

4. No other input is necessary on this page as other cells self-populate.

Attachment 5

Direct Labor (Unloaded) (see instructions)

GRID Alternatives Bay Area

Hourly Rates

| Employee Name | Job Classification / Title | Maximum Labor Rate (\$ per hour) | # of Hours | Commission Funds | Match Share | Total |
|-----------------------------------|--------------------------------|----------------------------------|------------|-------------------|-------------|-------------------|
| Arthur Bart-Williams | Executive Director | \$ 57.69 | 250 | \$ 14,423 | \$ - | \$ 14,423 |
| Cynthia Ibarra | Clean Mobility Project Manager | \$ 36.05 | 2,000 | \$ 72,100 | \$ - | \$ 72,100 |
| Vanessa Morelan | Clean Mobility Project Manager | \$ 36.05 | 2,000 | \$ 72,100 | \$ - | \$ 72,100 |
| Linda Khamoushian | Director of Shared Mobility | \$ 52.88 | 750 | \$ 39,660 | \$ - | \$ 39,660 |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| Hourly Direct Labor Totals | | | | \$ 198,283 | \$ - | \$ 198,283 |

Monthly Salary Rates

| Employee Name | Job Classification / Title | Maximum Labor Rate (\$ per month) | # of Months | Commission Funds | Match Share | Total |
|------------------------------------|----------------------------|-----------------------------------|-------------|------------------|-------------|-------------|
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| Monthly Direct Labor Totals | | | | \$ - | \$ - | \$ - |

Attachment 5

| | Commission Funds | Match Share | Total |
|----------------------------------|------------------|-------------|------------|
| Direct Labor Grand Totals | \$ 198,283 | \$ - | \$ 198,283 |

Direct Labor (Unloaded) Instructions

| |
|--|
| 1. Insert employee name(s) that will be charged as direct labor as either a reimbursed cost or match share. (optional, but recommended) |
| 2. Insert employee(s) job classification/title. (required) |
| 3. Insert the maximum hourly or monthly labor rate (unloaded) by employee job classification/title to be billed during the approved term of the agreement. This is the highest salary or wage rate that is actually paid to the employee before the application of fringe benefits, indirect costs or profit. |
| 4. Complete the appropriate table based on your organization's standard accounting practices. If an employee is paid based on an hourly rate, use the hourly table. If an employee is paid based on a monthly salary, use the monthly table. |
| 5. The rates in these forms are rate caps, or the maximum amount allowed to be billed for the entire term of the agreement. The Energy Commission will only reimburse for <u>actual</u> direct labor expenses incurred, not to exceed the rates specified in these forms. Rates must include dollars and cents (two decimal places only). |
| 6. Insert the approximate number of hours or months to be worked by employee or job classification/title including for all "to be determined" (TBD) employees. The Energy Commission will only reimburse for actual time worked. The Contractor/Recipient or Subcontractor must maintain auditable documentation of actual time worked hourly, daily, weekly or monthly using standard accounting practices. |
| 7. Insert the dollar amount by employee or job classification/title to be reimbursed with Energy Commission funds. Whole dollars only. |
| 8. Insert the dollar amount by employee/classification to be charged as match share. Whole dollars only. |
| 9. Confirm totals across and down are accurate. |
| 10. Totals on each line must be less than or equal to Maximum Labor Rate multiplied by the Number of Hours. |

Attachment 5

Fringe Benefits (see instructions)

GRID Alternatives Bay Area

| Fringe Benefit Base Description (Employee or Job Classification/Title) | Max. Fringe Benefit Rate (%) | Direct Labor Costs (\$) | Energy Commission Funds | Match Share | Total |
|--|---------------------------------------|----------------------------|-------------------------------|----------------|-----------|
| Executive Director | 24.26% | \$ 14,423 | \$ 3,499 | \$ - | \$ 3,499 |
| Clean Mobility Project Manager | 24.26% | \$ 144,200.00 | \$ 34,983 | \$ - | \$ 34,983 |
| Director of Shared Mobility | 24.26% | \$ 39,660.00 | \$ 9,622 | \$ - | \$ 9,622 |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
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| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| Fringe Benefit Totals | | \$ 198,283 | \$ 48,103 | \$ - | \$ 48,103 |

Fringe Benefits Instructions

Attachment 5

1. Insert the fringe benefit (FB) base description. The base is typically the direct labor costs that are multiplied by the fringe benefit rate to arrive at the fringe benefit cost (FB base multiplied by the FB rate = FB cost).

2. Organizations that charge the same fringe benefit rate for all classifications should insert "All Classifications" under the base description and complete the top line only. If more than one fringe benefit rate is utilized, use additional lines and adequately describe (by employee or classification) the base for each fringe benefit rate charged.

3. Insert the maximum fringe benefit rate to be charged during the approved term of the agreement. Round percentages **up** to the nearest hundredth (two decimal places). For example, manually enter 20.26% instead of 20.2511%

4. The fringe benefit rates in these forms are rate caps, or the maximum amount allowed to be billed. The Energy Commission will only reimburse for actual fringe benefit expenses incurred, not to exceed the rates specified in these forms.

5. Insert the direct labor costs allocable to each fringe benefit rate. These costs must be consistent with the costs identified on the Direct Labor worksheet. The total for the Direct Labor Costs column on this worksheet must match the Grand Total for all Direct Labor (Energy Commission Funds and Match Share) on the Direct Labor worksheet.

6. Insert the dollar amount of fringe benefit costs to be reimbursed with Energy Commission funds. **Whole dollars only.**

7. Insert the dollar amount of fringe benefit costs to be charged as match share. **Whole dollars only.**

8. Totals on each line must be less than or equal to Maximum Fringe Benefit Rate multiplied by Direct Labor Costs.

9. The Energy Commission expects to only reimburse fringe benefit costs which are allocable to the Fringe Benefit base costs reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the direct labor, the Energy Commission expects to only reimburse up to 45% of the fringe benefit costs.

10. Confirm all totals across and down are accurate.

Attachment 5

Travel (see instructions)

GRID Alternatives Bay Area

| Task No. | Traveler's Name and/or Classification | Departure and Destination | Trip Purpose | Energy Commission Funds | Match Share | Total |
|---------------|---------------------------------------|---------------------------|--|-------------------------|-------------|----------|
| | Clean Mobility Project Manager | To Be Determined (TBD) | Travel to/from client visits and project implementation meetings | \$ 3,600 | \$ - | \$ 3,600 |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
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| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| Total: | | | | \$ 3,600 | \$ - | \$ 3,600 |

Travel Instructions

1. All travel costs are reimbursed at state rates except in agreements between the Energy Commission and a UC campus or the Federal Government. Current state travel rates can be found at http://www.energy.ca.gov/contracts/TRAVEL_PER_DIEM.PDF. Please see terms and conditions for more information.

Attachment 5

2. Identify all travel costs to be incurred by the organization to which these budget forms pertain (e.g. subcontractor travel will be shown on the subcontractor travel sheet, not on the Contractor/Recipient travel sheet). All travel identified as "To Be Determined (TBD)" is not pre-approved and requires prior written approval from the Commission Agreement Manager and Commission Agreement Officer in accordance with the terms and conditions.

3. All travel not listed on agreement budget forms must obtain pre-approval from the Commission Agreement Manager and Commission Agreement Officer in accordance with the terms and conditions. All subcontractors under \$100,000 or 25% of the Commission Funds, who do not have their own travel sheets, must get all travel pre-approved in writing as needed.

4. Insert the applicable Task No. from the Scope of Work that the trip supports.

5. Insert the traveler's name and/or classification.

6. Insert the departure and destination locations. For example, "From Sacramento to Los Angeles and Return." It is strongly recommended that all out of state or out of country travel be paid with match funding.

7. Insert a brief purpose of the trip.

8. Insert the dollar amount of each trip to be reimbursed with Energy Commission funds. **Whole dollars only.**

9. Insert the dollar amount of each trip to be charged as match share. **Whole dollars only.**

10. Confirm all totals across and down are accurate.

Attachment 5

Equipment (see instructions)

GRID Alternatives Bay Area

| Task No. | Description | Purpose | # Units | Unit Cost | Energy Commission Funds | Match Share | Total |
|---------------|---------------------------|----------------------|---------|-----------|-------------------------|-------------|-------------|
| | Cargo Bikes & accessories | Vehicles for project | 35 | \$ 2,000 | \$ 70,000 | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | | \$ 70,000 | \$ - | \$ - |

Equipment Instructions

Attachment 5

| |
|---|
| 1. Equipment is defined as items having a per unit cost of at least \$5,000 and a useful life of at least 1 year. Equipment means any products, objects, machinery, apparatus, implements or tools purchased, used or constructed within the Project, including those products, objects, machinery, apparatus, implements or tools from which over thirty percent (30%) of the equipment is composed of Materials purchased for the Project. Items not meeting this definition should be included on the Materials & Miscellaneous worksheet |
| 2. Insert the applicable Task No. from the Scope of Work that the equipment supports. Multiple tasks may be identified. |
| 3. Insert a description of the equipment. The description should be sufficient to allow the Energy Commission to easily tie the equipment to backup documentation provided with the invoice and the Scope of Work. |
| 4. Insert a concise purpose of the equipment (i.e., why is the equipment needed for the project?). |
| 5. Insert the number of units to be purchased. |
| 6. Insert the per unit cost of the equipment. |
| 7. Insert the dollar amount to be reimbursed with Energy Commission funds. Whole dollars only. |
| 8. Insert the dollar amount to be charged as match share. Whole dollars only. |
| 9. Totals on each line must equal # of Units multiplied by the Per Unit Cost. |
| 10. Confirm all totals across and down are accurate. |

Attachment 5

Materials & Miscellaneous (see instructions)

GRID Alternatives Bay Area

| Task No. | Description | Purpose | # Units | Unit Cost | Energy Commission Funds | Match Share | Total |
|---------------|--------------------|---|---------|-----------|-------------------------|-------------|-----------|
| | Logistics expenses | Shipping and storage of cargo bikes, including tarriffs | 35 | \$285.71 | \$9,999.85 | \$ - | \$ 10,000 |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
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| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | | \$ 10,000 | \$ - | \$ 10,000 |

Materials & Miscellaneous Instructions

1. Materials are items under the agreement that do not meet the definition of Equipment. Miscellaneous are items of cost that do not fit in other cost categories contained in this workbook.

Attachment 5

2. Insert the applicable Task No. from the Scope of Work that the material/miscellaneous expense supports.

3. Insert a description of the material/miscellaneous item. The description should be sufficient to allow the Energy Commission to easily tie the material/miscellaneous expense to backup documentation provided with the invoice and the Scope of Work.

4. Where appropriate and logical, materials and miscellenous items can be grouped together. Grouped items must be clearly and thoroughly described. Grouped items can use "varies" for the # of units and unit cost. (Examples may include various pipes and pipe fittings or various nuts and bolts, etc...)

5. Insert a concise purpose of the material/miscelleneous expense (i.e., why is the material/miscellaneous expense needed for the project?).

6. Insert the number of units to be purchased.

7. Insert the *per unit* cost of the material/miscelleneous item.

8. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**

9. Insert the dollar amount to be charged as match share. **Whole dollars only.**

10. Totals on each line **must equal** # of Units multiplied by the Per Unit Cost.

11. Confirm all totals across and down are accurate.

Attachment 5

Subcontracts

(see instructions)

GRID Alternatives Bay Area

| Task No. | Subcontractor Name | Purpose | CA Business Certifications DVBE/ SB/MB/None | Energy Commission Funds | Match Share | Total |
|---------------|---|---|---|-------------------------|-------------|------------------|
| 5 | Justin Dawe Enterprises LLC | Vehicle selection, procurement, vendor management, project design consultation | None | \$ 35,000 | \$ - | \$ 35,000 |
| 5 | TBD: Collusion and Injury Insurance (for e-bikes and operators) | Insurers pilot participant for property damage and personal injuries while participating. | | \$60,000 | \$- | \$60,000 |
| 5 | TBD: E-bike Maintainence & Repairs | Provide e-bike maintainence as recommended by the e-bike manufacturer, and other repairs. | | \$2,000 | \$- | \$2,000 |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| Total: | | | | \$ 97,000 | \$ - | \$ 97,000 |

Attachment 5

Subcontracts Instructions

1. **Each subcontract containing: 1) \$100,000 or more of Energy Commission funds; or 2) 25% or more of the total Energy Commission funds requested requires completion of separate set of complete budget forms detailing the expected expenditures of the subcontractor.**

2. Include all subcontractors that have a direct contractual relationship with the organization to which these budget forms pertain including those that must also complete their own set of budget forms.

3. Insert the applicable Task No. from the Scope of Work that the subcontract supports. Insert multiple task numbers if applicable.

4. Insert the name of the subcontractor, if known. If not known, insert "TBD."

5. Insert a concise purpose of the subcontract (i.e., why is the subcontract needed for the project?).

6. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**

7. Insert the dollar amount to be charged as match share. **Whole dollars only.**

8. Totals on each line **must equal** total amount of subcontract.

9. Confirm all totals across and down are accurate.

10. Insert whether the subcontractor is a certified Disabled Veteran Business Enterprise (DVBE), Small Business (SB) or Micro Business (MB). Appropriate answers are "DVBE", "SB", "MB", "None", or "TBD". Certification status can be verified at the following website: <http://www.bidsync.com/DPXBisCASB>

Attachment 5

Indirect Costs and Profit

(see instructions)

GRID Alternatives Bay Area

Indirect Cost(s)

| Name of Indirect Cost | Maximum Rate | Indirect Cost Base Description | Indirect Cost Base Amount | Energy Commission Funds | Match Share | Total |
|-----------------------|--------------|--|---------------------------|-------------------------|-------------|------------------|
| Indirect Overhead | 10.00% | Base is Total Labor and Other Direct Costs | \$ 42,699 | \$ 42,699 | \$ - | \$ 42,699 |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | \$ 42,699 | \$ - | \$ 42,699 |

Profit

(Profit is not allowed for Grant Recipients)

| Profit Rate | Profit Base Description | Profit Base Amount | Energy Commission Funds | Match Share | Total |
|---------------|-------------------------|--------------------|-------------------------|-------------|-------------|
| 0.00% | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | \$ - | \$ - | \$ - |

Indirect Costs Instructions

1. All indirect costs charged must be reasonable, allocable to the project, and fully supported by backup documentation. The Energy Commission reserves the right to request supporting documentation of all indirect costs reimbursed or charged as match share.

Attachment 5

| |
|---|
| 2. Indirect costs must adhere to the Agreement Terms and Conditions, Generally Accepted Accounting Principles (GAAP) and the OMB Circular or Federal Acquisition Regulations applicable to your organization. |
| 3. Insert the name of the indirect cost. |
| 4. Insert the maximum indirect cost rate to be charged during the approved term of the agreement. |
| 5. The indirect cost rates on this form are caps, or the maximum amount allowed to be billed. The Contractor/Recipient/Subcontractor can only bill for actual indirect costs incurred, not to exceed the rates specified in these forms. |
| 6. Describe the indirect cost base (categories or items of costs within the budget) on which the indirect cost rate is applied. |
| 7. Insert the dollar amount of the indirect cost base. This is the sum of the budgeted costs described in the indirect cost base description. |
| 8. Insert the dollar amount to be reimbursed with Energy Commission funds. Whole dollars only. |
| 9. Insert the dollar amount to be charged as match share. Whole dollars only. |
| 10. The Energy Commission expects to only reimburse indirect costs which are allocable to the indirect base costs reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the costs included in the indirect cost base, the Energy Commission expects to only reimburse up to 45% of the indirect costs. Match share expenditures are allowed to cover higher percentages of indirect costs. |
| 11. Totals on each line must be less than or equal to Maximum Indirect Cost Rate multiplied by the Indirect Cost Base Amount. |
| 12. Confirm all totals across and down are accurate. |

Profit Instructions

| |
|---|
| 1. For Grant Agreements Only: Recipients CANNOT be reimbursed for more than their actual allowable expenses (i.e., cannot include profit, fees, or markups) under the agreement. Subcontractors (all tiers) are allowed to include up to a maximum total of 10% profit, fees or mark-ups on their own actual allowable expenses less any expenses further subcontracted to other entities (i.e., profit, fees and markups are not allowed on subcontractor expenses). For example, if a subcontractor has \$100,000 in actual allowable costs but has further subcontracted \$20,000 to another entity, then the subcontractor can only include up to 10% profit on \$80,000 (\$100,000 minus \$20,000). See terms and conditions for more information on allowable costs. |
|---|

Attachment 5

2. **For Contract Agreements Only:** Contractors and subcontractors can include up to a maximum total of 10% profit, fees or markups on their own actual allowable expenses less any expenses further subcontracted to other entities (i.e., profit, fees and markups are not allowed on subcontractor expenses). For example, if a contractor has \$100,000 in actual allowable costs but has further subcontracted \$20,000 to another entity, then the contractor can only include up to 10% profit on \$80,000 (\$100,000 minus \$20,000). See terms and conditions for more information on allowable costs.

3. **For All Agreement Types:** Forgone profit, fees, or markups are NOT eligible match share expenditures. Forgone profit, fees and markups are defined as profit, fees or markups that are not claimed or actually paid to a contractor, recipient or subcontractor. For example, if a contractor pays its own funds to a subcontractor (funds the contractor will not seek reimbursement from the Energy Commission) and the payment includes profit, fees or markups, the amount paid to the subcontractor including the profit, fees or markups can count as a match share expenditure since it was actually paid. However, if a contractor or subcontractor would normally include profit, fees or markups in its invoices and indicates it will forgo charging these costs, the forgone profit, fees, or markups cannot count as a match fund expenditure since it was not paid. This restriction does not apply to equipment or material discounts appropriately documented and provided to the project.

4. Insert the maximum profit rate to be charged during the approved term of the agreement. The profit rate in these forms are caps, or the maximum amount allowed to be billed.

5. Describe the profit base (categories or items of costs within the budget) on which the profit rate is applied.

6. Insert the dollar amount of the profit base. This is the sum of the budgeted costs described in the Profit Base Description.

7. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**

8. Insert the dollar amount to be charged as match share. **Whole dollars only.**

9. The Energy Commission expects to only reimburse profit which is allocable to the profit base reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the profit base costs, the Energy Commission expects to only reimburse up to 45% of the profit. Match share expenditures are allowed to cover higher percentages of profit.

10. Totals on each line must be less than or equal to: Max. Profit Rate X Profit Base Amount.

11. Confirm all totals across and down are accurate.

Attachment 5

General Budget Worksheet Instructions

1. A separate set of complete budget forms, including the full set of worksheets, is required for the Contractor/Recipient and for each subcontract containing: 1) \$100,000 or more of Energy Commission funds; or 2) 25% or more of the total Energy Commission funds requested.
2. For each worksheet, only identify the expenses to be incurred by the organization to which the budget forms pertain.
3. Only complete information for non-shaded cells; all other information will be automatically filled or calculated.
4. When more rows are required, copy an existing row and "insert the copied cells" between existing rows to keep template formulas accurate.
5. Budgeted Energy Commission funds and match share must be in whole dollars. Rates (labor, fringe, indirect or profit) and unit costs for materials/equipment must be in dollars and cents (two decimal places only).
6. Do not create new formulas in the tables as they may cause rounding discrepancies.
7. Each worksheet has specific instructions located below the form.
8. All rates (labor, fringe, indirect, and profit) included in these forms are caps, or the maximum amount allowed to be billed. The Energy Commission will only reimburse for actual expenses incurred, not to exceed the rates specified in these forms.
9. All costs (including indirect costs) must adhere to the Agreement Terms and Conditions, Generally Accepted Accounting Principles (GAAP) and the Office of Management and Budget (OMB) Circular or Federal Acquisition Regulations applicable to your organization.
10. Never delete Rows, Columns or Worksheets. Leave unused cells blank.

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Attachment 5

Category Budget (see instructions)

| | |
|-----------------------------|-------------------|
| Name of Organization | Organization Name |
|-----------------------------|-------------------|

| Cost Category | Energy Commission Reimbursable Share | Match Share | Total |
|---|--------------------------------------|-------------------|---------------------|
| Direct Labor | \$ - | \$ - | \$ - |
| Fringe Benefits | \$ - | \$ - | \$ - |
| Total Labor | \$ - | \$ - | \$ - |
| Travel | \$ - | \$ - | \$ - |
| Equipment | \$ 526,141 | \$ 120,000 | \$ 646,141 |
| Materials/Miscellaneous | \$ - | \$ 3,000 | \$ 3,000 |
| Subcontractors | \$ - | \$ 651,390 | \$ 651,390 |
| Total Other Direct Costs | \$ 526,141 | \$ 774,390 | \$ 1,300,531 |
| Indirect Costs | \$ - | \$ - | \$ - |
| Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - |
| Total Indirect and Profit | \$ - | \$ - | \$ - |
| Grand Totals | \$ 526,141 | \$ 774,390 | \$ 1,300,531 |

Category Budget Instructions

Attachment 5

1. Insert name of the organization (either Contractor/Recipient or Subcontractor). All subcontracts containing: a) \$100,000 or more of Energy Commission funds; or b) 25% or more of the total Energy Commission funds awarded must complete a full set of budget forms.

2. Check appropriate box to identify whether the budget forms are for the Contractor/Recipient or a Subcontractor.

3. Check appropriate box(es) to identify whether entity is a small business, micro business, and/or Disabled Veteran Business Enterprise.

4. No other input is necessary on this page as other cells self-populate.

Attachment 5

Direct Labor (Unloaded) (see instructions)

Organization Name

Hourly Rates

| Employee Name | Job Classification / Title | Maximum Labor Rate (\$ per hour) | # of Hours | Commission Funds | Match Share | Total |
|-----------------------------------|----------------------------|----------------------------------|------------|------------------|-------------|-------|
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| Hourly Direct Labor Totals | | | | \$ - | \$ - | \$ - |

Monthly Salary Rates

| Employee Name | Job Classification / Title | Maximum Labor Rate (\$ per month) | # of Months | Commission Funds | Match Share | Total |
|------------------------------------|----------------------------|-----------------------------------|-------------|------------------|-------------|-------|
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| | | \$ - | | \$ - | \$ - | \$ - |
| Monthly Direct Labor Totals | | | | \$ - | \$ - | \$ - |

Attachment 5

| | Commission Funds | Match Share | Total |
|----------------------------------|------------------|-------------|-------|
| Direct Labor Grand Totals | \$ - | \$ - | \$ - |

Direct Labor (Unloaded) Instructions

| |
|--|
| 1. Insert employee name(s) that will be charged as direct labor as either a reimbursed cost or match share. (optional, but recommended) |
| 2. Insert employee(s) job classification/title. (required) |
| 3. Insert the maximum hourly or monthly labor rate (unloaded) by employee job classification/title to be billed during the approved term of the agreement. This is the highest salary or wage rate that is actually paid to the employee before the application of fringe benefits, indirect costs or profit. |
| 4. Complete the appropriate table based on your organization's standard accounting practices. If an employee is paid based on an hourly rate, use the hourly table. If an employee is paid based on a monthly salary, use the monthly table. |
| 5. The rates in these forms are rate caps, or the maximum amount allowed to be billed for the entire term of the agreement. The Energy Commission will only reimburse for <u>actual</u> direct labor expenses incurred, not to exceed the rates specified in these forms. Rates must include dollars and cents (two decimal places only). |
| 6. Insert the approximate number of hours or months to be worked by employee or job classification/title including for all "to be determined" (TBD) employees. The Energy Commission will only reimburse for actual time worked. The Contractor/Recipient or Subcontractor must maintain auditable documentation of actual time worked hourly, daily, weekly or monthly using standard accounting practices. |
| 7. Insert the dollar amount by employee or job classification/title to be reimbursed with Energy Commission funds. Whole dollars only. |
| 8. Insert the dollar amount by employee/classification to be charged as match share. Whole dollars only. |
| 9. Confirm totals across and down are accurate. |
| 10. Totals on each line must be less than or equal to Maximum Labor Rate multiplied by the Number of Hours. |

Attachment 5

Fringe Benefits (see instructions)

Organization Name

| Fringe Benefit Base Description (Employee or Job Classification/Title) | Max. Fringe Benefit Rate (%) | Direct Labor Costs (\$) | Energy Commission Funds | Match Share | Total |
|---|------------------------------|-------------------------|-------------------------|-------------|-------|
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | \$ - | \$ - | \$ - | \$ - |
| Fringe Benefit Totals | | \$ - | \$ - | \$ - | \$ - |

Fringe Benefits Instructions

Attachment 5

1. Insert the fringe benefit (FB) base description. The base is typically the direct labor costs that are multiplied by the fringe benefit rate to arrive at the fringe benefit cost (FB base multiplied by the FB rate = FB cost).

2. Organizations that charge the same fringe benefit rate for all classifications should insert "All Classifications" under the base description and complete the top line only. If more than one fringe benefit rate is utilized, use additional lines and adequately describe (by employee or classification) the base for each fringe benefit rate charged.

3. Insert the maximum fringe benefit rate to be charged during the approved term of the agreement. Round percentages **up** to the nearest hundredth (two decimal places). For example, manually enter 20.26% instead of 20.2511%

4. The fringe benefit rates in these forms are rate caps, or the maximum amount allowed to be billed. The Energy Commission will only reimburse for actual fringe benefit expenses incurred, not to exceed the rates specified in these forms.

5. Insert the direct labor costs allocable to each fringe benefit rate. These costs must be consistent with the costs identified on the Direct Labor worksheet. The total for the Direct Labor Costs column on this worksheet must match the Grand Total for all Direct Labor (Energy Commission Funds and Match Share) on the Direct Labor worksheet.

6. Insert the dollar amount of fringe benefit costs to be reimbursed with Energy Commission funds. **Whole dollars only.**

7. Insert the dollar amount of fringe benefit costs to be charged as match share. **Whole dollars only.**

8. Totals on each line must be less than or equal to Maximum Fringe Benefit Rate multiplied by Direct Labor Costs.

9. The Energy Commission expects to only reimburse fringe benefit costs which are allocable to the Fringe Benefit base costs reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the direct labor, the Energy Commission expects to only reimburse up to 45% of the fringe benefit costs.

10. Confirm all totals across and down are accurate.

Attachment 5

Travel (see instructions)

Organization Name

| Task No. | Traveler's Name and/or Classification | Departure and Destination | Trip Purpose | Energy Commission Funds | Match Share | Total |
|---------------|---------------------------------------|---------------------------|--------------|-------------------------|-------------|-------|
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| Total: | | | | \$ - | \$ - | \$ - |

Travel Instructions

Attachment 5

1. All travel costs are reimbursed at state rates except in agreements between the Energy Commission and a UC campus or the Federal Government. Current state travel rates can be found at http://www.energy.ca.gov/contracts/TRAVEL_PER_DIEM.PDF. Please see terms and conditions for more information.

2. Identify all travel costs to be incurred by the organization to which these budget forms pertain (e.g. subcontractor travel will be shown on the subcontractor travel sheet, not on the Contractor/Recipient travel sheet). All travel identified as "To Be Determined (TBD)" is not pre-approved and requires prior written approval from the Commission Agreement Manager and Commission Agreement Officer in accordance with the terms and conditions.

3. All travel not listed on agreement budget forms must obtain pre-approval from the Commission Agreement Manager and Commission Agreement Officer in accordance with the terms and conditions. All subcontractors under \$100,000 or 25% of the Commission Funds, who do not have their own travel sheets, must get all travel pre-approved in writing as needed.

4. Insert the applicable Task No. from the Scope of Work that the trip supports.

5. Insert the traveler's name and/or classification.

6. Insert the departure and destination locations. For example, "From Sacramento to Los Angeles and Return." It is strongly recommended that all out of state or out of country travel be paid with match funding.

7. Insert a brief purpose of the trip.

8. Insert the dollar amount of each trip to be reimbursed with Energy Commission funds. **Whole dollars only.**

9. Insert the dollar amount of each trip to be charged as match share. **Whole dollars only.**

10. Confirm all totals across and down are accurate.

Attachment 5

Equipment (see instructions)

Organization Name

| Task No. | Description | Purpose | # Units | Unit Cost | Energy Commission Funds | Match Share | Total |
|---------------|---|-----------------------|---------|------------|-------------------------|-------------------|-------------------|
| | Delta 100 kW City Charger | EVCS | 2 | \$ 45,565 | \$ 91,131 | \$ - | \$ 91,131 |
| | Signet 500 Cabinet and Dispenser 350 kW | EVCS | 6 | \$ 72,502 | \$ 435,011 | \$ - | \$ 435,011 |
| | Switchgear | Electrical Switchgear | 1 | \$ 120,000 | \$ - | \$ 120,000 | \$ 120,000 |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | | \$ 526,141 | \$ 120,000 | \$ 646,141 |

Attachment 5

Equipment Instructions

| |
|--|
| 1. Equipment is defined as items having a per unit cost of at least \$5,000 and a useful life of at least 1 year. Equipment means any products, objects, machinery, apparatus, implements or tools purchased, used or constructed within the Project, including those products, objects, machinery, apparatus, implements or tools from which over thirty percent (30%) of the equipment is composed of Materials purchased for the Project. Items not meeting this definition should be included on the Materials & <u>Miscellaneous worksheet</u> |
| 2. Insert the applicable Task No. from the Scope of Work that the equipment supports. Multiple tasks may be identified. |
| 3. Insert a description of the equipment. The description should be sufficient to allow the Energy Commission to easily tie the equipment to backup documentation provided with the invoice and the <u>Scope of Work</u> . |
| 4. Insert a concise purpose of the equipment (i.e., why is the equipment needed for the project?). |
| 5. Insert the number of units to be purchased. |
| 6. Insert the per unit cost of the equipment. |
| 7. Insert the dollar amount to be reimbursed with Energy Commission funds. Whole dollars only. |
| 8. Insert the dollar amount to be charged as match share. Whole dollars only. |
| 9. Totals on each line must equal # of Units multiplied by the Per Unit Cost. |
| 10. Confirm all totals across and down are accurate. |

Attachment 5

Materials & Miscellaneous (see instructions)

Organization Name

| Task No. | Description | Purpose | # Units | Unit Cost | Energy Commission Funds | Match Share | Total |
|---------------|---------------|-------------------------|---------|-----------|-------------------------|-------------|----------|
| | Permit | Permitting for the EVCS | 1 | \$ 3,000 | \$ - | \$ 3,000 | \$ 3,000 |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | | \$ - | \$ 3,000 | \$ 3,000 |

Materials & Miscellaneous Instructions

Attachment 5

1. Materials are items under the agreement that do not meet the definition of Equipment. Miscellaneous are items of cost that do not fit in other cost categories contained in this workbook.
2. Insert the applicable Task No. from the Scope of Work that the material/miscellaneous expense supports.
3. Insert a description of the material/miscellaneous item. The description should be sufficient to allow the Energy Commission to easily tie the material/miscellaneous expense to backup documentation provided with the invoice and the Scope of Work.
4. Where appropriate and logical, materials and miscellenous items can be grouped together. Grouped items must be clearly and thoroughly described. Grouped items can use "varies" for the # of units and unit cost. (Examples may include various pipes and pipe fittings or various nuts and bolts, etc...)
5. Insert a concise purpose of the material/miscelleneous expense (i.e., why is the material/miscellaneous expense needed for the project?).
6. Insert the number of units to be purchased.
7. Insert the **per unit** cost of the material/miscelleneous item.
8. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**
9. Insert the dollar amount to be charged as match share. **Whole dollars only.**
10. Totals on each line **must equal** # of Units multiplied by the Per Unit Cost.
11. Confirm all totals across and down are accurate.

Attachment 5

Subcontracts

(see instructions)

Organization Name

| Task No. | Subcontractor Name | Purpose | CA Business Certifications DVBE/ SB/MB/None | Energy Commission Funds | Match Share | Total |
|---------------|--------------------|--------------------------------------|---|-------------------------|-------------|------------|
| | TBD | Construction of the charging site(s) | TBD | \$ - | \$ 620,890 | \$ 620,890 |
| | TBD | Permit package/ Engineering | TBD | \$ - | \$ 22,500 | \$ 22,500 |
| | TBD | Site Survey | TBD | \$ - | \$ 8,000 | \$ 8,000 |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| | | | | \$ - | \$ - | \$ - |
| Total: | | | | \$ - | \$ 651,390 | \$ 651,390 |

Subcontracts Instructions

Attachment 5

1. **Each subcontract containing: 1) \$100,000 or more of Energy Commission funds; or 2) 25% or more of the total Energy Commission funds requested requires completion of separate set of complete budget forms detailing the expected expenditures of the subcontractor.**

2. Include all subcontractors that have a direct contractual relationship with the organization to which these budget forms pertain including those that must also complete their own set of budget forms.

3. Insert the applicable Task No. from the Scope of Work that the subcontract supports. Insert multiple task numbers if applicable.

4. Insert the name of the subcontractor, if known. If not known, insert "TBD."

5. Insert a concise purpose of the subcontract (i.e., why is the subcontract needed for the project?).

6. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**

7. Insert the dollar amount to be charged as match share. **Whole dollars only.**

8. Totals on each line **must equal** total amount of subcontract.

9. Confirm all totals across and down are accurate.

10. Insert whether the subcontractor is a certified Disabled Veteran Business Enterprise (DVBE), Small Business (SB) or Micro Business (MB). Appropriate answers are "DVBE", "SB", "MB", "None", or "TBD". Certification status can be verified at the following website: <http://www.bidsync.com/DPXBisCASB>

Attachment 5

Indirect Costs and Profit

(see instructions)

Organization Name

Indirect Cost(s)

| Name of Indirect Cost | Maximum Rate | Indirect Cost Base Description | Indirect Cost Base Amount | Energy Commission Funds | Match Share | Total |
|-----------------------|--------------|--------------------------------|---------------------------|-------------------------|-------------|-------|
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | \$ - | \$ - | \$ - |

Profit

(Profit is not allowed for Grant Recipients)

| Profit Rate | Profit Base Description | Profit Base Amount | Energy Commission Funds | Match Share | Total |
|---------------|-------------------------|--------------------|-------------------------|-------------|-------|
| 0.00% | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | \$ - | \$ - | \$ - |

Indirect Costs Instructions

1. All indirect costs charged must be reasonable, allocable to the project, and fully supported by backup documentation. The Energy Commission reserves the right to request supporting documentation of all indirect costs reimbursed or charged as match share.

Attachment 5

| |
|---|
| 2. Indirect costs must adhere to the Agreement Terms and Conditions, Generally Accepted Accounting Principles (GAAP) and the OMB Circular or Federal Acquisition Regulations applicable to your organization. |
| 3. Insert the name of the indirect cost. |
| 4. Insert the maximum indirect cost rate to be charged during the approved term of the agreement. |
| 5. The indirect cost rates on this form are caps, or the maximum amount allowed to be billed. The Contractor/Recipient/Subcontractor can only bill for actual indirect costs incurred, not to exceed the rates specified in these forms. |
| 6. Describe the indirect cost base (categories or items of costs within the budget) on which the indirect cost rate is applied. |
| 7. Insert the dollar amount of the indirect cost base. This is the sum of the budgeted costs described in the indirect cost base description. |
| 8. Insert the dollar amount to be reimbursed with Energy Commission funds. Whole dollars only. |
| 9. Insert the dollar amount to be charged as match share. Whole dollars only. |
| 10. The Energy Commission expects to only reimburse indirect costs which are allocable to the indirect base costs reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the costs included in the indirect cost base, the Energy Commission expects to only reimburse up to 45% of the indirect costs. Match share expenditures are allowed to cover higher percentages of indirect costs. |
| 11. Totals on each line must be less than or equal to Maximum Indirect Cost Rate multiplied by the Indirect Cost Base Amount. |
| 12. Confirm all totals across and down are accurate. |

Profit Instructions

| |
|---|
| 1. For Grant Agreements Only: Recipients CANNOT be reimbursed for more than their actual allowable expenses (i.e., cannot include profit, fees, or markups) under the agreement. Subcontractors (all tiers) are allowed to include up to a maximum total of 10% profit, fees or mark-ups on their own actual allowable expenses less any expenses further subcontracted to other entities (i.e., profit, fees and markups are not allowed on subcontractor expenses). For example, if a subcontractor has \$100,000 in actual allowable costs but has further subcontracted \$20,000 to another entity, then the subcontractor can only include up to 10% profit on \$80,000 (\$100,000 minus \$20,000). See terms and conditions for more information on allowable costs. |
|---|

Attachment 5

2. **For Contract Agreements Only:** Contractors and subcontractors can include up to a maximum total of 10% profit, fees or markups on their own actual allowable expenses less any expenses further subcontracted to other entities (i.e., profit, fees and markups are not allowed on subcontractor expenses). For example, if a contractor has \$100,000 in actual allowable costs but has further subcontracted \$20,000 to another entity, then the contractor can only include up to 10% profit on \$80,000 (\$100,000 minus \$20,000). See terms and conditions for more information on allowable costs.

3. **For All Agreement Types:** Forgone profit, fees, or markups are NOT eligible match share expenditures. Forgone profit, fees and markups are defined as profit, fees or markups that are not claimed or actually paid to a contractor, recipient or subcontractor. For example, if a contractor pays its own funds to a subcontractor (funds the contractor will not seek reimbursement from the Energy Commission) and the payment includes profit, fees or markups, the amount paid to the subcontractor including the profit, fees or markups can count as a match share expenditure since it was actually paid. However, if a contractor or subcontractor would normally include profit, fees or markups in its invoices and indicates it will forgo charging these costs, the forgone profit, fees, or markups cannot count as a match fund expenditure since it was not paid. This restriction does not apply to equipment or material discounts appropriately documented and provided to the project.

4. Insert the maximum profit rate to be charged during the approved term of the agreement. The profit rate in these forms are caps, or the maximum amount allowed to be billed.

5. Describe the profit base (categories or items of costs within the budget) on which the profit rate is applied.

6. Insert the dollar amount of the profit base. This is the sum of the budgeted costs described in the Profit Base Description.

7. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**

8. Insert the dollar amount to be charged as match share. **Whole dollars only.**

9. The Energy Commission expects to only reimburse profit which is allocable to the profit base reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the profit base costs, the Energy Commission expects to only reimburse up to 45% of the profit. Match share expenditures are allowed to cover higher percentages of profit.

10. Totals on each line must be less than or equal to: Max. Profit Rate X Profit Base Amount.

11. Confirm all totals across and down are accurate.

Attachment 5

Indirect Costs and Profit

(see instructions)

San Francisco Department of the Environment

Indirect Cost(s)

| Name of Indirect Cost | Maximum Rate | Indirect Cost Base Description | Indirect Cost Base Amount | Energy Commission Funds | Match Share | Total |
|-------------------------|--------------|--------------------------------|---------------------------|-------------------------|-------------|-------------------|
| Indirect Overhead (IOH) | 25.70% | Direct Labor + Fringe Benefits | \$ 974,511 | \$ 250,449 | \$ - | \$ 250,449 |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| | 0.00% | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | | \$ 250,449 | \$ - | \$ 250,449 |

Profit

(Profit is not allowed for Grant Recipients)

| Profit Rate | Profit Base Description | Profit Base Amount | Energy Commission Funds | Match Share | Total |
|---------------|-------------------------|--------------------|-------------------------|-------------|-------------|
| 0.00% | | \$ - | \$ - | \$ - | \$ - |
| Total: | | | \$ - | \$ - | \$ - |

Indirect Costs Instructions

1. All indirect costs charged must be reasonable, allocable to the project, and fully supported by backup documentation. The Energy Commission reserves the right to request supporting documentation of all indirect costs reimbursed or charged as match share.

Attachment 5

| |
|---|
| 2. Indirect costs must adhere to the Agreement Terms and Conditions, Generally Accepted Accounting Principles (GAAP) and the OMB Circular or Federal Acquisition Regulations applicable to your organization. |
| 3. Insert the name of the indirect cost. |
| 4. Insert the maximum indirect cost rate to be charged during the approved term of the agreement. |
| 5. The indirect cost rates on this form are caps, or the maximum amount allowed to be billed. The Contractor/Recipient/Subcontractor can only bill for actual indirect costs incurred, not to exceed the rates specified in these forms. |
| 6. Describe the indirect cost base (categories or items of costs within the budget) on which the indirect cost rate is applied. |
| 7. Insert the dollar amount of the indirect cost base. This is the sum of the budgeted costs described in the indirect cost base description. |
| 8. Insert the dollar amount to be reimbursed with Energy Commission funds. Whole dollars only. |
| 9. Insert the dollar amount to be charged as match share. Whole dollars only. |
| 10. The Energy Commission expects to only reimburse indirect costs which are allocable to the indirect base costs reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the costs included in the indirect cost base, the Energy Commission expects to only reimburse up to 45% of the indirect costs. Match share expenditures are allowed to cover higher percentages of indirect costs. |
| 11. Totals on each line must be less than or equal to Maximum Indirect Cost Rate multiplied by the Indirect Cost Base Amount. |
| 12. Confirm all totals across and down are accurate. |

Profit Instructions

| |
|---|
| 1. For Grant Agreements Only: Recipients CANNOT be reimbursed for more than their actual allowable expenses (i.e., cannot include profit, fees, or markups) under the agreement. Subcontractors (all tiers) are allowed to include up to a maximum total of 10% profit, fees or mark-ups on their own actual allowable expenses less any expenses further subcontracted to other entities (i.e., profit, fees and markups are not allowed on subcontractor expenses). For example, if a subcontractor has \$100,000 in actual allowable costs but has further subcontracted \$20,000 to another entity, then the subcontractor can only include up to 10% profit on \$80,000 (\$100,000 minus \$20,000). See terms and conditions for more information on allowable costs. |
|---|

Attachment 5

2. **For Contract Agreements Only:** Contractors and subcontractors can include up to a maximum total of 10% profit, fees or markups on their own actual allowable expenses less any expenses further subcontracted to other entities (i.e., profit, fees and markups are not allowed on subcontractor expenses). For example, if a contractor has \$100,000 in actual allowable costs but has further subcontracted \$20,000 to another entity, then the contractor can only include up to 10% profit on \$80,000 (\$100,000 minus \$20,000). See terms and conditions for more information on allowable costs.

3. **For All Agreement Types:** Forgone profit, fees, or markups are NOT eligible match share expenditures. Forgone profit, fees and markups are defined as profit, fees or markups that are not claimed or actually paid to a contractor, recipient or subcontractor. For example, if a contractor pays its own funds to a subcontractor (funds the contractor will not seek reimbursement from the Energy Commission) and the payment includes profit, fees or markups, the amount paid to the subcontractor including the profit, fees or markups can count as a match share expenditure since it was actually paid. However, if a contractor or subcontractor would normally include profit, fees or markups in its invoices and indicates it will forgo charging these costs, the forgone profit, fees, or markups cannot count as a match fund expenditure since it was not paid. This restriction does not apply to equipment or material discounts appropriately documented and provided to the project.

4. Insert the maximum profit rate to be charged during the approved term of the agreement. The profit rate in these forms are caps, or the maximum amount allowed to be billed.

5. Describe the profit base (categories or items of costs within the budget) on which the profit rate is applied.

6. Insert the dollar amount of the profit base. This is the sum of the budgeted costs described in the Profit Base Description.

7. Insert the dollar amount to be reimbursed with Energy Commission funds. **Whole dollars only.**

8. Insert the dollar amount to be charged as match share. **Whole dollars only.**

9. The Energy Commission expects to only reimburse profit which is allocable to the profit base reimbursed by the Energy Commission. For example, if the Energy Commission reimburses 45% of the profit base costs, the Energy Commission expects to only reimburse up to 45% of the profit. Match share expenditures are allowed to cover higher percentages of profit.

10. Totals on each line must be less than or equal to: Max. Profit Rate X Profit Base Amount.

11. Confirm all totals across and down are accurate.

**Attachment 6
CONTACT LIST**

| California Energy Commission | Recipient |
|---|--|
| <p>Commission Agreement Manager: TBD by CEC California Energy Commission 1516 Ninth Street, MS-6 Sacramento, CA 95814 Phone: (916) 654-4405 Fax: (916) XXX-XXXX e-mail: XXXXXX</p> | <p>Project Manager: SF Department of the Environment Lowell Chu 1455 Market, 12th floor San Francisco, CA 94103 Phone: (415) 355-3700 Fax: (415) 554-6393 e-mail: lowell.chu@sfgov.org</p> |
| <p>Commission Agreement Office California Energy Commission 1516 Ninth Street, MS-18 Sacramento, CA 95814 Phone: (916) 654-4381 Fax: (916) 654-4423</p> | <p>Administrator: SF Department of the Environment Joseph Salem 1455 Market, 12th floor San Francisco, CA 94103 Phone: (415) 355-3721 Fax: (415) 554-6393 e-mail: joseph.salem@sgov.org</p> |
| <p>Accounting Office California Energy Commission 1516 Ninth Street, MS-2 Sacramento, CA 95814</p> | <p>Accounting Officer: SF Department of the Environment Mark Brown 1455 Market, 12th floor San Francisco, CA 94103 Phone: (415) 355-3789 Fax: (415) 554-6393 e-mail: mark.brown@sfgov.org</p> |
| <p>Legal Notices: Tatyana Yakshina Grants Manager 1516 Ninth Street, MS-18 Sacramento, CA 95814 Phone: (916) 654-4204 Fax: (916) 654-4423 e-mail: tatyana.yakshina@energy.ca.gov</p> | <p>Recipient Legal Notices: SF Department of the Environment Jennifer Kass 1455 Market, 12th floor San Francisco, CA 94103 Phone: (415) 355-3762 Fax: (415) 554-6393 e-mail: jennifer.kass@sfgov.org</p> |

Attachment 6

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) WORKSHEET

The California Environmental Quality Act (CEQA) (Public Resources Code §§ 21000 et seq.) requires public agencies to identify the significant environmental impacts of their actions and to avoid or mitigate them, if feasible.¹ Under CEQA, an activity that may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment is called a “project.” (Public Resources Code § 21065.) Approval of a contract, grant, or loan may be a “project” under CEQA if the activity being funded may cause a direct physical change or a reasonably foreseeable indirect physical change in the environment. Agencies must comply with CEQA before they approve a “project.” This can include preparing a Notice of Exemption or conducting an Initial Study and preparing a Negative Declaration, a Mitigated Negative Declaration, or, if there are significant impacts, an Environmental Impact Report.

The Lead Agency is the public agency that has the greatest responsibility for preparing environmental documents under CEQA, and for carrying out, supervising, or approving a project. Where the award recipient is a public agency, the Lead Agency is typically the recipient. Where the award recipient is a private entity, the Lead Agency is the public agency that has greatest responsibility for supervising or approving the project as a whole.² When issuing contracts, grants or loans, the Energy Commission is typically a “Responsible Agency” under CEQA, which means that it must make its own CEQA findings based on review of the Lead Agency’s environmental documents. If the Energy Commission is the only public agency with responsibility for approving the project, then the Energy Commission must act as the Lead Agency and prepare its own environmental documents before approving the project.

This worksheet will help the Energy Commission determine what kind of CEQA review, if any, is necessary before it can approve the award, and which agency will be performing that review as a Lead Agency. Please answer all questions as completely as possible. It may also help you to think through the CEQA process necessary for your proposed project. The Energy Commission may request additional information in order to clarify responses provided on this worksheet.

¹ For a brief summary of the CEQA process, please visit [www.ceqa.ca.gov](#).

² 14 C.C.R. §§ 15050, 15051. The Lead Agency typically has general governmental powers (such as a city or county), rather than a single or limited purpose (such as an air pollution control district).

1. What are the physical aspects of the project? (Check all that apply and provide brief description of work, including any size or dimensions of the project).

| Type of Project | Yes | No | Project Description |
|---|-------------------------------------|-------------------------------------|--|
| Construction (including grading, paving, etc.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Project includes developing 3 electric vehicle (EV) charging plazas at to-be-determined sites. |
| Trenching | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Trenching for conduit to serve charging stations |
| New or replaced pipelines | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Modification or conversion of a facility | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sites not yet determined, however, will likely require modification of existing lots. |
| New or modified operation of a facility or equipment | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Electric Vehicle Supply Equipment (EVSE) installation. |
| On-road demonstration | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Paper study (including analyses on economics, feedstock availability, workforce availability, etc.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Laboratory research | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Temporary or mobile structures (skid-mounted) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Design/Planning | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Design/planning for installation of charging stations |
| Other (describe and add pages as necessary) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |

2. Where is the project located or where will it be located? (Attach additional sheets as necessary.)

| Address | County | Type of Work to Be Completed at Site |
|---------|---------------|---|
| N/A | San Francisco | Installation of EVSE at three sites across San Francisco. |
| | | |

3. Will the project potentially have environmental impacts that trigger CEQA review? (Check a box and explain for each question.)

| Question | Yes | No | Don't Know | Explanation |
|--|--------------------------|-------------------------------------|-------------------------------------|--|
| Is the project site environmentally sensitive? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The project sites, likely covered in impervious surfaces, are not anticipated to be environmentally sensitive areas. |
| Is the project site on agricultural land? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The project sites are located within the City of San Francisco, an urban area, and are therefore not on agricultural land. |
| Is this project part of a larger project? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3 charging plaza sites are the only infrastructure pieces of the project. |
| Is there public controversy about the proposed project or larger project? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The proposed project is currently not known to be a controversial project |
| Will historic resources or historic buildings be impacted by the project? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Selected project sites will be chosen so as not to impact historic resources or historic sites. |
| Is the project located on a site the Department of Toxic Substances Control and the Secretary of the Environmental Protection have identified as being affected by hazardous wastes or cleanup problems? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | To be determined as sites are identified. If project sites are within an area of suspected soil and/or ground water activity and project includes more than 50 cubic yards of soil disturbance, it will be subject to Article 22A of the San Francisco Health Code, also known as the Maher Ordinance, and would be required to enroll in the San Francisco Department of Public Health's (DPH) Maher program. Compliance with the Maher program would reduce potential impacts from hazardous materials releases. |

| Question | Yes | No | Don't Know | Explanation |
|---|-------------------------------------|-------------------------------------|--------------------------|--|
| Will the project generate noise or odors in excess of permitted levels? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Operational noise would be required to comply with the San Francisco Noise Ordinance and is not anticipated to substantially increase noise levels at the project sites. Construction-related noise is also regulated by the Noise Ordinance and would be temporary and intermittent. Thus, construction activities are not anticipated to increase noise above permitted levels. The proposed electric vehicle charging infrastructure, solar panels, and batteries are not anticipated to result in odors in excess of permitted levels. |
| Will the project increase traffic at the site and by what amount? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Charging plazas will necessarily increase traffic to site. Traffic impacts are not yet known, but will be calculated upon identification of project sites. |

4. Will the project require discretionary permits or determinations, as listed below?

| Type of Permit | No | Modified | New | Approving Agency | Reason for Permit, Summary of Process, and Anticipated Date of Issuance |
|------------------------------------|-------------------------------------|--------------------------|--------------------------|------------------|---|
| Air Quality Permit | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Water Quality Permit | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Conditional Use Permit or Variance | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Building Expansion Permit | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

| Type of Permit | No | Modified | New | Approving Agency | Reason for Permit, Summary of Process, and Anticipated Date of Issuance |
|----------------------------|-------------------------------------|--------------------------|-------------------------------------|---------------------------------------|---|
| Hazardous Waste Permit | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Rezoning | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Authority to Construct | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Planning Dept and Building Inspection | Installing EVSE, timeline to be determined upon site identification. |
| Other Permits (List types) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

5. Of the agencies listed in #4, have you identified and contacted the public agency who will be the lead CEQA agency on the project?

Yes. Provide the name of and contact information for the lead agency.

San Francisco Planning Department

Jessica Range, jessica.range@sfgov.org

No. Explain why no contact has been made and/or a proposed process for making contact with the lead agency.

6. Has the public agency prepared environmental documents (e.g., Notice of Exemption, Initial Study/Negative Declaration/Mitigated Negative Declaration, Environmental Impact Report, Notice of Determination) under CEQA for the proposed project?

Yes.

Please complete the following and attach the CEQA document to this worksheet. (For “Not a project,” the title of the document may be an e-mail, resolution, or letter.)

| Type of Environmental Review | Title of Environmental Document | State Clearinghouse Number | Completion Date | Planned Completion Date (<u>must be before approval of award</u>) |
|---|---------------------------------|----------------------------|-----------------|---|
| “Not a project” | | N/A | | N/A |
| Exempt (Resolution of public agency or Agenda Item approving Exemption) | | N/A | | N/A |
| Exempt (Notice of Exemption) | | N/A | | |
| Initial Study | | | | |
| Negative Declaration | | | | |
| Mitigated Negative Declaration | | | | |
| Notice of Preparation | | | | |
| Environmental Impact Report | | | | |
| Master Environmental Impact Report | | | | |
| Notice of Determination | | | | |
| NEPA Document (Environmental Assessment, Finding of No Significant Impact, and/or Environmental Impact Statement) | | | | |


No. Explain why no document has been prepared. Propose a process for obtaining lead agency approval and estimated date for that approval (must occur before the Energy Commission will approve the award).

Unable to prepare documentation until project sites have been identified, upon completion of the Google Mapping Tool that will use community input, information about interconnection, and other factors to determine where to site new EVSE installation projects. SF Environment will ensure compliance with CEQA upon identification of proposed sites.

Certification: I certify to the best of my knowledge that the information contained in this worksheet is true and complete. I further certify that I am authorized to complete and sign this form on behalf of the proposing organization.

Name: Shawn Rosenmoss _____

Title: Manager of Development, Community Partnerships and SF Carbon Fund

Signature:  _____

Phone Number: 415-355-3746 _____

Email: shawn.rosenmoss@sfgov.org _____

Date: 10/23/2020 _____

Attachment 8
LOCAL HEALTH IMPACTS INFORMATION
SF Environment GFO-19-603

Air Quality Guidelines (California Code of Regulations, Title 13, Chapter 8.1, Section 2343(c)(6)(A)) require the Energy Commission to analyze the aggregate locations of the funded projects, analyze the impacts in communities with the most significant exposure to air contaminants or localized air contaminants, or both, including, but not limited to, communities of minority populations or low-income populations, and identify agency outreach to community groups and other affected stakeholders.

This information must be provided for all AB 118 funding categories, including fueling stations, fuel production, feedstock production or procurement, and vehicle or technology component production.

INSTRUCTIONS

Please complete the following information *for all sites where work for the proposed project that will require a permit will be done.* Attach additional pages if necessary. If the project includes multiple sites, you may submit this information in a table format using the bolded font below as column headers.

PROJECT NAME

Electric Vehicle Ready Communities Phase II Blueprint Implementation:
EV Charging Plazas

APPLICANT'S NAME AND ORGANIZATION

San Francisco Department of the Environment

PROJECT SITE(S) DESCRIPTION

Provide the precise street address(es) of the site(s) and a description of existing infrastructure or facilities (if any), surrounding structures, reference to any regional plans or zoning requirements for each location, and its proximity to residences, day care facilities, elder care facilities, medical facilities, and schools.

Sites for charging plazas will be identified during the proposed program. One plaza will be located in a DAC, most likely zip code 94124, San Francisco's Bayview Hunters Point Neighborhood. Charging plaza site selection will be made using the Google Mapping Tool that will be completed early in the project. The tool will help the City and charging station providers identify feasible sites that meet basic criteria and are served by sufficient electrical infrastructure. The public will participate in final site selection

using the Mapping Tool’s “crowdsource” function. Together, these functions will ensure that investments in electric vehicles supply equipment is both feasible and needed.

PROJECT-GENERATED EMISSIONS

Provide a quantified description of the air emissions (criteria and toxic) directly associated with the project’s operations, including, but not limited to: 1) transport (truck or rail) of fuel, feedstock or other material to project site as required for operations and production; 2) production of fuel or technology components; 3) fueling of alternatively-fueled vehicles; 4) potential increases to traffic.

We calculate the emissions associated with the charging plaza project, over the grant period, as follows:

(Total Emissions Reduced by Replacing an ICE vehicle with an EV)

– *(Total Emissions Generated Through Operation of Charging Plazas)*

– *(Emissions Generated Through Construction of Charging Plazas)*

= *Total Emissions Reduced Through Project*

We anticipate that over the grant period, the charging plaza project will result in GHG emissions reduction by powering EV VMT in place of ICE VMT:

Table 1: Charging Plaza GHG Emissions Reduction

| Year | Utilization Rate | Number of Chargers | Charge Rate (kW) | Annual kWh | Miles Powered | GHG Emissions Reduced (in metric tons) |
|--------------------------------|------------------|--------------------|------------------|------------|---------------|--|
| 1 | 0 | 8 | 80 | 0 | 0 | 0 |
| 2 | 0.15 | 8 | 80 | 840960 | 2522880 | 1019.24352 |
| 3 | 0.2 | 16 | 80 | 2242560 | 6727680 | 2717.98272 |
| 4 | 0.2 | 24 | 80 | 3363840 | 10091520 | 4076.97408 |
| Total over Grant Period | | | | | | 7814.20032 |

GHG emissions are calculated under the following assumptions:

- There will be 8 chargers per plaza.
- The first plaza will be completed by the beginning of year 2, the second constructed by the beginning of year 3, and the final constructed by the beginning of year 4. The plazas will be under construction the entirety of year 1.
- Each mile charged using charging plaza infrastructure replaces a mile that would otherwise be an ICE VMT
- One kWh powers 3 EV miles¹
- ICE vehicles emit on average 404 g/mi²
- Utilization rates will rise over time as presence of the charging plazas facilitates adoption³ but will not surpass EVGo’s target utilization rate of 20%.

¹ As estimated by EVGo in October, 2020.

² EPA, “Greenhouse Gas Emissions From a Typical Passenger Vehicle.” March 2018. < <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>>

³ Assumption drawn from a white paper by the International Council on Clean Transportation (ICCT), “LESSONS LEARNED ON EARLY ELECTRIC VEHICLE FAST-CHARGING DEPLOYMENTS.” July 2018. < https://theicct.org/sites/default/files/publications/ZEV_fast_charging_white_paper_final.pdf>

Tailpipe emissions are zero because the plaza will serve EVs. Upstream emissions are zero because the charging plazas will utilize San Francisco's 100% renewable energy sources. Therefore, operating emissions are zero.

Precise construction emissions will be calculated using the California Emissions Estimator Model (CalEEMod) upon identification of sites and as project plans are developed. Using a general emissions calculator to estimate emissions generated through general construction projects results in a range from 16 – 200 metric tons.

As a result, the final emissions reduction equation is:

7814.2. metric tons

– 0 metric tons

– 16 – 200 metric tons

= 7614.2 – 7798.2 metric tons GHG emissions reduced

Note that this emissions reduction is calculated for the duration of the grant period. The benefits of reduced emissions for all 3 charging plazas (4076.97 metric tons annually) will continue to accrue throughout the lifetime of the plaza.

Additionally, ICCT's paper on early EV fast charging deployment suggests that the presence of DC Fast Chargers has emissions benefits beyond the EV VMT they provide directly.⁴ The presence of a DCFC in a neighborhood increases the confidence of potential EV owners that they could charge away from home if needed. This means that the presence of DCFC increases adoption of EVs and reduces range anxiety, even if those new EV owners never actually use the public DCFC. This suggests that additional emissions reductions are likely thanks to this additional induced demand for EVs.

Finally, the plazas will increase traffic in the surrounding neighborhood, but of only zero-emissions vehicles.

PROJECT HEALTH IMPACTS

Using the demographic data and emissions information, provide a description of the project's potential localized health impacts. For this section, "potential localized health impact" denotes the project's potential to add criteria pollutants and toxic air contaminants to a localized air shed and affect ambient air quality levels to an extent that local community health is adversely affected.

PROJECT SUMMARY

Provide the page number in the proposal that describes the project goal and proposed infrastructure changes.

Project sites to be identified upon completion of Google Mapping Project.

Pages 1 – 2 of the narrative define the proposed infrastructure changes:

⁴ *ibid*

San Francisco has established a public-private partnership with EVgo to build **three public fast-charging plazas, the EV-equivalent to the petroleum fueling stations.** One of these plazas will be installed in or adjacent to a disadvantaged community.” Additionally, SF will use the Mapping Tool to streamline the process of identifying appropriate charging sites and de-risk the development process.

Each public fast-charging plaza will have approximately 6 – 10 charging stations, to be determined by site logistics.

Page 5 of the narrative map out project goals, including:

- Expedite the project development process for each of the plazas.
- “Connect charging providers with owners of under-utilized or vacant lots, and initiate project development.
- “Explore developing a policy to require existing fueling stations to include public charging.
- “Develop Monetary incentives to charging provider(s) to prioritize and develop projects near MUDs, in or adjacent to DAC, and on major thoroughfares.”

Provide estimate of environmental benefits and/or impacts from the proposed project.

The project will provide environmental benefits and impacts due to emissions reduction, as highlighted in the “Project Emissions” section above. Any adverse environmental impacts will be due to initial construction of the charging plazas and will be far outweighed by the environmental benefits of reduced emissions.

OUTREACH EFFORTS

Describe outreach efforts to be implemented throughout the project to educate the surrounding community of these benefits and/or impacts. Include method of outreach (e.g. flyer, town hall meeting), frequency of outreach, number of targeted stakeholders, and information to be provided.

Outreach will be supported by education and materials appropriate for potentially affected residents, with an emphasis on providing information in languages spoken in those neighborhoods. We plan to use a variety of outreach methods to ensure participation in the crowdsourcing function of the Mapping Tool. These will be based on what will work best in selected neighborhoods. In addition, both SF Environment, Grid Alternatives and the SF Municipal Transportation Agency have been very involved in transportation planning in Bayview Hunters Point (the identified DAC for one of the charging plazas) and have done in-depth community engagement. We will leverage these existing relationships and build on ongoing outreach and communication work.

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

Provide references for grants received by the Applicant or team in the last 10 years, or for similar or related types of projects completed in the last 10 years, to verify Applicant's or team's past performance. Each reference must include a contact person name and phone number (or email address). If contacted by California Energy Commission staff, references should be able to speak to Applicant's ability to successfully complete projects in a timely manner.

Applicants should fill out a separate Past Performance Reference Form for each reference addressed in the Project Narrative.

| | |
|--|--|
| Name of Organization | Bay Area Air Quality Management District (BAAQMD) |
| Address | 375 Beale St, Suite 600, San Francisco 94105 |
| Contact Name | Mark Tang |
| Contact Title | Program Lead - Zero Emission Vehicles |
| Contact Phone Number (or Email) | (415) 749-4778 / mtang@baaqmd.gov |
| Title of Project | Charge! EVgo's Electric Vehicle Charging Project |
| Agreement Number or Other Unique Identifier | Charge! 19EV006, effective 9/24/2019 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | EVgo requested a six-month extension for COVID impacts. |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Installation of 20 DCFC (50 kW or higher). Project is currently underway |

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

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|--|---|
| Name of Organization | CA - Transportation Fund for Clean Air - San Francisco 2019 |
| Address | 1455 Market Street, 22nd Floor, San Francisco, CA 94103 |
| Contact Name | Mike Pickford |
| Contact Title | Senior Transportation Planner |
| Contact Phone Number (or Email) | 415-522-4822 / mike.pickford@sfcta.org |
| Title of Project | Mixed Use Building Fast Charging in San Francisco |
| Agreement Number or Other Unique Identifier | SFCTA 20SF01, effective 10/18/2019 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | EVgo requested a six-month extension for COVID impacts. |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Project is currently underway. |

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

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|--|--|
| Name of Organization | Bay Area Air Quality Management District (BAAQMD) |
| Address | 375 Beale St, Suite 600, San Francisco 94105 |
| Contact Name | Amy Dao |
| Contact Title | Strategic Incentives Division |
| Contact Phone Number (or Email) | (415)749-4933 / adao@baaqmd.gov |
| Title of Project | Installation of 100 kW EV Fast Chargers Project |
| Agreement Number or Other Unique Identifier | 19RFG13 / Reformulated Gas Settlement West Oakland Grant; effective 10/10/2019 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | EVgo requested a six-month extension and amended contract to replace a site. |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Installation of eight (8) DCFC (100 kW). Project is currently underway |

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

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|--|---|
| Name of Organization | Los Angeles Department of Water and Power (LADWP) |
| Address | 111 N Hope St Los Angeles, CA 90012 |
| Contact Name | Yamen Nanne P.E. |
| Contact Title | Electric Transportation Program Manager |
| Contact Phone Number (or Email) | 213-949-6748 / Yamen.Nanne@ladwp.com |
| Title of Project | LADWP Commercial Rebate |
| Agreement Number or Other Unique Identifier | N/A – Rebate, effective 10/3/2019 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | N/A |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Installation of 16 Level 2 chargers at EVgo Headquarters. |

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

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|--|---|
| Name of Organization | Bay Area Air Quality Management District (BAAQMD) |
| Address | 375 Beale St, Suite 600, San Francisco 94105 |
| Contact Name | Mark Tang |
| Contact Title | Program Lead - Zero Emission Vehicles |
| Contact Phone Number (or Email) | (415) 749-4778 / mtang@baaqmd.gov |
| Title of Project | Charge! EVgo's Electric Vehicle Charging Project |
| Agreement Number or Other Unique Identifier | Charge! 19EV077, effective 2/10/2020 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | N/A |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Installation of 20 DCFC (50 kW or higher). Project is currently underway. |

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

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|--|--|
| Name of Organization | California Energy Commission |
| Address | 1516 9th St, Sacramento, CA 95814 |
| Contact Name | Thanh Lopez |
| Contact Title | Air Pollution Specialist |
| Contact Phone Number (or Email) | (916) 654-3929 / than.lopez@energy.ca.gov |
| Title of Project | DC Fast Chargers for California's North-South Corridors |
| Agreement Number or Other Unique Identifier | ARV-15-058 and ARV-15-060 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | EVgo worked with the Energy Commission to execute an extension agreement to open a total of 5 DCFC stations to the public by 3/31/2020 and was able to fulfill this amended schedule. Delays in site development ranged from permitting to utility construction and utility interconnection. |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | This project has not undergone audit. |
| Describe the final outcome of the project. | EVgo worked with the Energy Commission to execute an extension agreement to open a total of 5 DCFC stations to the public by 3/31/2020. EVgo successfully installed a total of 14 DCFC and 5 dual port L2s and is currently in the operating period through 9/31/2020. |

Attachment 10
GFO-20-605
PAST PERFORMANCE REFERENCE FORM
EVGo

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|--|---|
| Name of Organization | California Energy Commission |
| Address | 1516 9th St, Sacramento, CA 95814 |
| Contact Name | Delaney Appel (Center for Sustainable Energy) |
| Contact Title | Rebate Processing Specialist |
| Contact Phone Number (or Email) | (858) 429-5205 |
| Title of Project | California Electric Vehicle Infrastructure Project (CALeVIP) |
| Agreement Number or Other Unique Identifier | A-00392 |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | N/A |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Opened a 2 x 50 kW DCFC in Orange County on 12/18/2019, currently in the operating period. EVgo has a number of other projects awarded or in queue for this rebate program. |

Attachment 10
GFO-19-603
PAST PERFORMANCE REFERENCE FORM
Grid Alternatives

Provide references for grants received by the Applicant or team in the last 10 years, or for similar or related types of projects completed in the last 10 years, to verify Applicant's or team's past performance. Each reference must include a contact person name and phone number (or email address). If contacted by California Energy Commission staff, references should be able to speak to Applicant's ability to successfully complete projects in a timely manner.

Applicants should fill out a separate Past Performance Reference Form for each reference addressed in the Project Narrative.

| | |
|--|---|
| Name of Organization | Bay Area Air Quality Management District |
| Address | 375 Beale Street, Suite 600 San Francisco, CA 94105 |
| Contact Name | Tin Le |
| Contact Title | Staff Specialist, Technology Implementation |
| Contact Phone Number (or Email) | tle@baaqmd.gov |
| Title of Project | Clean Cars 4 All |
| Agreement Number or Other Unique Identifier | N/A |
| (For projects that did not complete (or timely complete) project objectives) Describe the challenges faced, what led to those challenges and indicate whether those challenges were within the Applicant's control. | N/A |
| Describe any severe audit findings and how they were ultimately addressed and resolved. | N/A |
| Describe the final outcome of the project. | Project has been going well and has now exhausted available funding and is on waitlist. |

Resumes
SF Department of the Environment
Proposal to California Energy Commission
Community EV Implementation

| <i>Staff</i> | <i>Organization</i> | <i>Role/Responsibility</i> |
|----------------------|---|--|
| Bevington, Andrew | SFPUC, Utility Analyst | Tech support for e-bike program |
| Carter, Sandy | SFPUC, Utility Analyst | General coordination on all aspects of project—grid, e-bikes, ombudsperson |
| Christopher, David | SFPUC, Utility Specialist | Work with Google on mapping tool and data integration |
| Chu, Lowell | SF Environment, Manager of Energy Programs | Project Manager: Interact with CAM, ensure contract compliance, and monitor budget and lead overall administration of grant |
| Dawe, Justin | Mobility Executive | Procurement, management, storage, distribution of e-bikes and equipment |
| Dinh, Paul | EVgo, Field Operations Manager | Manage and improve user experience at charging plazas |
| Ghantous, Sami | EVgo, Vice President, Engineering & Construction | Oversight of development and installation of charging plaza in DAC. Manage relationships with site development, utilities, contractors, and project managers |
| Goebel, Bryan | LAFCo, Policy Advisor to City Hall | Provide technical assistance on program design, connect with key stakeholders and participants, and provide ongoing research |
| Cynthia Ibarra | GRID, Clean Mobility Coordinator | Case manager for e-bike program |
| Khamoushian, Linda | GRID, Director of Shared Mobility | Program Manager of e-bike program |
| Lombardo, Nicole | Google, Business Development & Partnerships, Google - Environmental Insights | Project Manager for enhancing Mapping Tool |
| Loosen, Suzanne | SF Environment, Clean Cities Coalition Coordinator and Zero Emission Vehicle Specialist | Manage e-bike pilot project, coordinate outreach and education with Ombudsperson, coordinate dissemination through CCC |
| Morelan, Vanessa | GRID Alternatives Bay Area, Program Manager | Case Management for e-bike program participants |
| Peters, Lars | EVgo, Senior Director of Business Development | Primary point of contact for Phase II charging plazas, and project developer |
| Sanchez, Tessa | SF Environment, Zero Emission Vehicle Specialist | Lead tracking and monitoring of Mapping Tool enhancement, coordinate with EV Ombudsperson, dissemination, reporting, coordinate update of Playbook |
| Schumwinger, Matt | Driver's Seat Cooperative, Co-Founder | Manage e-bike program data analytics and reporting |
| Tyler, Eliana Marcus | SF Bike Coalition, Program Coordinator | Develop and implement e-bike safety training program |
| Whaling, Jeremy | EVgo, EV Systems Engineer | Technical expert for charging plazas |
| Witt, Hays | Driver's Seat Cooperative, Co-Founder | Manage e-bike data collection program |

Andrew Bevington

406 Boardwalk Ave. #7

San Bruno, CA, 94066

Phone: (650) 307-5207

Email: abevington35@gmail.com

Work Experience:

Utility Analyst - San Francisco Public Utilities Commission

San Francisco, CA. 2019-Present

- Support CleanPowerSF, San Francisco's Community Choice Aggregator program.
- Provide support to large commercial customers served by CleanPowerSF, including coordinating with PG&E to solve billing issues, perform usage analysis to create cost comparisons, and miscellaneous other issues.
- Support CleanPowerSF's Customer Solutions team, including launching new customer programs and supporting existing offerings. Supported programs include demand-response, energy efficiency, and electric vehicle infrastructure.
- Provide customer data support for miscellaneous CleanPowerSF program needs, including customer data analysis, billing analysis, and program research.

Risk & Compliance Analyst - Pacific Gas & Electric Co.

San Francisco, CA. 2017 - 2019

- Support PG&E's Land & Environmental Management (L&EM) team in building a comprehensive inventory and management process for federal, state and local compliance requirements.
- Support roll-out of enterprise reporting process for compliance violations, as well as violation ranking and investigation procedures for L&EM.
- Manage Risk & Compliance Committee process for Law, L&EM and PG&E's General Counsel. This process consisted of monthly meetings with leadership at the VP level to discuss compliance risks, violations, near hits, and operational risks.
- Develop comprehensive compliance communications plan targeting L&EM employees, including environmental, records management and safety requirements.
- Manage the Clarke Environmental Award, a recognition program for environmental compliance and outstanding environmental performance given internally to PG&E employees.

Energy Efficiency Policy Analyst - Pacific Gas & Electric Co.

San Francisco, CA. 2015 - 2017

- Implemented provisions of AB 32, SB 32, and SB 350, California's greenhouse gas reduction bills, across the portfolio of PG&E's energy efficiency programs. Managed projects involving staff across multiple teams both within energy efficiency and outside of the department.
- Supported outreach and coordination with other energy efficiency program administrators and other external stakeholders, including planning and staging off-site meetings, and creating externally facing reports and presentations.
- Managed \$750,000 annual energy efficiency sponsorship budget, tracking spending on conference and organization sponsorships and managing the relationship with those entities. Created and implemented market presence strategy unifying energy efficiency sponsorships and external engagement opportunities.

**Communications Associate - The Hannon Group, under contract to US Dept. of Energy, Building Technologies Office
Washington, DC. 2014 - 2015**

- In coordination with project managers and DOE web team, designed and created web outreach strategy for the High Impact Technology Catalyst program, the umbrella program for the Commercial Buildings Integration team's energy efficiency technology deployment work.
- Translated complex technical reports into fact sheets, web content, presentations, and other externally facing and internally facing materials for DOE's building energy efficiency analysis tools.
- Wrote blog posts and success stories showcasing successful projects for DOE's Energy Efficiency and Renewable Energy blog.
- Supported project closeout on technology demonstration reports and other deliverables by creating supplementary materials and coordinating the approval process.

**Technical Activities and Communications Support - National Academy of Sciences, Transportation Research Board
Washington, DC. 2013 - 2014**

- Created online surveys to gather webinar and e-newsletter feedback and data through SurveyMonkey.
- Improved data reporting system for weekly Transportation Research Board webinar program, reducing reporting time from 1 hour to 15 minutes or less.
- Wrote and designed website providing instructions and assistance to researchers submitting papers to the Transportation Research Board's academic journal.

**Online Media Outreach and Knowledge Management Intern - World Resources Institute, EMBARQ Program
Washington, DC. 2012 - 2013**

- Translated complex reports focused on the technical capabilities of transportation infrastructure around the world into public-facing blog posts and presentations.
- Created online guides and trained staff to use new Salesforce project management system.
- Created social media posts, gathered and distributed analytics and created monthly web impact report.
- Assisted in planning, outreach and registration for EMBARQ's Transforming Transportation conference.

Education:

UC Berkeley Extension - Certification, Project Management

San Francisco, CA. Ongoing.

American University - MS Sustainability Management

Washington, DC. 2012 - 2014

Humboldt State University - BA Political Science, English

Arcata, CA. 2006 - 2010

University of the Philippines, Diliman - Study Abroad, Political Science

Manila, Philippines. June - December 2008

References available upon request.

SANDY CARTER

scarter@sfwater.org | 410-829-2120 | San Francisco, CA

SUMMARY OF QUALIFICATIONS

- Over 5 years of environmental experience in energy, conservation, and water issues
- Extensive project management experience for non-profits and public agencies
- Master's degree in environmental science and management with specialization in energy and climate; bachelor's degree in environmental studies and political science
- Significant graduate level coursework in statistics and data analysis
- Demonstrated skills at drafting and delivering communication materials on energy technologies and policies

EDUCATION

Master of Environmental Science and Management, 3.91 GPA (June 2019)

Energy and Climate Specialization

Bren School of Environmental Science & Management – University of California, Santa Barbara (UCSB)

Selected Coursework: Economics for Environmental Management, Energy and Resource Productivity, Energy Law and Regulation, Statistics and Data Analysis

Leadership: MESM Dean's Advisory Council Class of 2019 Representative, Environmental Justice Club Co-Chair, Bren Environmental Justice Advisory Committee Founding Member

Bachelor of Arts in Environmental Studies and Political Science, 3.74 GPA (June 2013)

The University of Chicago, Chicago, IL

Senior Thesis: *Capturing the Sun and Protecting the Earth: Bridging the Human-Nature Divide*

MASTER'S THESIS GROUP PROJECT

Utilizing Flexible EV Charging to Mitigate Renewable Energy Curtailment & Support a Low Carbon Grid

Client: Southern California Edison (4/18 – 6/19)

- Created, as part of an interdisciplinary team, a framework for matching the growing demand for electric vehicles (EVs) with the daily overgeneration of renewable energy in California
- Built a model in RStudio and a web application to show how EV charging times shift in response to price and communication signals and subsequently reduce greenhouse gas emissions and air pollution

EXPERIENCE

San Francisco Public Utilities Commission, San Francisco, CA

Utility Analyst, Programs & Planning, Power Enterprise (9/19 – Present)

- Lead strategic planning efforts, including the creation of Enterprise-wide performance metrics and the facilitation of two 15+ person groups focused on electric rates and key customer accounts
- Create and manage the eMobility Readiness Project, an effort to ensure the SFPUC is fully prepared to support electric vehicle charger deployment involving 24 people across 16 teams
- Engage with the SF Department of Environment weekly on a range of energy and climate issues and programs, such as building decarbonization and light-, medium-, and heavy-duty electric vehicles
- Develop strategies to ensure San Francisco achieves its goal of achieving 100% renewable electricity by 2030 and 100% renewable energy by 2050, in support of the 2020 update to San Francisco's Climate Action Plan
- Conduct technical analysis for special projects, including determining the financial implications of deploying electric vehicle chargers across San Francisco and launching a new program for affordable housing customers

Bren Communication and Southern California Edison, Santa Barbara, CA

Project Manager, Strategic Communication for Energy Efficiency in Southern California (1/19 – 8/19)

- Updated 6 outreach materials and developed 2 video testimonials for a program that spreads awareness about clean energy programs available for income eligible communities of color in LA
- Organized weekly meetings with student fellows and liaised with community organizations in the program

California Public Utilities Commission, San Francisco, CA

Biomass Carbon Lifecycle Intern, RPS Team, Energy Division (6/18 – 9/18)

- Wrote a 100-page report on the climate, environmental justice, and economic tradeoffs associated with using dead trees to produce energy in California that will inform policy and regulatory conversations at the CPUC
- Crafted and implemented a 12-week research plan to review 150 papers and interview 5 stakeholders

-Continued-

EXPERIENCE (Cont'd)

The Nature Conservancy, Michigan Chapter, Chicago, IL

Project Manager, African Great Lakes Inform (remotely from Santa Barbara, CA) (7/17 – 5/18)

- Organized and implemented upgrades to African Great Lakes Inform, a web-based information sharing and delivery system for conservation in the African Great Lakes, while also selecting and training new site owners
- Managed and updated over 200 articles describing programs, projects, success stories, and conservation issues

Product Manager, Great Lakes Information Management/Delivery Program & Blue Accounting (9/16 – 6/17)

- Created technical and programmatic processes for encouraging conservation groups to submit their project data in order to inform regional progress tracking and online dashboards around key Great Lakes issues
- Managed and tracked content on Great Lakes Inform, an online conservation collaboration platform

Conservation Information Manager, GLIMD (1/15 – 9/16)

- Drafted 5 program fact sheets and authored a 60-page report on best practices for collaborative groups
- Improved content classification and ensured continuous functioning of basic web features

Alliance for the Great Lakes, Chicago, IL

Adopt-a-Beach Affiliate (5/14 – 11/14)

- Recruited and trained individuals and organizations to host over 120 beach cleanups in Illinois and Indiana
- Directly coordinated and facilitated weekly education and volunteer events with up to 200 attendees

Green Corps: Field School for Environmental Organizing, Troy, MI

Community Organizing Fellow, Sierra Club Beyond Coal Campaign (8/13 – 10/13)

- Trained individuals in petitioning, phone-banking, and press engagement in order to urge DTE Energy to adopt a Sustainable Clean Energy Plan
- Recruited and managed an 8-person core volunteer team and 50-person extended volunteer network

White House Council on Environmental Quality, Washington, D.C.

National Environmental Policy Act (NEPA) Team Intern (4/13 – 7/13)

- Researched policies and regulations regarding federal and state level environmental review processes
- Analyzed federal agencies' NEPA implementing procedures to ensure compliance with NEPA guidelines

ENVIRONMENTAL AND CLIMATE LEADERSHIP

Co-Chair—Alliance for the Great Lakes, Young Professional Council, Chicago, IL (6/16 – 6/17)

Facilitated monthly meetings and oversaw a 30-person associate board in developing a \$10,000 annual micro-grant program to catalyze small-scale community projects consistent with the Alliance's values and mission.

Community Organizing Intern—Sierra Club: National Beyond Coal Campaign, Chicago, IL (6/12 – 9/12)

Drafted political strategies and policies for a city-wide renewable energy campaign, Community Aggregation, and prepared and edited press advisories and releases for a 200-person rally as part of an environmental justice campaign opposing construction of a coal gasification plant

Chair—Chicago Youth Climate Coalition (CYCC), Chicago, IL (6/12 – 12/12)

Coordinated bimonthly meetings for an environmental activism network with representatives from 5 universities and negotiated a group agenda that considered internal resources as well as external political limitations.

Chicago Youth Climate Coalition Representative (10/12 – 12/12)

Director/ Internal Communications Coordinator (10/10 – 11/11)

UChicago Climate Action Network (UCAN), Chicago, IL

Recruited and organized students to collect and deliver petitions and attend rallies for an environmental justice campaign to transition Chicago away from coal-fired power plants; educated over 30 students about the environmental and political concerns of the Keystone XL Tar Sands Pipeline to help determine advocacy actions.

SKILLS & AFFILIATIONS

Computer: Microsoft Office Suite, MS Project, Raiser's Edge, Drupal, WordPress, HTML, RStudio

Presentations: Presented Great Lakes conservation projects to 60+ people at both formal scientific conferences and informal community gatherings; provided updates at board of director meetings for 2 organizations

Publications: Collaborative Best Practices Report at The Nature Conservancy

David K. Christopher

DChristopher@sfwater.org

525 Golden Gate Ave – 7th Floor – San Francisco, CA - 94102 - (415) 470-8779

PROFILE:

Thought leader with 8+ years of experience in economic and environmental consulting, litigation, and policy analysis. Subject matter expertise in climate change risk and resiliency, public infrastructure development, utility resource planning, environmental regulation, and conservation strategies. Technical expertise in econometric, geospatial, and graphical analysis, including mastery of multiple software packages (ArcGIS, QGIS, R, SQL, Stata, BenMAP, and Microsoft Office).

EDUCATION:

Master of Public Affairs (MPA)

Master of Science in Environmental Sciences (MSES)

Indiana University (Bloomington, IN)

August 2010- December 2012

Honors: SPEA Scholar, 2012 SPEA Engagement Scholarship Recipient

Bachelor of Science (BS)

Human Geography and Certificate in Env. Studies

University of Wisconsin-Madison (Madison, WI)

August 2004- June 2008

Honors: Dean's List

Honor's Thesis: "The Media, Groundwater, and Development: Scientific Input in the *Arizona Daily Star*" (published)

WORK EXPERIENCE:

Utility Specialist, SF Public Utilities Commission (Power Enterprise)

San Francisco, CA

January 2020 – present

- Support efforts to identify strategic investment opportunities in electric distribution infrastructure, electric vehicle charging stations, and distributed generation. Conduct research on technical and policy issues, build and maintain interactive maps of electric assets, and develop guidance documents to support planning work.
- Devise and execute spatial and statistical analyses related to infrastructure planning, electric load forecasting, and wholesale distribution tariff compliance.
- Compiled Power Enterprise's successful application for American Public Power Association's Smart Energy Provider designation, which recognizes utilities for maintaining best practices related to energy efficiency, distributed generation, renewable energy, and environmental initiatives.
- Served as Situation Status Unit Leader in SFPUC's Department Operations Center during COVID response.

Associate, The Brattle Group

San Francisco, CA

July 2013 – Nov 2019

- Acted as key subject matter and technical expert on consulting and litigation support projects related to climate change risk, natural resource management, water/utility supply planning, public infrastructure development, and environmental contamination. Developed litigation testimony, academic and industry studies, and consulting reports for public (state, local, and federal) and private clients. Designed and executed economic, statistical, spatial, and policy analyses to support project work.
- Served as main project manager for firm's environmental group. Devised and maintained staffing forecasts, budget projections, and project timelines. Supervised teams of analysts and associates to assist with data analysis and report development. Coordinated workflow with external experts and served as key point of contact for clients.

David K. Christopher

DChristopher@sfgwater.org

525 Golden Gate Ave – 7th Floor – San Francisco, CA - 94102 - (415) 470-8779

- Advised public agencies on economic and policy issues related to climate change, infrastructure development, and environmental conservation, including: SFPUC, CADWR, CA Office of the Governor, USDOJ, various municipal governments, and multiple water/electrical utilities.
- Served as firm's primary expert in GIS analysis and mapping. Planned and implemented spatial analyses, developed and presented training materials for colleagues on GIS tools and techniques, managed project teams, and developed marketing materials to promote GIS capabilities internally and externally.
- Some examples of key projects include:
 - Spatial and economic analysis of changes in CAA criteria pollutant emissions associated with shutdown of nuclear energy facilities in Illinois, New York, New Jersey, and Pennsylvania.
 - Valuation of health risk associated with changes in particulate matter emissions caused by installation of pollution control technology on coal-fired power plant in Missouri
 - Environmental analyses of urban and agricultural development, water quality, and water supply allocation issues for original jurisdiction water apportionment cases before the US Supreme Court (Florida v. Georgia, Texas v. New Mexico)
 - Economic assessment of public electric utility's ability to pay for mitigation measures to protect endangered bird species in Hawaii
 - Valuation of electrical transmission line and natural gas pipeline right-of-ways for Tribal Nations in Wyoming and Louisiana

Consultant, Haitjema Consulting

Bloomington, IN

August 2012 – August 2013

- Conducted analysis of wetland hydrology for expert witness testimony in a federal Clean Water Act case. Assisted with wetland delineation and basic hydrology modeling.
- Acquired, processed, and analyzed data relating to riparian wetlands and groundwater hydrology, and generated statistical models based on on-the-ground observations
- Coordinated workflow between expert witness teams in hydrology, soil science, and biology. Provided logistical and analytical support for field visit and expert report development

Teaching Assistant and SPEA Scholar, Indiana University

Bloomington, IN

August 2010 – December 2012

- Introductory Statistics- instructed students on basic statistical theory and calculations, as well as basics of programming and use of statistical software
- Applied Math for Env. Science- instructed students on basic calculus principles, led weekly recitation section
- Limnology - led laboratory section and instructed students on data collection, analysis of water quality parameters, and identification of aquatic organisms

Researcher, Delft University of Technology

Delft, Netherlands

March 2012 – September 2012

- Researched the applicability of interactive modeling for the development of public infrastructure projects in California, China, and the Netherlands with a faculty member in the Department of Hydraulic Engineering
- Schematized the water distribution systems in California, China, Thailand, Indonesia and developed diagrams documenting distribution infrastructure for publication. Developed detailed understanding of laws, regulations, and technical design that relate to water use, infrastructure development, and climate change resiliency
- Presented research at conference of European Geographers in Dublin, Ireland. Developed research papers published in the European Journal of Geography (Vol. 4 Issue 1), and E-proceedings of the 2nd International Symposium on Hydraulic Modelling and Measuring Technology Congress (May, 2018)



CREDENTIALS

Years of Experience: 13

Certifications/Licenses:

- Certified Energy Manager, CEM
- Lighting Certified, L.C.
- California Department of Real Estate
- LEED AP

Education:

- B.S. Mechanical Engineering, California State University Sacramento

EXPERIENCE

SF Department of Environment / Interim Energy Program Manager, 01/2019 - present

- Managed administration, implementation and budget for the Department's energy efficiency and electric vehicle programs.

SF Department of Environment / Senior Energy Specialist, 2010-present

- Managed Bay Area Regional Energy Network Program design, administration and implementation
- Planned/tracked BayREN annual budget to the Department
- Managed RFP and contracting for BayREN Implementor and Administrator contracts for BayREN Commercial Program
- Co-authored of the BayREN Business Plan Commercial Chapter, Program Manual and Implementation Plan
- Contributed to comments on EE proceedings representing City and County of San Francisco

SF Department of Environment / Energy Specialist, 2008-2010

- Performed energy audits at commercial sites, and worked to enroll in energy efficiency programs, tracked and reported on progress of projects, provided quality control
- Provided technical assistance and project management

AutoDesk, San Rafael, CA / Software Engineer 2006-2008

- Researched and developed 3-dimensional organic-modeling module for AutoCAD
- Tested specific features and service packs for the software

Justin Dawe

Mobility Executive

510.559.0955
dawe.justin@gmail.com

Skills

Experienced at building high-performing organizations, identifying & pursuing business opportunities, and leading complex sales and partnership processes in the US as well as internationally.

Education

Harvard Business School / MBA

August 2005 - June 2007, Cambridge MA

Focus on entrepreneurship. President of campus Energy Club.

Stanford University / BS & MS Engineering

August 1993 - June 1998

Completed BS Engineering & MS Engineering Economic Systems in 4 years. Spent one year in manufacturing engineering fellowship at Intel.

Experience

Justin Dawe Enterprises, LLC / Principal

April 2020 - Present, San Francisco Bay Area

Initiate and consult on a variety of ebike and scooter projects, all with the goal of helping more people access affordable, clean mobility. Among these projects:

- created Free Bike program in collaboration with GRID Alternatives to provide free ebikes and similar vehicles to people in need;
- managing the establishment of US operations for a Top 5 global manufacturer of light electric vehicles;
- consulting with several sharing companies on strategy, vehicle sourcing, and program development.

Bird Rides / VP New Ventures

July 2019 - March 2020, San Francisco & Santa Monica CA

Established 20 person New Ventures team at Bird after the acquisition of Scoot. Identified and tested a series of new lines of business for the company.

Scoot Networks / CEO

October 2016 - June 2019, San Francisco CA

Scoot was the world's first shared electric micromobility company. Helped lead Scoot through international expansion in Europe and LatAm, growth to 200 people, and sale to Bird. Promoted from GM to President to CEO.

C12 Energy / Founder & CEO

September 2008 - February 2014, Berkeley CA

Raised \$4.5M Series A from Sequoia & General Catalyst, followed by \$25M Series B and \$200M private equity growth round. Built company to 35 people and a portfolio of energy projects before hiring a management team

to take over.

Early career / Engineer, Community Organizer, Project Manager

June 1998 - July 2005, California / Colorado / Maine / Massachusetts

Worked as an Engineering Program Manager for Sun Microsystems. Left engineering to be a community organizer doing clean energy policy advocacy, culminating in helping initiate, run, and win the nation's first statewide ballot measure for renewable energy (Colorado Amendment 37 in 2004). After MBA, joined Horizon Wind Energy and helped manage development of a portfolio of wind energy projects.

For additional information, see: <https://www.linkedin.com/in/jadawe/>

Paul Dinh
Field Operations Manager
Phone: 310.954.2936
Paul.Dinh@EVgo.com

EDUCATION AND TRAINING

University of California Davis, BSc- Mechanical Engineering 2003
NABCEP Solar Installer Certificate 2008-2012

EMPLOYMENT HISTORY

EVgo Services LLC

Field Operations Manager

- Responsible for maintaining 98% uptime of EVgo Electric Vehicle charging fleet
- Manage vendor performance
- Collaborate with internal and external development teams to enhance applications and improve charger user experience
- Triangulate with charger OEMs, vehicle manufacturers, network operators and service stakeholders to troubleshoot short and long range opportunities
- Train internal and external departments on agreed responsibilities related to EVSE infrastructure, support and maintenance

UL Responsible Sourcing

Global Operations Manager

- Responsible for global workplace labor and safety operations – representing services in over 125 countries
- Executed global operations field strategy, including resource management, scheduling & logistics, skills development, budgeting, forecasting and quality control
 - Responsible for the quality, cost and delivery of global safety audit services – representing 90% of division revenue
 - Increased operational global capacity by 15% to accommodate an additional \$4 million in revenue
 - Improved operational efficiency by 30% through streamlined processes, new IT solutions and refocused training
 - Create and maintain partnerships with vendors, subcontractors, and joint venture partners
- Managed overall operations training program and strategic planning for consistent roll-out and implementation for 300 global staff
 - Executed restructure of training program to reflect changes to industry/client requirements, IT improvements and revised company standards
 - Explored, evaluated, and implemented use of training tools such as: performance support tools, video learning, subject modules, training videos, classroom training, and mentorship programs
 - Collaboration with business departments to ensure training requirements and best practices are reflected in service delivery
- Implementation management and training of IT system go-live
 - Worked with all business departments for requirements gathering and translated needs to IT applications team
 - Conducted classroom trainings, created trained the trainer program, wrote technical manuals and provided training videos on new system(s)
- Provided leadership and mentoring to global teams of 7 Regional Managers, 3 Global Trainers, and 6 line employees

Sami Ghantous
Vice President, Engineering & Construction
Phone: 310.954.2936
Sami.Ghantous@EVgo.com

EDUCATION AND TRAINING

D'Amore-McKim School of Business at Northeastern University- MBA, High Technology
University of Massachusetts Amherst- B.A. Mechanical Engineering

EMPLOYMENT HISTORY

EVgo Services LLC

Vice President, Engineering & Construction

- Managing the team of Project Managers to install EV charging networks across the USA
- Increasing collaboration between site development, utilities, contractors, and project managers
- Managing contractor relationships to ensure safe and high-quality installations
- Standardizing on the tools and process to drive consistency throughout all EVgo installations
- Promoting a positive work environment to enhance customer experience

Shell

New Energies Business Development- Energy Storage

- Led the development of Shell's capabilities to assess and acquire Utility Scale energy storage projects and companies.
- Sought partners through trade shows and network for co-development opportunities
- Established Shell revenue and cost criteria for potential project funding
- Collaborated with Shell Energy to formulate revenue modeling capabilities
- Built in-house expertise for energy storage modelling and sourcing

NEC Energy Solutions

Senior Sales Engineer/Proposal Manager

- Managing the proposal process for Utility Scale battery storage projects of all types of applications.
- Translate customer use cases into technical parameters for Applications Engineering to design systems
- Provide strategic advice to Sales Directors on best options to propose to customers
- Work closely with customers to support their technical needs for project development during the proposal phase
- Prepare and issue final proposal document for submission to customer
- Collaborate with Product Management on forward looking designs to future proposals
- Utilize prior solar experience to lead the analysis and modeling for DC Coupled Solar + Storage

BRYAN GOEBEL

San Francisco, Ca.

415-572-4612

velobry@gmail.com

LinkedIn: <https://www.linkedin.com/in/bryangoebel/>

- Policy advisor at SF City Hall who oversees innovative labor research and develops policy recommendations to help gig workers and improve the City's community choice energy program
- Former award-winning advocacy and public radio journalist who wrote about sustainable transportation solutions

PROFESSIONAL EXPERIENCE

SAN FRANCISCO LOCAL AGENCY FORMATION COMMISSION, Executive Officer (2018-present) – Staff person for a 5-member commission that includes three members of the SF Board of Supervisors. Manage a team of renewable energy consultants, labor researchers and interns performing research to inform policy solutions to clean energy barriers and poor working conditions in the gig economy. Helped commission the nation's largest representative survey of gig workers, which has been cited in the NY Times, SF Chronicle, TechCrunch, CityLab, and other publications.

BICYCLE COURIER, UberEats, Caviar, Doughbies (2017) – Independent contractor who hustled around San Francisco on a bicycle, delivering lunch, dinner and treats with a smile and friendly attitude.

HUMAN STREETS, Editor and Founder (2017 - 2018) Editor of a start-up non-profit devoted to coverage of bicycle, pedestrian and urban design issues. Oversaw a small freelance team of writers and photographers.

KQED PUBLIC MEDIA, Reporter (2013 - 2017) On-air and online transportation reporter covering bicycling, Uber, Muni, BART and the movement for safe streets. Named 2015 "Investigative Reporter of the Year" by the San Francisco Trial Lawyers Association.

FREELANCE, Writer/Reporter (2012 - 2013) Urban planning and sustainable transportation features writer. Stories published in Streetsblog and Rails-to-Trails Magazine.

STREETSBLOG SAN FRANCISCO, Editor/Writer (2008 - 2012) Built Streetsblog SF into a nationally-recognized transportation blog. Managed two transportation reporters and a team of freelance writers and photographers. Turned wonky issues into fun, easy to read stories. Co-wrote the current editorial manual for all Streetsblogs. Staff awarded 2010 Golden Wheel Award from the SF Bicycle Coalition for "intelligent journalism...leading the conversation."

KCBS RADIO, Editor/Anchor/Reporter (2001 - 2008) Overnight news anchor and editor with a focus on issues often overlooked by mainstream news media. Produced live interviews and wrote breaking news stories for KCBS.com.

REDBAND BROADCASTING, Podcast Producer (2001) Produced podcast interviews with authors and writers for the website of Publishers Weekly Magazine.

PREVIOUS EXPERIENCE:

ABC 7 NEWS, San Francisco – Planning editor (1999 - 2001)

KXTV CHANNEL 10, Sacramento – Night assignment editor (1996 - 1998)

HUMAN RIGHTS COMMISSION, Sacramento – Media coordinator (1996)

KFBK RADIO, Sacramento – Managing Editor (1991 - 1996)

PREVIOUS WRITINGS:

<https://www.kqed.org/author/bgoebel>

<https://humanstreets.org/>

<https://sf.streetsblog.org/author/bryan/>

ADDITIONAL AWARDS:

-1995 California Journalism Award from the California State University, Sacramento for coverage of Proposition 209, the anti-affirmative action measure.

-Winner of the Silver Medallion Award from the California Bar Association for a series of investigative reports on Sacramento County Juvenile Hall.

-Named "Favorite Radio Personality" by the Lambda Gay and Lesbian Center for coverage of the 1993 Gay March on Washington.

CYNTHIA IBARRA

cibarra@gridalternatives.org

(510) 646-9843

www.linkedin.com/in/cynthia-ibarra-30031a114

OBJECTIVE

Dedicated worker pursuing the opportunity to expand both GRID Alternatives' clean mobility efforts and organizational EID efforts

EDUCATION

Bachelor of Science, Environmental Studies

2012 – 2016

University of California, Santa Barbara (UCSB)

Relevant Courses:

- Energy and the Environment
 - Science Writing for the Public
 - Advanced Environmental Education and Practicum
 - Air Quality and the Environment
-

EXPERIENCE

Clean Mobility Coordinator

Jan 2020 - Present

GRID Alternatives Bay Area

- Lead integration of clean mobility and solar programs including development of equitable systems and outreach practices
- Build partnership with Bay Area and Central Coast community organizations and stakeholders to expand reach and access of clean mobility programs
- Execute clean mobility projects such as Ride & Drive events, lead acquisition for EV incentive/charging programs, tenant engagement for affordable housing charger installations
- Support Bay Area Air Quality Management District's (BAAQMD) Clean Cars for All program

Program Coordinator

Oct 2018 - Dec 2019

GRID Alternatives Central Coast

- Managed funding contracts with local governments and partner organizations including: keeping clear communication lines, developing systems to keep in adherence with project requirements, liaising with multiple parties to successfully execute invoicing and reporting processes
- Designed, supported implementation, and tracked campaigns resulting in outreach team exceeding monthly lead generation goals

SolarCorps Outreach Fellow

Aug 2017 - Oct 2018

GRID Alternatives Central Coast

- Supported lead generation efforts by attending community events, canvassing, implementing direct mailer campaigns, and obtaining referrals
- Developed curriculum on the topics of outreach and environmental justice and implemented as part of educational programs geared towards high school and college students

Team Lead

April - June 2016

Environmental Education Practicum

- Worked effectively with a group to create a culturally relevant platform for Latino/a parents to be more involved with their student's environmental education
-

SKILLS

- Bilingual proficiency in English and Spanish
- Skilled utilization of Salesforce
- Enthusiastic learner committed to meeting challenges through the use of new concepts and technology
- Resourceful and responsive team player with a positive attitude



Linda Khamoushian, Director of Shared Mobility

Current Projects

- * California Air Resources Board – Clean Mobility Options Voucher Program

Employment History

2020 – Present, Director of Shared Mobility, GRID Alternatives, Sacramento, CA

- * Serve as GRID Alternatives' lead on the statewide administrative team for the Clean Mobility Options (CMO) Voucher Pilot Program, funded through the California Air Resources Board
- * Develop, design, and implement a multi-pronged equity outreach strategy for the CMO program that centers reaching communities with least resources to independently access major statewide funding
- * Directly engage with local government staff, community-based organizations and tribal communities throughout California and provide application and program technical assistance
- * Serve as a strong voice for equity on the CMO administrative team including creating a platform where partners and program beneficiaries from frontline communities can use their voices to help shape clean transportation programming

2019 – 2020, Policy Director, California Bicycle Coalition, Sacramento, CA

- * Developed, led, and implemented policy agenda including new state legislation and administrative policy and practice
- * Serve as a member of the Active Transportation Program Technical Advisory Committee and member of the California Walk and Bike Technical Advisory Committee to provide valuable insight and expertise to the CA Department of Transportation and the California Transportation Commission
- * Work with local and state allies, members, and other key stakeholders to develop consensus and lead state campaign efforts for policy change
- * Managed and directed policy team members and coordinated closely with development and communications staff on key and on-going funding and outreach matters

2017 – 2019, Senior Policy Advocate, California Bicycle Coalition, Sacramento, CA

- * Lead campaign organizer for SB 127 "Complete Streets for Active Living;" developed and executed strategic campaign plan, overcoming political and administrative challenges to present the Governor with strong policy proposal
- * Advocated for active transportation priority and inclusion in key equity funding programs provided by the California Air Resources Board, including successfully advocating for bike-share in the Clean Mobility Options program
- * Successfully managed and led campaigns for access to clean mobility SB 400 (e-bikes as mobility options) and traffic safety SB 1266 (bicycle traffic control device), both signed by Governor Newsom

Education, Training and Leadership

Master of Urban and Regional Planning, University of California, Los Angeles, 2014

B.A Political Economy in Industrial Societies, University of California, Berkeley, 2010

Nicole Lombardo

Nicole has over a decade of experience in renewable energy and software technologies. Prior to Google, Nicole held senior roles at Intel, Solarcity, and Oracle where she led high performing teams with a focus on business strategy and operations, product management and advertising, and partnerships across customers in public/ private sectors.

EMPLOYMENT

Google

Business Development & Partnerships, Environmental Insights, Project Sunroof
Jul 2015 – Present

Nicole Lombardo leads business strategy and partnerships across Google's Geo's organization for the Environmental Insights team. In this role, Nicole is responsible for partnering with product management and engineering teams to pioneer new products, set strategic go-to-market plans, and manage partnerships for providing access to high quality data. These tools enable public sector and commercial businesses to drive smarter climate policies and profitable solutions to advance sustainability and a resilient, low-carbon future.

Her work has led to receiving the UNFCCC Climate Change award for the launch of Project Sunroof which utilize Google's extraordinary mapping capabilities enabling the world's renewable energy transition. More recently, the work she did to develop and launch Environmental Insights Explorer, led to receiving Google's Green Award, which recognizes teams for their significant contributions that drive sustainability across the company.

Intel

Director, Global Media

Oct 2010 – Mar 2013

SolarCity

Director, Marketing

Sep 2006 – Oct 2010

EDUCATION

University of California, Davis

Bachelor of Science/Marketing Communication and Design

Stanford University Graduate School of Business

Executive Program for Women Leaders

Suzanne Loosen

City and County of San Francisco

Summary Biography

Suzanne Loosen is the San Francisco Department of the Environment's Zero Emission Vehicles Coordinator, and the San Francisco Clean Cities Coalition Coordinator. She manages several CEC-funded grants focused on ZEVs and has 20 years of experience in private and public sector transportation program management and communications.

Years of Experience: 20

Education:

2005: Bachelor of Arts,
International Political
Economy (honors)
University of California,
Berkeley

Professional Experience

Suzanne served as a Senior Transportation Planner at the Transit Authority of Marin, where she managed the Congestion Management Program, the Safe Routes to Schools Program, and the Marin Travel Model. She also developed Marin's electric vehicle infrastructure and outreach program, coordinated the site assessment and installation of publicly accessible EV charging stations on municipal properties, and launched National Plug In Day at the Marin Farmers Market.

Suzanne also served as a Transportation and Communications Consultant in the San Francisco Bay Area. During this time, she was a Project Manager for the Bay Area Climate Collaborative, a Project Manager for the Marin EV Program, and a Community Outreach Analyst to communities affected by construction activities associated with the VTA/BART Silicon Valley Berryessa Extension. During her time as a consultant, Suzanne provided technical assistance, cost-benefit analyses, and best practices regarding the adoption of electric vehicles. She also developed an innovative multi-agency collaboration with Marin Energy Authority, Marin Transit, and Transportation Authority of Marin to procure electric buses.

Currently, at the City and County of San Francisco's Department of the Environment, Suzanne manages California Energy Commission grants for alternative fuels planning, hydrogen fuel readiness planning, and multi-unit dwelling EV charging. She coordinates trainings and events to educate a wide array of audiences on alternative fuels, vehicles, and technologies, and works with government agencies and private-sector stakeholders to develop grant proposals and strategies to secure funding for alternative fuel and vehicle projects.

In addition to her work for the Department of the Environment, Suzanne manages San Francisco's Clean Cities Coalition, advancing economic, environmental, and energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. She also provides technical assistance to San Francisco and Clean Cities stakeholders regarding alternative fuels and vehicles.

Key Skills

Zero emission vehicles; program and policy development and implementation; program and grant management; community outreach and education

EXPERIENCE

GRID Alternatives; Oakland, California

Acting Program Manager | June 2020 – Current

Assistant Program Manager | November 2019 – June 2020

Program Coordinator | March 2019 – November 2019

- Provide case management services in English and Spanish to Clean Cars for All interested parties, applicants, and grantees to assist with the application process and discuss aspects of transiting to clean vehicles.
- Facilitate and review charging incentive reimbursements for program grantees to increase accessibility and independence.
- Advocate for increased opportunity and representation of underserved communities within transit and nexus policy areas.
- Identify and attend outreach events to increase awareness of the program and establish relationships with underserved and neglected communities.
- Coordinate electric vehicle showcases and ride and drives to discuss program opportunities, provide education, and familiarize interested parties with electric vehicles and charging infrastructure.

Energy Solutions & Cool Roof Rating Council; Oakland, California

Energy Efficiency Associate – Codes and Standards | March 2016 – September 2017

- Utilized primary and secondary resources to construct and recommend an energy benchmarking and audit ordinance to the City of Richmond that achieves milestones established in their Climate Action Plan and General Plan.
- Data harvested products certified to the California Energy Commission database to assess Title 20 compliance, identify areas for improvement and develop resources to enhance compliance throughout the compliance chain.
- Coordinated and facilitated Utility-Sponsored Stakeholder meetings and Code and Standards Enhancement reports to assist in the development and implementation of 2019 Title 24, Part 6 energy efficiency standards.
- Explored power factor and harmonic regulations and identified product metrics to assist in estimating statewide energy savings for the Title 20 low power modes Codes and Standards Enhancement study.
- Researched federal efficiency standards to determine additional energy savings opportunities at the state level.

Technical Coordinator, Cool Roof Rating Council | March 2016 – September 2017

- Performed technical review of testing data to ensure completion and accuracy of test methods and roof product ratings.
- Organized and assisted working groups, subcommittees, and the technical committee to support conflict resolution, and the development of standardized test methods, program protocols, and technical research.
- Conducted the interlaboratory comparison study to confirm consistent, accurate measurements among accredited laboratories, manufactures, and test farms.

California Independent System Operator; Folsom, California

Infrastructure Contracts & Management Intern | June 2015 – August 2015

- Consolidated amendments to three-party generator interconnection agreements to improve efficiency and precision of contract negotiations within the greater Queue Management system.
- Investigated tariffs and contract processes of Independent System Operators and Regional Transmission Organizations to support the department goal of streamlining and enhancing the efficiency of interconnection agreements.

Regulatory Affairs Intern | June 2014 – September 2014

- Analyzed San Diego Gas & Electric's vehicle to grid integration pilot programs and collected interview analysis to facilitate the formation of Alternative Fueled Vehicle proceeding comments.
- Researched the regulatory agencies of coordination to enhance internal and external knowledge of organizational structure, regulatory authority, and legal procedure, then presented to the Policy and Client Services department.

University of California Davis Energy and Efficiency Institute

Program Lead and Research Analysis Intern | September 2014 – June 2015

- Conducted research to identify barriers to implementing deep energy retrofits in restaurants to develop recommendations and augment existing SDG&E energy efficiency programs.
- Supported curriculum development for the Intern Development Program, and co-led the program by guiding weekly meetings, promoting correspondence, overseeing granted projects, hosting professional workshops, and supervising research projects.

Research Analysis Intern | October 2013 – June 2014

EDUCATION

University of California, Davis | December 2015

Bachelor of Science: Environmental Policy, Analysis, and Planning - *Energy and Transportation Focus*

Lars J. Peters

Director, Utilities & Public Agencies

Phone: 707-364-9879

Lars.Peters@EVgo.com

EDUCATION AND TRAINING

Kellogg School of Management, M.B.A.

University of Amsterdam, M.A. International Economic Environmental Policy & Regional Economics

EMPLOYMENT HISTORY

EVgo Services LLC

Director, Utilities & Public Agencies

- Responsible for tracking and planning utilities and public agencies funding programs to expand and accelerating the EVgo fast charging network in California and the pacific northwest
- Developing new partner relationships and nurture existing partnerships with the goal of securing funding to build, operate, and own EVgo charging stations

City & County of San Francisco

Senior Advisor, Zero Emission Vehicles / FUSECORPS

- Crafted San Francisco's first Electric Mobility Strategy leading the Subcommittee of the Electric Vehicle Working Group with broad industry and public sector representation
- Introduced 100% Electric Vehicle readiness for new buildings and 100% Electric Fleet ordinances as the first city in the US
- Won a \$9M CARB grant to electrify 6 commercial fleets in San Francisco and Sacramento and a California Energy Commission grant to develop an EV Blueprint strategy for San Francisco
- Frequent speaker / panelist on EV policy. E.g., at Prospect Silicon Valley's "Ticket to Ride: Autonomous Vehicle Programs in Public and Private Sectors", Mechanics institute's 'The Future of Cars', 2017 Intersolar and Infocast's 'EV & The Grid' and 'Western Energy Market Summit'
- Scouted and selected sites for the development of high-powered charging infrastructure in partnership with leading charging network providers. Hands-on involvement in utility service provisioning, accessibility compliance and permitting.
- Recruited through FUSE (founded by McKinsey emeritus Lenny Mendonca) for the SF Mayor's office, role extended with support from Supervisor Katy Tang

Meraki

Director Global Service Provider- Sales

- Achieved two consecutive years of 400% growth for Meraki's global business through SP channel
- Built global SP channel and managed relationships with Tier 1 partners resulting in service launches with Verizon, Shaw, KPN, DT, TI and LGI
- Created and presented bi-monthly Webinar product demo with 50-100 attendees (14 months running)
- Developed and executed competitive take out programs for Education and Hospitality verticals. Each resulted in multiple \$M business opportunities in the 1st year of launch
- Built the enablement program consisting of SP value proposition, demo script and battle cards

Tessa Sanchez

📞 562.310.3749 @ hellotessasanchez@gmail.com 📍 Oakland, CA

EXPERIENCE

Energy and Electric Vehicle Coordinator

San Francisco Department of the Environment

04/2018 - Ongoing San Francisco, CA

Company Description

- Developed an EV Blueprint for the City of San Francisco. Assisted key city officials to develop strategies for smart city programs focused on EV infrastructure, emerging mobility, public awareness campaigns, and incentive programs. Mayor's office using the Blueprint to achieve the City's bold new vision to make all transportation GHG-free by 2040.
- Design, develop, and deliver energy efficiency and electrification programs for a regional local government partnership.
- Facilitate cross-department collaboration on strategic objectives that support the City's Climate Action Strategy. Originate funding and new legislation opportunities, lead workshops and listening sessions, and analyze the national clean transportation and decarbonization policy landscape.

Analyst

Current, powered by GE 07/2017 - 04/2018 San Ramon, CA

Current blends advanced energy technologies with networked sensors and software to make buildings more energy efficient & productive

- Supported the Customer Success team build the strategic digital pilots business, focused on Fortune 100 companies.
- Managed the project development process by working closely with sales, product, and design & engineering teams to originate and deliver energy management solutions to commercial customers.

Director of Customer Success

WegoWise 06/2016 - 06/2017 Boston, MA

WegoWise is the nation's leading energy benchmarking, building analytics, and sustainability reporting SaaS company

- Led customer support organization responsible for retaining 50% of company's revenue. Functions included client onboarding, technical training, utility data analysis, and energy savings identification within customer's building portfolios.
- Deployed new upsell/cross-sell strategy that leveraged customer data and emphasized cross-team collaboration, resulting in 30% increase in additional revenue within first 6-months.

Senior Client Manager

WegoWise 06/2015 - 05/2016 Boston, MA

- Managed enterprise client relationships, spanning \$0.5M+ in business. Evaluated customer portfolio's for upsell/cross-sell opportunities, resulting in \$125k in additional revenue during tenure.
- Managed team of three responsible for driving customer retention.

Client Manager

WegoWise 07/2013 - 05/2015 Boston, MA

- Performed detailed benchmarking analysis on utility data and worked directly with customers to create sustainability plans and recommend energy efficiency measures at targeted buildings.

EDUCATION

B.A. Environmental Analysis and Policy

Boston University

2012

SKILLS

Skills

| | |
|--------------------|-----------------|
| Program Management | Energy Policy |
| Government Affairs | Data Analysis |
| Building Auditing | Microsoft Suite |

PROJECTS

CALeVIP

2018 - 2019 SF Department of the Environment

- Cross-functional team lead for forthcoming city-wide EV infrastructure incentive program.
- Guided initial concept and program design, resulting in \$20 million dollar proposal.
- Responsible for ensuring timely execution of all major program targets.

EV Mapping Tool

2018 SF Department of the Environment

- Co-led effort with Google's Environmental Insights and Cloud teams to create a mapping and modeling tool that identifies priority areas for near- and long-term EV charging infrastructure investments in San Francisco.

ACHIEVEMENTS

📌 Climbed

the career ladder at WegoWise to become the company's first female Director.

★ Marched

in the Women's March on Washington

🧘 Balanced

approach to work and life. I'm a great lover of hot yoga, bike-commuting, culinary explorations, and the American Southwest.

Matt Schumwinger

Data Consultant

Contact matt@biglakedata.com

Portfolio biglakedata.com/solutions

I am a City of Milwaukee-based, independent consultant specializing in data mining and data visualization. I have seven years' experience in providing data analytics solutions to clients in the non-profit and public sectors. I have graduate-level training in data mining and applications, and have developed and deployed custom analytic tools and web applications for clients. I am differentiated by my expertise in the analysis and communication of spatial data.

Relevant Skills

Analytical

- Statistical analysis (exploratory, inferential, predictive)
- Theory and application of machine learning algorithms
- Spatial analysis and advanced web-mapping
- Data processing, data mining, and text mining methods

Organizational

- Workshop training, large group presentations, facilitation
- Project management and budgetary authority (~\$500,000)
- Team-based software development and collaboration

Software & Programming Languages

- R - advanced user and package author
- Javascript /HTML/CSS - proficient
- SQL relational database framework - proficient
- GIS - advanced user of QGIS
- Vector graphics editors (Illustrator, Sketch) - advanced
- Git/GitHub version control and collaboration environment

Work Experience

Data Consultant & Founder, Big Lake Data LLC

2010 – Present

Providing data analytics, visualization, and custom web applications to non-profits and government contractors.

A hallmark of my consultancy is finding the story within the data and then telling it with meaning and clarity. Clients have successfully used my work to develop policy goals, plan new initiatives, and win new business.

Examples and case studies of the solutions I have delivered to clients can be found at

biglakedata.com/solutions

Field Organizing Director at SEIU labor union

2009 – 2010

Directed a large-scale field campaign that successfully organized 5,500 homecare workers in Wisconsin.

Administered voter database, assigned turf to organizing teams and made campaign decisions based on data analysis. Created an effective data management process by discerning best practices through consultation with experts, developing appropriate data entry protocol, and hiring skilled staff.

Coordinated the financial and human resources of several allied organizations.

Managed a diverse group of twenty campaign staff and 70+ member organizers. Supervised the work of lead organizers, communication specialists, and database developers.

Systematically assessed and developed skills of lead staff, member organizers, and interns. Planned workshops, trained facilitators, and coached leads on training to their team members' needs.

Program Director at SEIU labor union

2007 – 2009

As Laundry & Food Service Director for SEIU's Midwest affiliate:

Coordinated the union's bargaining and representational work in laundry and food service industries.

Ran volunteer trainings and led canvassing teams for the 2008 Obama Presidential Campaign in Wisconsin and for John Edward's 2008 Presidential Campaign in the Iowa primary.

Supervised staff on special projects, such as strike preparation and internal organizing problems.

Bargaining Director at SEIU labor union

2005 – 2007

As Bargaining Director for a ground-breaking SEIU national organizing project:

Developed and implemented a national bargaining program for thousands of newly organized workers in the business services industry.

Developed mechanisms to measure progress and success of the program, such as peer debriefs and evaluations, and created a national contract tracking database.

Supervised staff responsible for negotiating scores of collective bargaining agreements. Personally bargained contracts at strategic and/or troubled units.

Built staff development goals into bargaining program. Trained fifty staff in bargaining, including intensive training for nine senior staff.

Matt Schumwinger

Data Consultant

Contact matt@biglakedata.com

Portfolio biglakedata.com/solutions

Assistant State Director at UNITE labor union

2003 – 2005

Increased the union's Wisconsin membership by 30% through the successful affiliation of more than 500 workers in ten different bargaining units.

Directly represented and negotiated contracts for more than 1,000 workers with fifteen employers.

Led canvassing teams for the 2004 Kerry Presidential Campaign.

Organizing Supervisor at UNITE labor union

2000 – 2003

Conceived the union's Wisconsin organizing and representational strategy; implemented assignment to grow union from 1,500 to 2,000 members in 2003.

Directed campaign that organized 440 blue-collar county employees in Mobile, Alabama – the first successful public sector organizing campaign in the county's history.

Led teams that varied between three and twelve organizers; supervised lead organizers, evaluated individual performance, and maintained morale.

Strategic Researcher and Campaign Consultant

1997 – 2000

Researcher at UNITE labor union 1999 – 2000
Conducted research to support organizing direct caregivers of the developmentally disabled in New York. This work contributed to the successful organizing of 3,000 new union members in four years.

Wrote comprehensive public critiques of industry, highlighting the relationship between substandard worker pay and poor care. Presented research findings to public officials and the media.

Consultant at Labor Research Association 1998 -1999

Developed expertise on New York State's nursing home industry; consulted for union clients on financial and regulatory aspects of New York and Pennsylvania health care industries.

Created a relational database containing nursing home Medicaid cost report data used for employer and policy research.

Researcher at SEIU labor union 1997 – 1998

Supported multi-party contract negotiations by performing elaborate contract cost comparisons.

Constructed a relational database used to support a 40,000 union member election campaign.

Education

Cornell University

BS in Industrial and Labor Relations

1993 – 1997

Concentrations in statistics and labor economics

Stanford University

Graduate Certificate in Data Mining and Applications

2015 – 2016

1st Place (of 92 teams) in Kaggle InClass machine learning competition: "Getting a 'Handel' on Data"

Presentations & Workshops

Data Viz Theory & Techniques

Guest lectures to Applied Planning Methods URBPLAN 721 class, University of Wisconsin-Milwaukee

December 2015 & 2016

Data Mapping for Non-Profits

Data visualization workshop series sponsored by IMPACT Planning Council, Milwaukee, Wis.

March/April 2014

Open Source GIS: Web mapping with MapBox/TileMill

GIS Day, University of Wisconsin-Milwaukee

November 2013

Data Visualization Theory and Practice

Presenter at annual conference of the Council for Community and Economic Research, Memphis, Tenn.

May 2013

Eliana Marcus-Tyler (she/her pronouns)

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San Francisco, CA 94115
ertyler23@gmail.com • 973-619-2570

EXPERIENCE

San Francisco Bicycle Coalition, San Francisco, CA

March 2019-present

Program Coordinator

- Design, establish and revise curricula for Adult Bicycle Education programming, ensuring adherence with the California Vehicle Code and local regulations
- Hire and manage a team of 12 part-time, multilingual bicycle educators, including scheduling, staffing and siting classes around the city
- Oversee multiple education contracts to ensure objectives are executed and invoiced appropriately
- Serve as the organizational thought leader on all matters related to adult bicycle education, including constituent services and PR engagements
- Solicit, secure, and manage additional adult bike education contracts with private companies and public agencies to provide high-quality and individualized services to their organizations
- Drive student attendance and engagement through promotion and outreach, including sending a monthly newsletter to over 5,000 subscribers

One Community Inc.: Institute for Community Equity and Sharing, Brooklyn, NY *November 2018 - January 2019*

Institutional Liaison (Contract Position)

- Conduct research, prepare reports, and present findings to local universities on models of community engagement that they can adapt to be better integrated with their local community
- Collaborate with re-entry organizations to recruit participants for bike mechanic training that will lead to permanent employment

Journey's End Farm Camp, Newfoundland, PA

February 2017 - August 2018

Assistant Director

- Co-managed the day-to-day functioning of a 60+ person sleepaway camp located on a 210-acre farm
- Interviewed, hired, and supervised a 30+ person staff
- Planned and led an intensive, week-long staff training
- Communicated regularly with parents and guardians of campers and provided additional support to parents and guardians whose children struggled with adjusting
- Supervised, designed and executed camp activities

EDUCATION AND CERTIFICATIONS

League Cycling Instructor #6212

March 2019-present

Vassar College, Poughkeepsie, NY

May 2018

Bachelor of Arts in Sociology

GPA:

3.8

- Thesis: *"Between 'the Potential' and 'the Actual': Lead Poisoning in New Orleans as State Sanctioned Environmental Racism"*

Honors: Departmental Honors and Member of Phi Beta Kappa (International Sociology Honor Society), 5-time Liberty League All-Academic Honors

Jeremy Whaling
EV Systems Engineer
Phone: 424.397.2149
Jeremy.Whaling@EVgo.com

EDUCATION AND TRAINING

University of California at Irvine, B.S., Electrical Engineering

EMPLOYMENT HISTORY

EVgo Services LLC

EV Systems Engineer

- Designer of Submetering Solutions
 - Developed in house solution for submetering EV charger load for repayment to site host
 - Performed pilot assembly for first run of units
- Level 2 AC charging hardware expert
 - Studied existing Level 2 hardware in use by EVgo
 - Evaluating and testing hardware available in the marketplace
- Low power DCFC (<30 kW) hardware expert
 - Evaluating and testing hardware available in the marketplace
 - Directing vendors to create products for fleet solutions
- Policy and government
 - Represented the company in stakeholder working groups, workshops, and speaking events
-

American Honda Motor Company, Inc.

Grid Connected Project Manager

- Manager of Workplace Charging on campus
 - Liaison to ChargePoint on API development
 - Notified drivers for planned and non-planned outages
 - Invoiced the California Energy Commission for payout of Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) grant
 - Studied electric vehicle charging patterns in home, workplace, and public for application to grid services and renewable energy integration
- Project Manager for Honda Smart Charge
 - Developed and managed a program for Vehicle-Grid Interaction in CAISO markets
 - Resolved contracts between Honda and various utility companies
 - Managed scope of work for three outside vendors
 - Provided feedback to team members, upper management, as well as external entities during development
 - Reviewed legal terms and conditions for users, contracts with vendors, and subcontractors
- Policy and government relations
 - Represented the company in stakeholder working groups, workshops, and speaking events
- Subject matter expert for electric vehicle infrastructure and EV policy for the company

California ISO

Real Time Scheduler

- Monitored and adjusted schedules as necessary to maintain reliability and verify actual flows with adjacent utilities.
- -Communicated effectively to other operators any changes or impacts to system conditions.
- -Detailed knowledge of renewable energy power plants and concepts.
- -Studied the evolution of the grid from customer, distribution, and transmission changes.
- -PI Process book screen designer for scheduling displays.
- -OATI software expert in ETS, ITS, and WebSAS.

Hays Witt

4110 SE Hawthorne Blvd #258, Portland, Oregon, 97214

213-200-1133 | hays@driversseat.co

SUMMARY OF QUALIFICATIONS

- Built and operate the first gig worker data cooperative - connecting gig workers with other gig economy stakeholders via data sharing.
- Developed innovative policy research, analysis, and recommendations on the intersection of new mobility and workers rights for the Cities of San Francisco and Seattle, as well as national advocacy organizations.
- 21 years of experience facilitating the direct engagement of low-wage workers in policy changes that raise industry standards.

EXPERIENCE

Co-founder, Driver's Seat Cooperative – October 2018 – present

Driver's Seat Cooperative is a start-up that empowers gig workers to take ownership of the full spectrum of information that they generate while they work. Starting with rideshare drivers and delivery people, we support worker-owners in sharing, making meaning of, and capturing the value of their data.

Founder and Principal, Strategic Action LLC, March 2017-October 2018

Founded a boutique consulting firm that advised progressive non-profits, local governments, small businesses and worker organizations on how to simultaneously meet workforce, racial equity and environmental goals in rapidly changing sectors of the economy. Specialties in policy research and development, strategic planning, and grassroots engagement.

Deputy Director, Partnership for Working Families, 2016-2017

Responsible for management of multiple policy and organizing initiatives at a progressive national non-profit network. Led and supervised staff in development and execution of core program areas related to the Future of Work, Climate Justice, and Equitable Cities.

Transforming Trash Director, Partnership for Working Families, 2011 – 2015

Led a multi-city initiative to transform the commercial waste and recycling sector, winning good jobs, major reductions in diesel truck emissions, and increased waste diversion.

Southern California Airports Coordinator, Service Employees International Union - USWW, 2007 - 2010

UCLA Lead Organizer, AFSCME 3299, 2004-2006

Neighborhood Revitalization Director, Environmental Health Coalition 2002-2003

Community Organizer, Office of LA City Councilmember Jackie Goldberg, 1999-2001

EDUCATION AND LANGUAGES

- Bachelor of Arts, 1998, The Evergreen State College, Olympia, WA.
- Fluent in Spanish and English.

References available upon request

Letters of Support and Commitment
SF Department of the Environment
GFO-19-603
Implementing Community EV Blueprint

| | Organization | Commitment | Value |
|----|------------------------------------|---|---------------|
| 1 | SF Dept of Environment | Project lead, overall management. Staff time commitment | \$90,000 |
| 2 | DoorDash | Support their drivers in participating in e-bike pilot | |
| 3 | Drivers Seat | Provide data on 100 delivery workers, provide findings, support development of outreach materials, onboard and train participants | |
| 4 | EVgo | Support development of ombudsperson processes, participate in testing and validation of mapping tool, develop charging plazas | \$634,390 |
| 5 | Golden Gate Restaurant Association | Technical assistance for e-bike program, outreach about project | |
| 6 | Google | Use Google Geo Environmental Insights Explorer data and Google Cloud tech to enhance EV Mapping Tool created in Phase 1 of EV Community Blueprint. Support Dissemination. | \$150,000 |
| 7 | GRID Alternatives | Program design, community engagement, job training, dissemination | |
| 8 | LAFCo | Technical assistance for E-bike pilot | \$13,500 |
| 9 | Postmates | Support for e-bike program | |
| 10 | SF Bike Coalition | Tech Support and outreach for e-bike pilot | |
| 11 | SF Dept of Building Inspection | Support with streamlining permitting and supporting ombudsperson position | in-kind staff |
| 12 | SF Mayor's Office | General support, including policy and coordinating with other city depts | In-kind staff |
| 13 | SFMTA | Community outreach, support for e-bike program, charging plaza development, mapping tool, outreach and streamlining infrastructure development processes. | In-kind staff |
| 14 | SF Planning Dept | Support with streamlining infrastructure development processes, support for Ombudsperson process/position | In-kind staff |
| 15 | SF Public Utilities Commission | Tech support for charging expansion and e- bike program. Support for Ombudsperson processes. Grid-related assistance for charging plazas. Staff time commitment | \$125,312 |
| 16 | SF Supervisor Mandelman | General support including policy | |
| 17 | Uber | Support for e-bike program, supporting participating delivery workers | |



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

London N. Breed
Mayor

Deborah O. Raphael
Director

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 23, 2020

Dear Mr. Worster,

The San Francisco Department of the Environment (SF Environment) is delighted to commit match funding for Phase 2 implementation of San Francisco's EV-Ready Community Blueprint.

As the designated home of the San Francisco Clean Cities Coalition (SFCCC) for 20 years, we are well positioned to provide funding we receive annually from the US Department of Energy for that program to support outreach, education, and dissemination for this project. San Francisco is a founding member of the Clean Cities Coalition and the Blueprint implementation supports the overall goals of the USDOE, the State and the City and County of San Francisco to accelerate the shift to cleaner fuels and reduce emissions.

Specifically, the SFCCC coordinator will provide project management services for the e-bike program and support reporting and dissemination of project results, including case studies and presentations, organizing webinars, and conducting outreach. The value of the match is \$90,000, which will be documented per the terms of the grant agreement.

Our team has put together an outstanding project. I personally am committed to working with other department heads and the Mayor's Office to ensure it achieves its goals and objectives and serves as a model and inspiration to other municipalities.

Thank you for your consideration.

Sincerely,

Deborah Raphael
Director
Deborah.raphael@sfgov.org
415-355-3701

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 15, 2020

Dear Mr. Worster,

We write in support of the City and County of San Francisco Department of the Environment's grant application for the California Energy Commission's funding opportunity titled "Electric Vehicle Ready Communities Phase II - Blueprint Implementation."

DoorDash is a technology company headquartered in San Francisco that connects customers with their favorite local and national businesses in more than 4,000 cities and all 50 states across the United States, Canada, and Australia. Founded in 2013, DoorDash empowers merchants to grow their businesses by offering on-demand delivery, data-driven insights, and better in-store efficiency, providing delightful experiences from door to door. By building the local delivery infrastructure for cities, DoorDash is bringing communities closer, one doorstep at a time.

Today, Dashers use a variety of mobility options to complete many different types of deliveries using the DoorDash platform and we are constantly exploring opportunities to assist them in utilizing the modes of transportation that best fit their needs. We find that e-bikes and other forms of emerging mobility can enhance Dashers' ability to complete deliveries quickly, easily, and efficiently - particularly in dense urban areas.

We believe e-bikes serve as a viable, sustainable method of transportation with the potential to reduce vehicle miles traveled, decrease greenhouse gas emissions, improve the Dasher pick-up and drop-off experience in areas where parking availability is limited, and facilitate local goods delivery to the benefit of all three sides of our marketplace in addition to the broader community. To that end, we are eager to make these alternative modes of transportation more easily accessible to Dashers.

At DoorDash, we share the San Francisco Department of the Environment's goal to make the City's transportation system more sustainable, equitable, and efficient. Thank you for your consideration of the Department's grant application as part of the City's efforts to work toward a carbon neutral transportation network.



Mariah Ray
Public Policy and Partnerships Lead
DoorDash



Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 23, 2020

Dear Mr. Worster,

The Driver's Seat Cooperative is delighted to support the Electric Vehicle Ready Communities Phase II Blueprint Implementation for the City and County of San Francisco.

Driver's Seat is a driver-owned cooperative committed to data democracy. Our mobile app helps on-demand drivers take control and maximize their earnings with free data insights. We pool and analyze that data to deliver unique insights that help city planners and agencies understand and make informed decisions about shared mobility and logistics in their community.

The Driver's Seat shares the SF Department of Environment's goal to improve working conditions of delivery drivers in San Francisco by switching to electric bikes. Food delivery has become a lifeline and critical food distributor for San Francisco residents. As app-based delivery services continue to grow, electric bikes will be key to not only reducing emissions—we see huge potential in e-bikes making deliveries faster and increasing both drivers' earnings and merchant sales, especially in dense urban areas such as San Francisco.

This project continues our partnership with San Francisco's Local Agency Formation Commission (LAFCo) and Department of Environment. Driver's Seat organized, collected, and analyzed data that was the foundation of LAFCo's 2019 labor study on emerging mobility services that included groundbreaking representative survey of gig economy workers. One key recommendation from the study is to establish an electric bike rebate program.

Driver's Seat has a deep understanding and connection with our drivers, which gives us unique insight into the data they share with us. For this program, we will:

- *Provide our mobile app to enable up to 100 delivery workers to collect mobility and earnings data during the study period.*

- *Provide onboarding and training to program participants for the data collection period,*
- *Provide findings to the project team for further analysis and reporting, and*
- *Support the program team in developing outreach materials and public dissemination of pilot findings.*

This project is a wonderful example of a public-private partnership that is helping all of us achieve our goals in way that probably would not happen if we were acting alone.

Thank you for your consideration,

A handwritten signature in black ink that reads "John Hays Witt". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

Hays Witt
CEO
hays@driversseat.co

A second handwritten signature in black ink, identical to the one above, reading "John Hays Witt".

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 23, 2020

RE: Commitment letter City of San Francisco EV Blueprint Implementation

Dear Mr. Worster,

EVgo is pleased to support the San Francisco Department of the Environment's proposal to the California Energy Commission to implement components of its 2018 Community EV Blueprint. As one of the key EV charging stakeholders who participated in creating the Blueprint, we are excited to see it come to fruition.

Founded in 2010 and headquartered in California, EVgo is leading the way on transportation electrification in the state and across the nation. With more than 800 fast charging locations in 66 metropolitan areas across 34 states, we are the largest public fast EV charging network in the country and continuing to expand rapidly. We partner with automakers, fleet and rideshare operators, states and cities, retail hosts like hotels, shopping centers, gas stations, and parking lot operators, and other stakeholders to make it easier for all Americans to take advantage of the benefits of driving an EV. Most recently we have committed to working with General Motors to triple the size of the nation's largest public fast charging network over the next five years.

The City and County of San Francisco Department of the Environment has been a valued partner since we installed our first charger there in 2013. To continue our history of successful collaboration, EVgo is committed to working with the City to ensure that EV charging is available its most vulnerable neighborhood, Bayview Hunters Point. This is particularly important in this time of COVID, as so many residents of these communities are front-line workers, who must have safe and affordable ways to get to work.

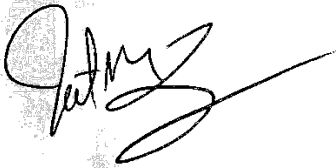
EVgo commits to participating in the implementation of three project elements:

1. Ombudsperson Pilot: EVgo will participate in the testing and refinement of an EV ombudsperson program in conjunction with the development of one large or several smaller EVgo charging plazas.
2. EV Blueprint Mapping Tool: EVgo will participate in the testing and validation of an EV Blueprint Mapping Tool.
3. Charging Plaza: EVgo will develop a charging plaza to be sited in Bayview Hunters Point using the mapping tool

The value of this commitment is \$634,390 for the estimated cost of design, permitting and construction of one or more charging plazas with a total of 8 DC Fast Chargers. The source of this funding is EVgo's capital.

Thank you for your consideration of this exciting proposal. Together, we can create a cleaner and greener future for all.

Sincerely

A handwritten signature in black ink, appearing to read 'Jonathan Levy', with a long horizontal flourish extending to the right.

Jonathan Levy
Senior Vice President
EVgo

Jonathan.levy@evgo.com

**GOLDEN GATE
RESTAURANT
ASSOCIATION**
est: 1936

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 2, 2020

Dear Mr. Worster,

The Golden Gate Restaurant Association (GGRA) is delighted to support the Electric Vehicle Ready Communities Phase II Blueprint Implementation for the City and County of San Francisco.

GGRA's mission is to celebrate and empower the restaurant community through advocacy, education, marketing, events, and training. We are a trusted one-stop resource for the culinary community in the Bay Area and beyond. Our member community includes restaurants of all sizes and profiles, and we have a valuable network of resources to support them through all stages of growth.

Supporting the City's Phase II Blueprint implementation is one more project in GGRA's history of successful collaboration with San Francisco and its Department of Environment. We worked closely with Mayor Breed's office on behalf of our members on the 15% delivery commission cap implemented in April 2020, and have coordinated with the Department on a range of initiatives, including Zero Waste and the Green Business Program.

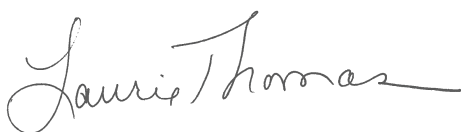
GGRA shares the SF Department of Environment's goal to help delivery drivers in San Francisco access a range of zero-emissions mobility options. Food delivery has become a lifeline for our restaurants and a critical food distributor for San Francisco residents. The prolonged pandemic and shifting consumer habits indicate that app-based delivery services will continue to grow and expanding options for safe, zero emission deliveries is essential to our members' long-term success. Data collected via this program will help them better understand how and where food is being delivered.

To that end, GGRA will provide as-needed technical assistance on the e-bike program, communicate information about the program to our members through our newsletter and social media channels, and work with San Francisco to explore other opportunities to support the program.

In addition to the environmental benefits of zero-emissions transportation, we see huge potential in e-bikes making deliveries faster and increasing both drivers' earnings and merchant sales, especially in dense urban areas such as San Francisco.

This project is a wonderful example of a public-private partnership that is helping all of us achieve our goals in a way that probably would not happen if we were acting alone.

Thank you for your consideration,



Laurie Thomas
Executive Director, Golden Gate Restaurant Association
Laurie@ggra.org



Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 7, 2020

Dear Mr. Worster,

Google is delighted to support the application for the City and County of San Francisco's: **Phase II Blueprint implementation is but one more project in Google's history of successful collaboration with the SF Department of Environment.**

Background

As part of Google's most ambitious decade of climate action, we're making a commitment to help more than 500 cities and local governments reduce an aggregate of 1 gigaton of carbon emissions per year by 2030 and beyond. To do this, we aim to support cities around the world like San Francisco, with the Environmental Insights Explorer (EIE), a platform we developed by analyzing Google's comprehensive global mapping data together with standard greenhouse gas (GHG) emission factors to easily estimate the carbon footprint of their buildings and transportation activities, as well as assess interventions that could be designed to reduce emissions.

Purpose and Tasks

Google LLC's contribution to the project is to harness Geo Environmental Insights Explorer data and Google Cloud technologies in collaboration with the City of San Francisco to develop San Francisco's Electric Vehicle Ready Communities Phase II Blueprint, and potentially create a tool that can be used by other cities in California to develop their own EV infrastructure plans. The support will be provided from January of 2021 to December 2021.

Funding

Upon award, Google LLC's is prepared to provide all resources as defined in the City of San Francisco scope of work and budget for the project's duration. If the team is selected, Google LLC is prepared to provide \$150k in the form of staff time, equipment, technical advising, research, Geo datasets, and Google Cloud Platform technology and services to run the analysis to support this project.

Duration

This Letter of Commitment may be modified by mutual consent of the signatories, but any change must be communicated to the California Energy Commission.

Thank you for your consideration,

Nicole Lombardo
Google, Environmental Insights Partnerships

Denise Pearl
Google Cloud



October 16, 2020

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

Dear Mr. Worster,

GRID Alternatives Bay Area is delighted to support the Electric Vehicle Ready Communities Phase II Blueprint Implementation for the City and County of San Francisco.

GRID Alternatives' vision is for a successful transition to clean, renewable energy that includes everyone. We are a national leader in making clean, affordable solar power and solar jobs accessible to low-income communities and communities of color.

We have a long and successful relationship with the SF Department of the Environment and have partnered with them on several projects—including the installation of more than 100 PV systems in San Francisco's Bayview Hunters Point, a CalEnviroScreen-identified DAC.

In addition to the environmental benefits of zero-emissions transportation, we see huge potential in e-bikes making deliveries faster and increasing both drivers' earnings and merchant sales, especially in dense urban areas such as San Francisco. As a national leader in energy access, GRID is also excited about the potential to share information about this project to the many communities in which we operate.

For this pilot, we will bring our experience with program design and implementation, job training, and community engagement. Specifically, GRID will manage bike procurement and logistics, work with SFE to finalize program design and an implementation plan, and provide case management for individual low-income participants. We will also support SFE in compiling project results and best practices to support scaling or implementing this program in other communities.

This project is a wonderful example of a public-private partnership that is helping all of us achieve our goals in a way that probably would not happen if we were acting alone.

Thank you for your consideration,

Sincerely,

DocuSigned by:
Arthur Bart-Williams
DAA81386C28448E...

Arthur Bart-Williams
Executive Director
GRID Alternatives Bay Area



San Francisco Local Agency Formation Commission

City Hall
1 Dr. Carlton B. Goodlett Place, Room 409
San Francisco, CA 94102-4689
Tel. 415.554.6756 Fax. 415.554.5163

October 2, 2020

COMMISSIONERS

*Sandra Lee Fewer, Chair
Board of Supervisors*

*Cynthia Crews-Pollock, Vice-
Chair Member of the Public*

*Matt Haney
Board of Supervisors*

*Gordon Mar
Board of Supervisors*

*Shanti Singh
Member of the Public- Alternate*

*Bryan Goebel
Executive Officer*

*Inder Khalsa
Legal Counsel*

*Alisa Somera
Clerk*

*Ricky Tran
Research associate*

*Jackson Nutt-Beers
Research associate*

*Ryan Powell
Research associate*

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

Dear Mr. Worster,

The San Francisco Local Agency Formation Commission (LAFCo) is delighted to support the application for the City and County of San Francisco's Electric Vehicle Ready Communities Phase II Blueprint.

LAFCo is an independent commission whose mission is to ensure the logical and orderly provisioning of government services. It's made up of three members of the SF Board of Supervisors, one public member and one alternate. State statutes give LAFCo broad authority to conduct special studies, which gives us the ability to assist and support the City on studies and specialized consultant hiring, and to assess its municipal service needs. Some examples of LAFCo special studies for San Francisco include studies on energy services, tidal wave power, waste, undergrounding of utility wiring, open source voting and increasing voter participation.

Supporting the implementation of Phase II of the EV-Ready Community Blueprint is but one more project in the LAFCo's demonstrated alignment with the SF Department of Environment on sustainability issues. We were instrumental to forming San Francisco's community choice energy program, CleanPowerSF. LAFCo also led a 2019 labor study on emerging mobility services that included a groundbreaking representative survey of app-based workers. A key recommendation from the study is to establish an electric bike rebate program, as 39% of surveyed delivery drivers indicated they would switch from a vehicle to an electric bike with an incentive, while 31% said they might switch.

LAFCo is a critical partner to developing such an incentive program. We will provide technical assistance on program design, connect the team with key stakeholders and surveyed participants and provide ongoing research. The value of this commitment is \$13,500, funded through LAFCo's budget for staff time from the City of San Francisco's General Fund.

Our implementation activities will contribute to San Francisco's progress towards achieving its goal of net-zero emissions by 2050.

Thank you for your consideration,

Sandra Lee Fewer

Sandra Lee Fewer, Chair
Member, San Francisco Board of Supervisors, District 1

Cynthia Crews-Pollock


Cynthia Crews-Pollock, Vice Chair
Public Member



Gordon Mar
Member, San Francisco Board of Supervisors, District 4



Matt Haney
Member, San Francisco Board of Supervisors, District 6



Shanti Singh
Alternate Public Member



Postmates

Postmates Inc.
201 3rd Street
Second Floor
SF, CA 94103

October 21, 2020

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

RE: Proposed e-Bike Rebate Pilot Program for Third-Party Delivery Workers

Dear Mr. Worster,

On behalf of Postmates I am writing to express support for the Electric Vehicle Ready Communities Phase II Blueprint Implementation for the City and County of San Francisco.

Launched in 2011, Postmates has pioneered both the technology and logistics powering on-demand delivery in the United States. Our revolutionary online marketplace and mobile platform connect customers with local merchants, and when requested, with local couriers who use Postmates to deliver anything from any store or restaurant in minutes. In an era where e-commerce goliaths are crowding out local businesses with regional warehouses, Postmates is doing the opposite: empowering local brick & mortar merchant partners, through offering greater access to their products. Postmates currently operates in more than 4,200 cities across the United States, providing access to more than 600,000 merchants.

In San Francisco alone, Postmates has partnered with approximately 4,000 merchants across the City & County allowing residents to unlock the best of our city with a reliable on-demand "anything" network. Postmates has helped facilitate the sales of more than a quarter of a billion dollars worth of goods, a number that continues to grow amidst the pandemic. And S.F. residents who performed services on the platform as couriers (or "Postmates") earned nearly \$20 million in earnings in 2019 alone.

As we transform the movement of commerce in our cities, we share the SF Department of Environment's goal to help our delivery drivers' access a range of zero-emissions mobility options.

- We have partnered with the SF Bike Coalition in the past to amplify the importance of Vision Zero goals as well as encourage members of our fleet to consider bike options.
- We have piloted an e-bike delivery program, in collaboration with GenZe, to ease the carbon footprint of on-demand delivery.
- And we have worked with the City's Board of Supervisors, City Administrator and Office of Emergency Technology, to pioneer innovative delivery systems such as our non-contact, carbon-free [autonomous delivery device known as SERVE](#).

In that spirit, the EV Blueprint Implementation Project is an opportunity to apply the lessons learned from these carbon-neutral pilots to foster cross-sector collaboration. In particular, the lessons generated from this pilot could inform Postmates' efforts to expand Postmates' zero-emissions mobility options across the City and beyond, while balancing the realities couriers face on a daily basis. To that end, Postmates is

open to providing technical assistance on the e-bike program and supporting recruitment if and where practicable.

In addition to the environmental benefits of zero-emissions transportation, we see the potential in e-bikes to increase delivery efficiencies, increasing both drivers' earnings and merchant sales, especially in dense urban areas such as San Francisco -- provided access to the bikes are cost effective.

Thank you for your consideration & leadership during this time.

Vikrum Dave Aiyer
Vice President of Public Policy & Strategic Comms



San Francisco Bicycle Coalition
1720 Market Street
San Francisco, CA 94102

T 415.431.BIKE

F 415.431.2468

sfbike.org

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 20, 2020

Dear Mr. Worster,

The San Francisco Bicycle Coalition is very pleased to support the Electric Vehicle Ready Communities Phase II Blueprint Implementation for the City and County of San Francisco.

For over 45 years, the San Francisco Bicycle Coalition has been transforming San Francisco streets and neighborhoods into more livable and safe places by promoting the bicycle for everyday transportation. We are one of the largest and most effective bicycle advocacy groups in the country. Through our working partnerships with City and community agencies, the SF Bicycle Coalition creates safer streets and more livable communities for all San Franciscans.

Supporting the City's Phase II Blueprint implementation extends our long history of successful collaboration with San Francisco and its Department of Environment, including on Vision Zero and Safe Routes to School.

The San Francisco Bicycle Coalition shares the SF Department of Environment's goal of helping delivery drivers in San Francisco switch to electric bikes. Food delivery has become a lifeline and critical food distributor for San Francisco residents, and app-based delivery services will likely continue to grow. The environmental impact of that growth would be mitigated by supporting workers' access to zero-emission delivery options, and switching to e-bikes would ease the impact on curb space demand.

SF Bicycle Coalition served as technical advisor to the LAFCo study that inspired this pilot program. In that study, 70% of those who deliver by bike reported feeling unsafe doing this work in San Francisco. To address that barrier, SF Bicycle Coalition will provide classroom-based (or webinar) and on-bike safety training at the beginning of the pilot program to increase safety and confidence of participants as they use their e-bikes.

In addition to the environmental benefits of zero-emissions transportation, we see potential for e-bikes to increase both delivery workers' earnings and merchant sales by increasing the speed of deliveries in the dense urban area of San Francisco.

This project is a wonderful example of a public-private partnership that is helping all of us achieve our goals in a way that probably would not happen if we were acting alone.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "Chris White".

Christopher White
Program Director
christopher@sfbike.org

**City and County of San Francisco
Department of Building Inspection**



**London Breed, Mayor
Patrick O'Riordan, Interim Director**

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814
October 15, 2020

Dear Mr. Worster,

The San Francisco Department of Building Inspection (DBI) is delighted to support the application for the City and County of San Francisco's Electric Vehicle Ready Communities Phase II Blueprint.

DBI is the regulatory building safety agency responsible for overseeing the effective and efficient enforcement of building, electrical, plumbing, disability access and housing codes for the City and County of San Francisco's more than 200,000 commercial and residential buildings. DBI is currently overseeing an almost unprecedented building boom in the City. These projects include public and private developments as well as affordable and market-rate housing. DBI's mission is to provide provides transparent, consistent, efficient, and equitable services to support our growing building and infrastructure stock.

Supporting the implementation of Phase II of the EV-Ready Community Blueprint is a continuation of DBI's longstanding partnership with the San Francisco Department of Environment (SFE). The partnership has resulted in the adoption of some of the most aggressive green building standards in the state, the nation, and the world. For example, since 2008, San Francisco has adopted an energy reach code stricter than California's Title 24 Energy Standards in every code cycle, and adopted complementary policies preparing building energy systems for both the present and the future. The partnership also served as a platform to implement groundbreaking initiatives such as the EV Readiness and Better Roofs Ordinances. Both Ordinances are substantially stricter than CalGreen. Specifically, the EV Readiness Ordinance requires new buildings and major renovations to install EV-ready infrastructure, and the Better Roofs Ordinance mandates solar and living roofs on all commercial and residential new construction of 10 floors or less.

As the agency responsible for issuing permits for EV infrastructure, DBI is a critical partner particularly for charging expansion, and to support the EV-Ombudsperson. DBI and SFE shall establish a Memorandum of Understanding to not only memorialize the roles and responsibilities of the EV-Ombudsperson, but also to establish best-in-class permit processes. DBI will also provide permit-related technical assistance on the construction of public charging plazas to serve residents in multi-unit dwellings and disadvantaged and low-income communities. In summary, Phase II implementation activities will contribute to substantial progress to expanding EV infrastructure.

Thank you for your consideration,

A handwritten signature in blue ink, appearing to read "James Zhan".

James Zhan, P.E.
Senior Engineer and Manager, Mechanical and Electrical Plan Review Division
San Francisco Department of Building Inspection



Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 5, 2020

Dear Mr. Worster,

On behalf of the San Francisco Mayor's Office, I am delighted to support the Department of the Environment's proposal to the California Energy Commission to implement Phase 2 of the City and County of San Francisco's Electric Vehicle Ready Communities Phase II Blueprint.

If this grant is awarded, our office will work with relevant city department stakeholders to ensure smooth implementation of the various project components—from installing an EV charging plaza in one of our communities of concern, to creating processes to streamline the permitting process for these chargers, and working with app-based food delivery companies to help their drivers transition to using electric bikes.

San Francisco's groundbreaking initiatives such as our EV Readiness and Better Roofs Ordinances have been modeled throughout California. By creating replicable tools and processes to promote charging infrastructure, successes here in San Francisco will translate into successes throughout California.

Thank you for your consideration,

A handwritten signature in black ink that reads "Andres Power".

Andres Power
Policy Director
Office of Mayor London N. Breed



London Breed, Mayor

Gwyneth Borden, Chair
Amanda Eaken, Vice Chair
Cheryl Brinkman, Director

Steve Heminger, Director
Sharon Lai, Director

Jeffrey Tumlin, Director of Transportation

October 19, 2020

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

Dear Mr. Worster,

The San Francisco Municipal Transportation Agency (SFMTA) is delighted to support the application for the City and County of San Francisco's Electric Vehicle Ready Communities Phase II Blueprint.

SFMTA's mission is to connect San Francisco through a safe, equitable, and sustainable transportation system. The SFMTA is a department of the City and County of San Francisco (City) responsible for the management of all ground transportation in the city. The SFMTA has oversight over the Municipal Railway (Muni) public transit, as well as bicycling, paratransit, parking, traffic, walking, and taxis. We serve San Francisco by creating transportation options that are constant, practical and everywhere; we connect people with their community to enhance the economy, environment and quality of life. We operate today's transportation system and work with our partners to plan the transportation system of tomorrow.

This project is a continuation of SFMTA's long history of successful collaboration with the City's Department of Environment, including working on a range of policies to incentivize the use of mass transit. We have also partnered on two iterations of the City's Climate Action Plan, in 2004 and 2013, and are currently working on another update. Notably, we are collaborating on a range of electric vehicle (EV) plans, policies, and initiatives, including expanding EV-charging infrastructure in municipal lots and garages, exploring potential curb-side charging pilots, and developing strategies to electrify the sector while also prioritizing transit, bicycling and walking trips.

We are excited about the potential for getting app-based delivery drivers out of their cars and onto bikes and are particularly supportive of the Phase II Implementation component to develop a charging plaza in one of the City's low-income communities. SFMTA is committed to transportation equity and has done extensive community engagement and outreach across the city's diverse neighborhoods over the last 20 years, most recently through the Bayview Community Based Transportation Plan. Through our ongoing work in the community, we fully understand the need for access to EV's and a robust charging infrastructure for those who must rely on vehicles.

In closing, the SFMTA's support and partnership in Phase II implementation will ensure success in achieving the objectives of the grant. We are committed to bringing our expertise in shared mobility,



bike infrastructure, bike safety, slow streets, vehicle electrification and curb management to provide technical assistance to this project.

Your consideration of this is sincerely appreciated.

A handwritten signature in blue ink, appearing to read 'Jeffrey Tumlin'.

Jeffrey Tumlin
Director of Transportation



Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

September 24, 2020

Dear Mr. Worster,

The San Francisco Planning Department (Planning) is delighted to support the application for the City and County of San Francisco's Electric Vehicle Ready Communities Phase II Blueprint.

Planning plays a central role in guiding the City's growth and development. Furthermore, Planning works with other City agencies and the communities to help balance the needs of residents, businesses, and civic leaders to protect the environment and historical resources, create inspiring and livable urban spaces, cultivate neighborhood resilience, and enforce good land-use practices. In particular, Planning is responsible for zoning and related requirements. These requirements ensure proposed projects' connection to a comprehensive suite of transportation modes. The resulting connections reduce greenhouse gas emissions and improve the quality of life for San Franciscans and visitors.

Supporting the implementation of Phase II is a continuation of Planning's longstanding partnership with the San Francisco Department of the Environment (SFE). In collaboration with the SFMTA, Department of Building Inspection, and SFE, San Francisco has adopted some of the most aggressive sustainability requirements in the state, the nation, and the world. Notably, the Better Roofs Ordinance generates socio-environmental benefits by requiring living roof or solar installation on all new construction of 10 stories or less. In addition, Planning plays the pivotal role of communicating those code requirements to the public, as well as conducting California Environmental Quality Act reviews.

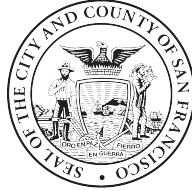
As the agency responsible for zoning for EV infrastructure, Planning is a critical partner for Phase II tasks: EV-Ombudsperson and EV-Charging Expansion. Planning and SFE shall establish a Memorandum of Understanding to not only memorialize the roles and responsibilities of the EV-Ombudsperson, but to also establish best-in-class zoning processes. Planning will also provide zoning-related technical assistance on the construction of public charging plazas to serve residents in multi-unit dwellings and disadvantaged and low-income communities. In summary, the continued partnership between Planning and SFE will contribute to the successful implementation of Phase II tasks.

Thank you for your consideration,

Heidi Kline

Heidi Kline, Senior Planner
Flex Team and PIC Specialist
San Francisco Planning Department

Member, Board of Supervisors
District 8



City and County of San Francisco

RAFAEL MANDELMAN

September 29, 2020

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, CA 95814

Re: San Francisco's Electric Vehicle Ready Communities Blueprint Phase II Proposal

Dear Mr. Worster,

As a member of the San Francisco Board of Supervisors, I am writing in strong support of the Department of the Environment's proposal to the California Energy Commission to implement Phase II of the City and County of San Francisco's Electric Vehicle Ready Communities Blueprint. My district has a high number of electric vehicles (EV) registrations, compared to other parts of the city. Despite the progress, availability and access to public charging infrastructure remains a barrier to expanded EV ridership. With two-thirds of San Francisco residents living in multifamily buildings and City policies that seek to limit the amount of private on-site parking spaces, the lack of public charging infrastructure is particularly acute in our community. In order for San Francisco to comply with Governor Newsom's executive order for new EVs, the City must aggressively expand fast, affordable public charging, while continuing to facilitate convenient and sustainable transportation options.

The City's Phase II project builds the infrastructure required to advance total transportation electrification in San Francisco. It will create an effective process to site EV-charging projects, thereby reducing lead-time and costs for developing charging infrastructure. As a result, by 2025, San Francisco will have three new public fast-charging plazas, one of which will be designated to serve low-income communities. Moreover, the project will inform an equitable and economically-viable plan for existing petroleum fueling stations, many of them small businesses, to transition to vehicle energy centers that will distribute energy to EVs and e-bikes. Finally, the proposal will work with app-based food delivery companies to help their drivers transition to using e-bikes, while improving delivery efficiencies and increasing wages.

With the Governor's recent order to prohibit sales of new gasoline-fueled cars in 2035 and the increasing effects of climate change impossible to ignore, decisive action to broaden EV access is more important now than ever. San Francisco has long been a proving ground for environmental initiatives. With this proposal I look forward to the opportunity to continue leading by example, and hope our bold and innovative EV efforts will inspire and support commitments to an electric vehicle future in communities across California, and beyond. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "RJM".

Rafael Mandelman
San Francisco Board of Supervisors



San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
F 415.554.3161
TTY 415.554.3488

Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 2, 2020

Dear Mr. Worster,


The San Francisco Public Utilities Commission (SFPUC) supports the application for Phase 2 funding of the San Francisco EV-Ready Community Blueprint.

The SFPUC operates three essential service utilities. We provide retail drinking water and wastewater services to all residents and businesses in the City, wholesale water in three Bay Area counties, and serve as the primary electricity provider in the City and County of San Francisco. We operate two retail electricity programs – Hetch Hetchy Power, our publicly owned utility, and CleanPowerSF, our community choice program – that offer carbon-free, renewable, affordable, customer-responsive service to over 380,000 accounts.

As the utility responsible for providing more than 70% of the City's overall electricity use, the SFPUC is a critical partner, particularly for charging expansion, but also mode-shifting to electric bikes. The EV-Ombudsperson will reduce charging-project lead-time and costs. The SFPUC will also provide grid-related technical assistance for the public charging plazas intended to meet the unique needs of residents in multi-unit dwellings and disadvantaged and low-income communities. The SFPUC will also ensure that our electric bike program – currently in development -- aligns with this project's e-bike program for mobile-app deliveries. The funding requested for Phase 2 implementation activities will contribute to substantial progress towards the City's commitment to net-zero emissions by 2050.

Thank you for your consideration.

Sincerely,

DocuSigned by:

E7C8A7AF513B400...

Barbara Hale
Assistant General Manager, Power
San Francisco Public Utilities Commission

London N. Breed
Mayor

Ann Moller Caen
President

Anson Moran
Commissioner

Sophie Maxwell
Commissioner

Tim Paulson
Commissioner

Harlan L. Kelly, Jr.
General Manager

OUR MISSION: To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.



San Francisco Public Utilities Commission
Staff time committed to Implementation of San Francisco's EV Community Blueprint

| Name | General Activity | Y 1 | Y 2 | Y 3 | Total | \$/hour | Total \$ |
|--------------------------------|--|------------|------------|------------|--------------|----------------|-----------------|
| David Christopher and team | <ul style="list-style-type: none"> • Present his outstanding map to Google • Work with Google on data integration; attend meetings • System Testing - test and provide feedback, defects, improvements, etc • Provide HHP capacity data for map (as available/ relevant) • Consulting and conducting implementation activities on development of the e-bike pilot • Assist w/ final evaluation | 133 | 98 | 81 | 312 | \$163.51 | \$51,021 |
| Sandy Carter | <ul style="list-style-type: none"> • General coordination on all projects + report review (8 hours/year=32 hours) • e-bike program support (4 hours/year =12 hours) • Mapping tools support (40 hours) • Smart charging pilot integration (10 hours). • Team updates, assist with final evaluation, and reserve for as-needed support for the project (other – 26 hrs) | 45 | 45 | 30 | 120 | \$113.70 | \$13,644 |
| Andrew Bevington | <ul style="list-style-type: none"> • Consulting and conducting implementation activities on the development of the e-bike pilot • Assist w/ final evaluation | 70 | 60 | 50 | 180 | \$113.70 | \$20,466 |
| TBD (most likely Julia Allman) | <ul style="list-style-type: none"> • Provide general guidance and feedback on e-bike program and staff support | 14 | 12 | 10 | 36 | \$166.48 | \$5,993 |
| TBD (most likely Mike Hyams) | <ul style="list-style-type: none"> • Update Assistant GM and provide general guidance and feedback for project. | 20 | 24 | 20 | 64 | \$219.12 | \$14,024 |
| TBD (Matt Ho or designee) | <ul style="list-style-type: none"> • Monthly ombudsperson meetings (12 X 1 hour x 3yrs • Engineering support for charging plaza (design review, estimating, scheduling, miscellaneous discussions) (50 hours) | 26 | 36 | 36 | 98 | \$205.76 | \$20,164 |
| TOTAL | | | | | 810 | | \$125,312 |



Brad Worster, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814

October 2, 2020

Dear Mr. Worster,

We are writing to lend our support for the San Francisco Department of the Environment's Electric Vehicle Ready Communities Phase II Blueprint Implementation for the City and County of San Francisco.

Uber Eats' food delivery platform that makes getting great food from favorite local restaurants as easy as requesting a ride. Our app connects users with a broad range of local restaurants and food, and provides our delivery people with a reliable and flexible way to earn an income.

As the largest mobility and delivery platform in the world, we know that our impact goes beyond our technology and are focused on doing our part to build back better and support a green recovery in our cities and communities. We can accomplish that by helping our drivers go electric and bringing our innovation, technology, and talent to the fight against climate change by partnering with NGO's and public agencies.

Making food deliveries more accessible and more sustainable has been a priority for us and Uber Eats shares the SF Department of Environment's goal to help our delivery drivers' access a range of zero-emissions mobility options like e-bikes and e-scooters. The EV Blueprint Implementation Project is an opportunity to apply the lessons learned from our previous zero-emissions mobility efforts to create a successful cross-sector collaboration. In particular, the data generated from this pilot may help inform our efforts to expand our delivery people's zero-emissions mobility options across the City and beyond.

Thank you for your consideration,

Andrew Byrne
Senior Director, Public Policy
Uber Technologies, Inc.

Table of Contents

- A. Implementation Strategy1**
 - 1. *Project Description and Proposed Changes 1*
 - 2. *Implementation plan for the Phase II, from strategies identified in the Phase I blueprint.3*
 - 3. *Technical and economic feasibility..... 4*
 - 4. *Goals, objectives and implementation plan.5*
 - 5. *Actionable items and Performance Measures.7*
 - 6. *How the proposed project(s) will be transformative to addressing ZEV adoption barriers.12*
 - 7. *Describe how the proposed project(s) may be replicated in other regions and/or communities.12*
 - 8. *Project schedule..... 13*
 - 9. *Project partners, relationships and obligations 15*
 - 10. *Expected and new information 16*
 - 11. *Method to Track activities and evaluate factors influencing outcomes..... 17*
- B. Team Qualifications and Experience.....17**
 - 1. *Key personnel and responsibility 17*
 - 2. *Qualifications and Relevance to Project..... 19*
 - 3. *Meeting deadlines, milestones and controlling costs. 21*
 - 4. *Team function and partner interactions 21*
- C. Project Budget21**
 - 1. *Project budget, scope of work and overhead costs. 21*
 - 2. *Maximizing Benefit-cost score of the proposed project 21*
 - 3. *Discuss how proposed expenditures are reasonable and necessary for the proposed project..... 22*
 - 4. *Provide a description of the type and source of match – cash and in-kind. 22*
 - 5. *Tracking expenditures (including administration and overhead expenditures) 22*
 - 6. *Explain how the project will demonstrably maximize electric vehicle deployments. 23*
 - 7. *Best value in terms of economic, environmental and technical performance..... 23*
- D. Project Benefits24**
 - 1. *Benefits and Impact of each project included in the application to the selected region. 24*
 - 2. *Metrics and Methods for verification of benefits. 24*
 - 3. *Support of state goals to reduce GHG and to increase ZEV adoption. 24*
- E. Local Government Participation25**
 - 1. *Describe how the community provided input and its needs were considered in the project design. 25*
 - 2) *Participation from a wide variety of local city or county governments, etc. 25*
 - 3) *Community engagements 25*

PROJECT NARRATIVE

A. Implementation Strategy

1. Project Description and Proposed Changes

The City's Phase II builds from the work performed and needs identified in Phase I. Specifically, San Francisco has identified three Phase I interlocking strategies as having the greatest near term (3-year) potential to accelerate EV adoption and reduce congestion and greenhouse gas (GHG) emissions—1) Public Awareness, 2) Charging Infrastructure, and 3) Fleet & Emerging Mobility Electrification.

The City's public awareness strategy has three components. It will:

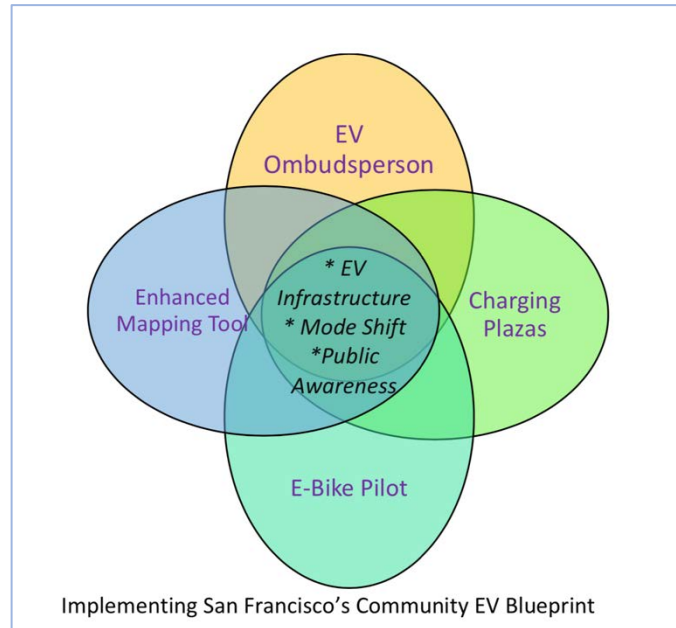
- Continue its public-private partnership with Google to enhance the Phase I Blueprint Mapping Tool to be used by the public and other stakeholders, including municipalities and EV charging providers.
- Create a full-time EV-ombudsperson position limited to 2-year duration. This position is the EV "clearinghouse" for the City, answering all EV-related inquiries from residents, businesses, EV charging providers, city departments and agencies. Additionally, this position will develop a streamlined process to reduce lead time and development costs related to expanding its charging infrastructure in general, and specifically to install three public fast-charging plazas. Best practices will be documented and shared widely with other authorities having jurisdiction to reduce permitting lead times across the state.
- Leverage its GreenStacks partnership with the SF Public Library to and its membership in US Department of Energy's Clean Cities Coalition (CCC) to raise general awareness about EV-benefits and disseminate project information. GreenStacks is a decade-long collaboration that provides environmental information and resources (including EV education workshops) to the 50% of San Francisco residents that hold a library card. The City was founding member of CCC more than 25 years ago and this legacy partnership has built a robust public awareness dissemination system to advance affordable, clean transportation fuels and technologies.

The City is committed to substantially increasing its public charging infrastructure. While EV technology is readily available, and EVs are achieving price parity with internal combustion vehicles, the lack of charging infrastructure remains a stubborn barrier to widespread adoption. This lack of infrastructure is particularly problematic in a dense urban environment like San Francisco, where 2/3 of residents live in multi-unit dwellings (MUD), with little access to off-street parking. A recent International Council on Clean Transportation (ICCT) report estimates that the City will need at least 260 fast charging stations to support the number of EVs projected in 2030—to date, the City has 56.

To increase its charging infrastructure the City:

- Has established a public-private partnership with EVgo to build three public fast-charging plazas, the EV-equivalent to the petroleum fueling stations. One of these plazas will be installed in or adjacent to the City's Bayview Hunters Point—a CalEnviroScreen-identified DAC.
- Will use the Blueprint Mapping Tool to streamline the process of identifying appropriate charging sites and de-risk the process of installing charging infrastructure for developers.
- Will task the Ombudsperson with reducing permitting barriers to rapid deployment of infrastructure

The final component of the City's implementation project will address fleet electrification and mode shift by launching a pilot to help app-based delivery workers transition from internal combustion engine vehicles to electric bikes (e-bikes) for deliveries. Mode shift has been identified as a crucial component in achieving the City's share of the state's emission reduction goals. This highly replicable pilot has significant potential to reduce congestion and emissions, while also improving delivery efficiency, traffic-safety and potentially increasing workers' earnings. The pilot will be informed by LAFCo (Local Agency Formation Commission) and UC Santa Cruz's research (see below) and will provide empirical evidence to inform future mode-shift incentive programs, identify gaps, and establish a sound precedent for other communities and municipalities to replicate.



As a result of various clean transportation efforts that the City has completed or embarked on since Phase I, the City is proposing a few enhancements for Phase II implementation of the Blueprint Mapping Tool. It will enhance the Blueprint Mapping Tool with new features and datasets that will significantly reduce charging project development time and expense. Enhanced elements include:

- Google will lend its scalable mapping data and capabilities to enhance the Blueprint Mapping Tool to allow citizens to propose sites for EV charging stations and dramatically reduce the time developers currently spend prospecting for sites. This has been a tedious manual process requiring developer staff time and resources and generally leaves out a valuable resource—the public.

In addition, the enhancement could allow potential site-hosts who may be interested in providing EV charging as an amenity and additional source of revenue to contribute their needs and ideas for infrastructure. With the customized tool, the user simply enters an address or uploads a photo of a desired location to initiate crowdsourcing and enable anyone to comment and/or vote, based on interest in charging at that location. This gives EV charging providers, parking lot operators, businesses, and local governments, critical information on where there is the most need in the City.

- In late 2019, PG&E made the electrical capacity data in the Integration Capacity Analysis (ICA) map available via an API. This information is an enhancement to the Blueprint Mapping Tool, as critical low-voltage distribution data can be integrated. The Blueprint Mapping Tool will be capable of generating a credible feasibility analysis of an interconnection request, including: 1) grid impact, 2) equipment upgrade costs, and 3) anticipated utilization rates. This capability will eliminate weeks of waiting for the results of PG&E's analysis, allowing charging project developers to quickly assess potential sites for development.
- Users and other stakeholders can integrate consumer data to assess the likelihood that residents of particular neighborhoods will purchase EVs in the future and identify which neighborhoods may need more intensive outreach to encourage adoption.
- Information on underutilized parking garages and lots derived from an SF County Transportation Authority (SFCTA) 2020 geospatial analysis will be added as a data layer. This new information source will be critical for charging project developer siting plans.

- The Google team will integrate real-time traffic flow data to improve driver convenience and accurately calculate GHG emissions from light-duty vehicles.

Furthermore, projects and research completed in the last nine months have also informed San Francisco's selection of specific Phase II activities including:

- ICCT's "EV Charging Demand in San Francisco,"¹ commissioned by SF Environment, quantified the City's charging infrastructure needs by ZIP-codes for San Francisco to meet its goal of reaching 100% EV sales by 2030. The analysis also estimated charging infrastructure for growing electric ride-hailing and urban delivery truck fleets and assessed energy load requirements and grid impacts. It cited the need for public charging plazas and indicated the city would need 260 DCFC and 1,200 public Level 2 chargers by 2030. The study indicated this would also need a 25% increase in sustainable trips and congestion pricing in the downtown business district to reduce overall VMT.
- The Harvard Kennedy School's "Leading the Charge: Public EV Charging Infrastructure for a Greener San Francisco,"² also commissioned by SF Environment. The report analyzed EV adoption and municipal charger utilization in the City today and developed a framework for deploying public EV charging infrastructure.
- LAFCo collaborated with UC Santa Cruz to examine working conditions of app-based delivery workers and identified transportation mode shift strategies for TNC-drivers that would alleviate congestion and reduce emissions without impacting employment. This is the most representative survey of on-demand workers in the US, revealing that about 20% of workers may be earning nothing after expenses and that up to 70% would consider switching from cars to electric bikes.
- The San Francisco Public Utilities Commission (SFPUC) continues to develop its "eMobility Readiness Plan" that identifies eMobility programs (including an e-bike program) and streamline the process and support customers installing EV chargers at various scales.
- Google continues to invest substantial staff time and resources to support governments in their climate action planning efforts and reducing emissions. Google has stepped up new commitments to help more than 500 cities and local governments reduce an aggregate of one gigaton of carbon emissions per year by 2030 and beyond. To do this, Google is empowering city planners, policymakers, climate subject matter experts and NGOs with its Environmental Insights Explorer (EIE). Currently their datasets and the EIE tool is accessible to more than 3,000 cities worldwide — a 25-fold increase since launching efforts 2 years ago.
- As part of its Phase I Community EV Blueprint, SF Environment created a Playbook to help guide other municipalities adapt, scale, and replicate the City's EV Ready Community Blueprint best practices to achieve an emission-free transportation future. Specifically, the Playbook is a step-by-step guide that outlines how San Francisco established and coordinated the EV Working Group, engaged with the community, and developed an EV Ready Community Blueprint and Blueprint Mapping tool. Through this project, the team will update the Playbook to include findings from the research, reports, and planning, adding to this original product in order for other California communities and cities to learn and replicate from.

2. Implementation plan for the Phase II, from strategies identified in the Phase I blueprint.

The complete implementation plan is outlined in the Scope of Work. The project will be implemented in the City and County of San Francisco.

¹ Hsu, C. and Slowik, P., "City Charging Infrastructure Needs to Reach 100% Electric Vehicles: The Case of San Francisco," The International Council on Clean Transportation, Working Paper. (2020).

² Kong, A. and Bell, J. (2019). *Leading the Charge: Public Electric Vehicle Charging Infrastructure for a Greener San Francisco*. [Master's capstone project, Harvard Kennedy School].

Elements of Phase 1 that have informed Phase II include:

| Phase 1 – Strategy Description | Phase 1 - Action Description | Phase II - Implementation |
|---|--|---|
| Public Awareness | EV Staff Position <i>“Create a City staff position to coordinate a citywide EV public awareness campaign, operate an EV Help Desk, and develop an extended EV test drive program.”</i> | Engage Clean Cities Coalition to promote awareness and help desk Staff EV-ombudsperson |
| Charging Infrastructure | Off-Street EV Charging Masterplan <i>“Develop a masterplan to establish a citywide publicly available EV charging network, including fast charging hubs, to meet current and future demand. This masterplan will leverage findings from the EV Blueprint Mapping Tool.”</i> | Blueprint Mapping Tool Enhancement |
| Charging Infrastructure | Privately-Owned Facilities <i>“Accelerate deployment of charging stations in privately-owned, publicly accessible parking garages and lots, and identify a pathway to electrify existing MUD parking.”</i> | 3 Fast Charging Plazas; one will be in, or adjacent to a DAC |
| Fleet & Emerging Mobility Electrification | Shared Mobility Services <i>“evaluate options for electrifying shared mobility services.”</i> | E-bike Pilot for app-based delivery workers as groundwork for scalable program. |

3. Technical and economic feasibility.

Project activities are more thoroughly described in the Scope of Work. In general, the team will access the relationships established over the years to ensure various project components are successful. Committed partners include app-based food delivery companies, Google, EVgo, city departments, and community stakeholders (Please refer to enclosed letters of support/commitment).

Economic Feasibility – Based on team experience, this project is economically feasible. A portion of the cost of installing the three charging plazas is being provided by the developer, who has 10 years of experience in this area, has worked in San Francisco and has a thorough understanding of related costs. Creating the Ombudsperson position is based on City salary levels, which are not anticipated to change dramatically. In addition, this position will last no longer than two years. Part of the job will be to put the structures and processes in place to be used by appropriate municipal staff and the position will no longer be necessary.

Technical Feasibility – The Team established the technical viability criteria for the Blueprint Mapping Tool in Phase I. The integration of new datasets, and their continued update, are capabilities built into the Google EIE application. Although the proposed new features are custom to the EIE, crowdsourcing applications have reached market maturity and do not present a technical barrier to the Google engineering team. Fast-charging EV equipment and their ancillary equipment (software and hardware) have also reached market maturity. In the last decade, e-bikes have grown in popularity and scale thanks to a number of recent developments, including: (1) expanded distance ranges due to battery technology improvements, (2) falling purchase costs as the industry achieves economies of scale, and (3) investments in supportive infrastructure such as bike lane networks.

4. Goals, objectives and implementation plan.

The goals of the project are to accelerate EV-adoption by building infrastructure and creating demand for EVs. To that end, the City will deploy strategies to increase awareness, streamline the process for developing large-scale charging infrastructure, build large-scale charging infrastructure, and pilot emerging mobility electrification. Objectives and supporting actions have been incorporated and the Scope of Work.

| Ltr | Objective | Supporting Actionable Items |
|-----|---|--|
| A | Increase public awareness | <ul style="list-style-type: none"> • Leverage relationship with CCC to promote EVs and mode shift • Leverage SF Environment’s Greenstacks partnership with SF Public Library to reach the 50% of San Franciscans with a library card to ensure understanding of the availability and benefits of EVs, as well as to promote use of the Blueprint Mapping Tool • Promote the use of the Blueprint Mapping Tool’s crowd-sourcing feature by the public through SF Environment’s robust social media network, as well as through partners |
| B | Establish EV-ombudsperson position and streamline process for developing charging infrastructure | <ul style="list-style-type: none"> • Recruit and hire for limited-term position • Evaluate root causes of institutional problems & recommend mitigation strategies and tactics • Institutionalize mitigation actions into a process / system; documented in a dynamic guide • Track and evaluate impact; course-correct • Interact with the public on EV-related topics • Represent the City in EV-related events, conferences, and workshops • Develop guidelines for implementing an Ombudsperson process developed to streamline charging station installations and promote EVs, focusing on replicating processes (to be included in Playbook). • Develop guidebook for internal city stakeholders and “sunset” the position |
| C | Enhance the Blueprint Mapping Tool | <ul style="list-style-type: none"> • Add distribution-level grid data and other data-sets. • Add capability for crowd-sourcing EV charging sites to the Blueprint Mapping Tool. • Enhance and use new crowd-sourcing features for the public and interested businesses to nominate sites and to become site-hosts. |
| D | Reduce time spent on siting public fast-charger installations, and capacity analysis by 20% and their associated costs by 10% and “de-risk” installation to the developer | <ul style="list-style-type: none"> • Conduct studies on requiring existing petroleum stations to add EV-charger(s). • Enhance and use the Blueprint Mapping Tool to quickly evaluate potential site for electrical capacity. • Analyze feasibility of adding charging to existing petroleum stations. |
| E | Reduce project development time and cost. Reduce times spent on permitting, planning, and interconnection by 20%, and their associated costs by 10%. | <ul style="list-style-type: none"> • Develop and maintain Citywide database of EVcharging infrastructure projects to document issues and for timely follow-ups. • Deploy the EV-ombudsperson as a single point of contact, the “clearinghouse,” for EV charging projects. • Deploy the streamlined process; measure and evaluate effectiveness. |
| F | Add 200 Level 2 and 50 DCFC throughout SF | <ul style="list-style-type: none"> • Identify siting parameters of all major charging providers and match them using the Blueprint Mapping Tool. |

| | | |
|---|--|--|
| | | <ul style="list-style-type: none"> • Evaluate Planning Department’s list of under-utilized and vacant lots for EV charging potential. Organize the list to share with EV charging providers to initiate prioritizing sites for infrastructure development. • Provide EV charging providers with a list of 50 sites for project development, by Year 2 of the grant. • Recruit new site-hosts for more public fast-charging plazas, particularly under-utilized or vacant lots and petroleum stations. • Connect EV charging providers with owners of under-utilized or vacant lots, and initiate project development. • Explore developing a policy to require existing fueling stations to include public EV charging. • Explore providing incentives to EV charging provider(s) to prioritize and develop projects near MUDs, in or adjacent to DAC, and on major thoroughfares. |
| G | Complete three public fast-charging plazas, with one located near or in a DAC. | <ul style="list-style-type: none"> • Deploy the Blueprint Mapping Tool and the ombudsperson to facilitate the installation of three publicly available fast-charging plazas to serve most EV makes and models. • Engage communities about the charging plazas particularly the one that will be installed in or adjacent to the DACs: Bayview Hunters Point, South of Market and Tenderloin |
| H | Implement a pilot program that provides e-bikes to app-based delivery workers to evaluate performance (vs. cars/bikes) and other key indicators such as impact on GHGs, worker earnings, road safety, and congestion; and identifies best practices, and lays groundwork for scaling up the program. | <ul style="list-style-type: none"> • Finalize the design process to deliver e-bikes, safety equipment, training, and support to pilot participants. • Implement data collection program using an app-based program that collects time and location data, for two peer groups: e-bike deliveries and vehicle deliveries. • Implement data collection program that evaluates mode-shift benefits; impact on GHGs, worker earnings, road safety, and congestion; and identifies best practices, and lays groundwork for scaling up the program. • Conduct surveys with study participants to understand dollars earned per delivery, number of deliveries made per shift, delivery distance, where their batteries are charged, and dwell time. • Analyze and synthesize results and recommendations for scaling up future incentive programs. |
| I | Disseminate information about the project to a range of stakeholders | <ul style="list-style-type: none"> • Update San Francisco’s EV Ready Playbook to include: <ol style="list-style-type: none"> 1. An updated Blueprint Mapping Tool. 2. Guidelines for implementing an Ombudsperson process. 3. Findings from research, reports, and studies conducted. • Develop case study and presentation, to disseminate information about the project, and in particular ensure that other municipalities access the Blueprint Mapping Tool. • Develop case study and presentation on e-bike pilot results to help public- and private-sector actors improve and scale e-bike delivery programs. • Organize webinars to share case studies and results with California local governments and community choice aggregators, individually and through networks such as the Clean Cities Coalitions, Green Cities CA, Urban Sustainability Directors Network, C40, and California Community Choice Association. |

The team has engaged in extensive planning for this project and proposed Implementation Plan activities and actions have been informed and vetted by a diverse group of stakeholders and is adequate to achieve

these goals and objectives. The team has secured commitments from private partners such as Google and EVgo, organizations noted for their on-going success. The e-bike component was developed with extensive stakeholder input and has secured support from a diverse set of stakeholders. Organizations from the Golden Gate Restaurant Association to the SF Bicycle Coalition, to delivery-companies such as Postmates and DoorDash, are committed participating in this component of the Implementation Plan.

The project team has long-term relationships with various City departments, such as Dept of Building Inspection (DBI), LAFCo, Planning, SF Municipal Transportation Agency (SFMTA), SFCTA, and SFPUC. They have assisted in the development of the Implementation Plan, have pledged support and/or in-kind match, and are fully aware of the expectations and desired results. The project team has surveyed five EV charging providers across eight projects to identify major institutional barriers as well as the associated length of the delay to the development of rapid charging infrastructure in the City. Thus, the team has a clear sense of the kinds of issues the ombudsperson will need to immediately start working on.

While this is not a comprehensive list, some of the most pressing issues identified include:

| Type of Delay | Description of Delay | Project Specs | Length of Delay |
|-------------------------------|--|---------------------|-----------------|
| Engineering | Power route required multiple redesigns to meet power need and site host requirements. | 4 chargers, DCFC/L2 | 6.5 months |
| Permit Applications with City | Lack of easily accessible public information resulted in confusion about which permits were required. EVSP had to get permit after finishing construction. | 4 chargers, L2 | 1 year |
| | Multiple rounds of comments from both building and electrical plan checks, instead of issuing one complete list of comments. | 4 chargers, L2 | 6 months |
| Construction | Limited area for staging of equipment required project to be completed in phases. No access to storage in public right of way. | 4 chargers, DCFC | 1 month |
| Interconnection Process | Interconnection process required multiple City permits including permits from transit, right-of-way, encroachment, etc. | 4 chargers, DCFC/L2 | 8 months |
| Miscellaneous Delays | Underground interconnections are stopped because of a street excavation moratorium on newly paved roadways | 4 chargers, DCFC/L2 | 3 months |

The team's extensive research and other groundwork performed between Phases I and II, the commitments from the range of public and private partners, as well as the Mayor's pledge to reduce GHG emissions while ensuring that environmental benefits are spread across the City ensure project success.

5. Actionable items and Performance Measures.

Ombudsperson--Actionable items include:

- Recruit and hire
- Document processes
- Identify root causes of problems and issues
- Proactively engage and build coalitions with technical experts, local and state authorities, and other key stakeholders
- Ensure effective communication between city agencies, utility partners, and charging providers.
- Facilitate project progress and following up to trouble-shoot issues
- Engage the public to promote EVs and advocate for accessible, affordable and public charging

Why in SF? As the second densest city in the US, the tools, lessons, and processes created here may be used by other cities and communities. As in many municipalities, San Francisco’s charging installation process is fragmented and spread out among multiple agencies and departments. Developing EV charging infrastructure is one of the most complex development projects to implement, regardless of density. Generally municipal staff, particularly those who are engaged in permitting and planning, have not been brought up to speed on EV charging projects. Very often they may be a subject matter expert in a specific area and are being asked to apply their skills to EVs and charging infrastructure. Specialized trainings such as California Code Ace that updates building inspectors, designers and engineers on building codes do not exist for EV charging. As a result, many inspectors and planners may not be ready to react to charging plazas and other large-scale charging infrastructure projects.

The ombudsperson will create and operationalize processes and a institutionalize a system to overcome challenges to deploying EV infrastructure. These will be devised to be updated regularly, to become the “Code Ace” resource for EV charging in the future. Furthermore, the ombudsperson will establish best practices that go beyond AB 1236 permit streamlining compliance, like those outlined in GO-Biz’s EV Charging Station Permitting Guidebook. Best practices such as established timelines for EV permit application reviews, pre-application meetings with charging project developers, concurrent reviews between overseeing departments, and more consistent collaboration with the EV charging industry, have the potential to substantially accelerate the pace of charging network development. By the end of the ombudsperson’s tenure, these best practices will become standard practices in San Francisco.

Performance measures linked to project Objectives 1, 2, and 3 include:

- a. Baselineing and measuring the reductions in permitting, planning, install times, capacity analysis time, and cost reductions.
 - i. *Challenges Summary Report*
 - ii. *Root Cause Analysis Report*
 - iii. *Quarterly Project Tracking Report*
- b. Institutionalize operations, process and systems.
 - i. *Interdepartmental dynamic guide that documents the improved process for city employees.*
 - ii. *One-stop-shop website to serve EV charging installations for developers, the public and other stakeholders*

Expanding charging infrastructure-Actionable items include:

- Use the Mapping Tool to recruit under-utilized or vacant lots and petroleum stations for public fast charging plazas, prioritizing those near MUDs and DAC/DAC-adjacent and major thoroughfares.
- Use ombudsperson and resulting processes to build three public charging plazas, and to develop, test and finalize a process resulting in 200 publicly-accessible Level 2 and 50 DCFC chargers.

Why in SF? In 2018, nearly 50% of the City’s emissions came from the transportation sector—with nearly 75% of these emissions sourced from private cars and trucks. To achieve net zero emissions by 2050, San Francisco has set one of the nation’s most aggressive electrification targets—100% of new vehicles will be electric by 2030 (Figure 1), five years in advance of Governor Newsom’s mandate. As a major commuter City, San Francisco’s charging infrastructure serves drivers from around the Bay Area. Even with the shifting driving patterns as a result of the pandemic, the City needs to continue building EV charging infrastructure to serve commuters.

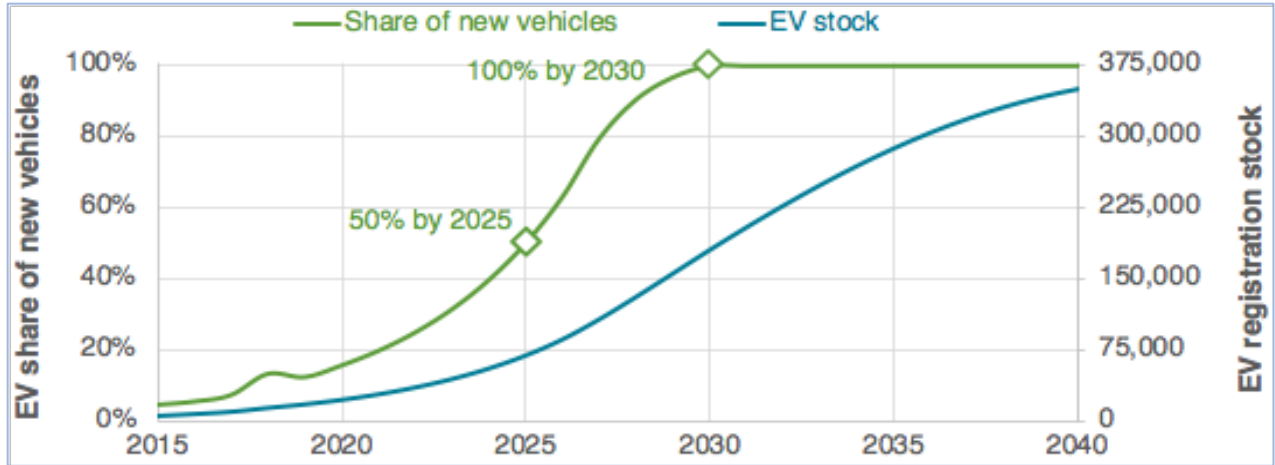


Figure 1. San Francisco new vehicle EV share and total EV stock from 2015 to 2040

Further, according to ICCT, San Francisco needs 260 DCFC stations to support the 2030 goal (Figure 2). The lack of infrastructure is particularly acute for those living in MUDs, without home-charging. Adoption requires increasing infrastructure to improve EV functionality and the convenience for EV drivers. Lessons

learned from creating an infrastructure to support those living in MUDs can be replicated in area with a similar housing mix. San Francisco is also home to one of the largest number of EV registrations in the US. As of 2019, over 36% of newly registered vehicles in San Francisco are battery-and fuel-cell electric. To sustain this momentum, the City must proactively plan its infrastructure to match vehicle electrification goals.

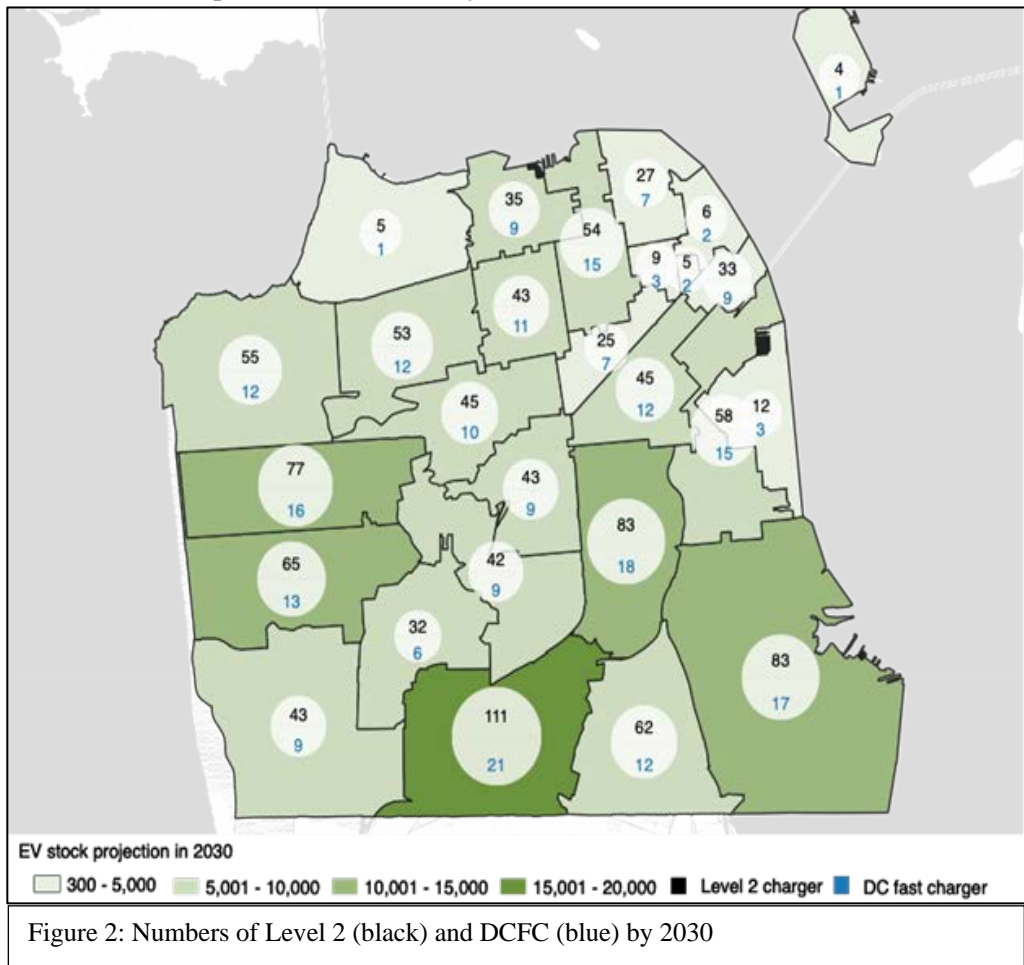


Figure 2: Numbers of Level 2 (black) and DCFC (blue) by 2030

Performance measures linked to Project Objectives B, C and D include:

- a. *Sites identified for public charging infrastructure, categorized by DACs, DAC-adjacent and AB1550 areas.*
- b. *Project Tracking Report*
- c. *Land Utilization Data*

The Blueprint Mapping Tool - Actionable items include:

- Integrate new datasets and develop new functionalities, including crowdsourcing, interconnection analysis, and co-development of fast charging.
- Conduct user acceptance tests and beta-tests with limited public users
- Recruit PG&E territory municipalities to building regional version of Blueprint Mapping Tool

Why in SF? San Francisco has a well-established relationship with Google. The collaboration that initiated in Phase I is relevant not only to getting installation projects up and running, but also to inform policy development around land use development and how spaces get used (commercial garages, gas stations, former brownfield sites). The Blueprint Mapping Tool will allow utility partners, municipal planners, EV charging providers, and even the citizen, to site EV charging stations by simply entering an address or uploading a photo of the desired location to initiate crowdsourcing. With this feature, any user could suggest a location in their neighborhood, and comment or vote based on their interest in charging at that location. Presently, public requests for preferred charging infrastructure come to local governments and EV charging providers only through occasional calls or at community forums. A crowdsourcing feature will give EV charging providers, parking lot operators, businesses, and local governments, critical information on where there is need within the City.

Currently, EV charging providers canvass businesses to identify potential site hosts. The Blueprint Mapping Tool will cut down on this labor-intensive search by serving as a “matchmaker”, enabling a direct connection between interested site-hosts and EV charging providers. The Blueprint Mapping Tool will allow commercial property and business owners to express their interest in hosting EV charging as an amenity to their businesses or to generate revenue from underused parking spaces. They can upload photos and/or provide their geographic locations (address, intersection, etc.) directly to EV charging providers. The EV charging providers will receive the request, use the Blueprint Mapping Tool to conduct a preliminary feasibility study, and conduct follow-up.

Additionally, several recent landmark announcements have changed the transportation electrification landscape including CARB’s Advanced Clean Truck Rule to accelerate a large-scale transition of zero-emission medium-and heavy-duty (MD/HD) vehicles. Both Uber and Lyft have committed to going 100% electric by 2030. These announcements signal the imminent arrival of mainstream electrified ride-hailing vehicles and MD/HD trucks on city streets. Municipalities can no longer only consider planning for light-duty, private vehicles but must take into account how this diverse mix of EVs will charge over the course of a day. “Co-development”— the enablement of a single location to simultaneously serve multiple vehicle types — will be imperative to the planning process.

The Blueprint Mapping Tool supports co-development by enabling accurate interconnection analysis to precisely calculate the load impacts of a site enabled for multiple charging uses. The inclusion of grid and real estate data allows EV charging providers to quickly identify and prioritize areas of the City with excess power capacity to fast-charge MD/HD trucks and TNC fleets. The Tool also indicates socio-economic data to identify future vehicle-purchasing trends. It can be used to identify low-income neighborhoods where residents may need additional engagement to understand that EVs are accessible for them, as well as neighborhoods where residents may already be on a trajectory for adopting EVs. The Blueprint Mapping Tool could even identify traffic flow to improve driver convenience. For instance, if there is a 4-way

intersection, the preferred fast-charging site is the corner on the right after the light to avoid left-hand turns, and to allow drivers to get past the light before charging.

As municipalities consider future transportation options and developing EV charging infrastructure, they must develop a thorough understanding of impacts to the grid of future EV adoption levels and charging patterns. With newly available ICA grid map data, the Blueprint Mapping Tool will provide grid transparency, with efficient visual and graphical displays, to quickly assess the feasibility of deploying EV charging stations without increasing soft costs and engineering time. This information is crucial to facilitate efficient charging station placement and related capital investments. Currently, delays in the grid interconnections can add more than a year to a project schedule and thousands of dollars in soft costs. The Blueprint Mapping Tool will significantly reduce the time required of EV infrastructure stakeholders, municipal planners, and other users (researchers, industry advocates, etc.) and reduce or even eliminate the upfront soft cost associated with grid interconnection requests.

The Blueprint Mapping Tool has the potential to provide real-time data that will allow for sophisticated policy intervention, such as targeting public programs and long-term asset planning. It will enable municipal planners and policymakers to initiate planning for charger network development in the same way that they currently plan for land use and transportation in their General Plans. By removing the current bottleneck in interconnection request processing, a problem that will only get worse as EV adoption grows, stakeholders will be better equipped to meet their aggressive electrification and carbon emissions reduction goals. As a founding member of the Bay Area EV Coordinating Council, San Francisco is ideally positioned to disseminate the Blueprint Mapping Tool to municipalities throughout the State. Google will partner with the team to disseminate to other state municipalities.

Performance measures linked to Project Objectives D, F and G include:

- d. Google/SF Environment Check-ins (biweekly)*
- e. Project Management Plan w/ Mile Markers*
- f. Education and Outreach Plan to select California/U.S. Cities*
- g. Blueprint Mapping Tool has been tested and validated.*

E-Bike pilot project - Actionable items include:

- Implement program to deliver e-bikes, safety equipment, training, and support to pilot participants.
- Implement data collection program using an app-based program that collects time and location data (daily total vehicle miles traveled (VMT), daily routes to identify high-traffic corridors, times when no freight deliveries) for two cohorts: 50% e-bike deliveries and 50% vehicle deliveries.
- Conduct surveys with study participants to understand gross earnings and work hours, dollars earned per delivery, number of deliveries made per shift, delivery distance, dwell time, and times when no deliveries are made.
- Analyze and synthesize results and recommendations for scaling up future incentive programs.

Why in SF? San Francisco is a pioneer in shared mobility services, such as car share, TNCs, bike share, and scooters. For years, there have been major concerns with the increase in daily ride-share and delivery trips in the City. This concern has been exacerbated by the COVID-19 pandemic, as food deliveries have increased dramatically via app-based programs. According to research firm, Second Measure, national spending on meal delivery services was up 158% year-over-year in August 2020. Food delivery has become a lifeline for restaurants and critical for residents. A prolonged pandemic and shifting consumer habits indicate that app-based delivery services will continue to grow. At the same time, it is imperative to reduce the number of vehicle trips and shift to sustainable modes. It is the responsibility of local governments to understand this phenomenon and develop solutions that ensure positive outcomes for residents, restaurants,

workers, and the environment, but there is limited data to support these efforts. Fortunately, the first-of-its-kind study commissioned by LAFCo, and conducted by UC Santa Cruz, finds that the industry is primed for mode shifting and electrification.

Performance measures linked to Project Objective E include:

- h. Recruit two cohorts of program participants: 50% e-bike and 50% vehicle drivers.*
- i. Provide e-bikes, orientation, safety training and equipment, and test period for participants.*
- j. Launch data collection period; conduct surveys.*
- k. Complete final project report and case study.*

6. How the proposed project(s) will be transformative to addressing ZEV adoption barriers.

Many studies substantiate that a lack of public charging is a primary barrier to EV-adoption. With nearly ninety petroleum stations in San Francisco, petroleum-powered vehicles have myriad convenient fueling options. These vehicles embark on trips outside of the Bay Area and beyond, knowing that fueling infrastructure is available and accessible. As noted, 2/3 of San Francisco residents live in MUDs and the lack of public fast charging is more acute. For electricity to become the dominant fuel for motor vehicles by 2030, EV charging stations must be the new petroleum stations of the future.

EV charging plazas will be transformative to addressing ZEV adoption barriers because it makes operating an EV convenient and secure, especially for MUD residents. From the Blueprint Mapping Tool to the EV-Ombudsperson, the increase in visible charging sites will change the mindset of the everyday drivers. Their presence signals that access to electricity as a source of vehicle fuel is equivalent to petroleum, and the security of a full tank of gas is just a few miles away for those without home or workplace charging.

Separately, e-bikes' innovations and practicality are accelerating their adoption across the world. Yet, their potential for use in local, app-based deliveries remains unknown. The proposed mode-shift pilot will gather operational and survey data and analyze the applicability of e-bikes in this growing sector. The pilot will assess motivations and incentives for app-based delivery workers to shift from vehicles to e-bikes. It will uncover an entirely new market-sector for e-bikes, which can improve worker satisfaction and earnings while reducing automobile VMT and emissions. Data from this pilot program can also help make the case to public agencies and CCAs to include e-bikes in incentive programs such as Clean Vehicle Rebate Program.

7. Describe how the proposed project(s) may be replicated in other regions and/or communities.

The Blueprint Mapping Tool and ombudsperson will provide the technology and approach for other regions and/or communities to build public EV charging plazas, as well as identify under-used sites for single chargers. The manner of replication will be similar to that used to deploy Google's EIE GHG accounting and rooftop solar potential. Once the San Francisco version of the Blueprint Mapping Tool, with its additional datasets and features, moves into beta in EIE Labs, other jurisdictions and municipalities can sign up to develop a similar mapping tool.

In addition, as California continues to invest in transit-oriented development, models for streamlining the installation of charging plazas to serve these developments will be vital. Replicating the ombudsperson function is replicable to that end, as well as supporting general EV adoption and infrastructure creation.

The team will update the Phase I "Playbook" with Root Cause Analysis, detailing the challenges and solutions implemented to inform other jurisdictions. The update will also include findings to inform new sites for EV charging plazas. The methodology will assist other regions and communities in considering

land-use and environmental policies. Notably, other cities with similar density and land-use limitations can consider taking a similar approach to finding new sites and site-hosts.

The e-bike pilot will provide much needed data and best practice recommendations to jurisdictional authorities and CCAs to develop their own mode shift, emissions reduction, and load building programs that are necessary to meeting California climate goals. Finally, this pilot has the potential to increase worker earnings, which is particularly important as data shows these are primarily low-income wage earners. The project may increase worker satisfaction, and safety in communities with high congestion and pedestrian safety concerns.

8. Project schedule.

| Component | Activity Description | Milestone | Duration | Lead | Support |
|----------------------------------|---|--|----------|--------|-------------------------|
| Task 2 Blueprint Mapping Tool | Project initiation | Project kick-off meeting | M 1 | SFE | Google |
| | Add new datasets; develop and establish new functionalities | Identify datasets, compile and integrate | M 2 | SFE | Google |
| | Establish open data-sourcing model to bridge connection with EV charging providers | Finalize Agreements | M 5 | Google | SFE |
| | Move Blueprint Mapping Tool from prototype to Google Platform and Tools | Announcement on EIE Labs site | M 9 | Google | |
| | Scale Blueprint Mapping Tool to select California/U.S. cities | Mass-market Adoption of the Blueprint Mapping Tool | M 12 | SFE | Google |
| Task 3 Ombuds-person | Create job description, interview, hire, and onboard new staff member | Staff hired | M 1 – 3 | SFE | |
| | Create a baseline summary report of EV charging installation challenges | Challenges Summary Report | M 4 | SFE | DBI/CPC /EVSE/Utilities |
| | Establish monthly check-ins with utility providers, agencies, and EV charging providers | Root Cause Analysis Report | M 6 | SFE | DBI/DPW /EVSE/Utilities |
| | Develop a system to track public EV charging installation projects | Quarterly Project Tracking Report | M 7 - 8 | SFE | DBI/EVSE |
| | Apply new processes to Charging Plaza Expansion Task; iterate and improve | One-stop-shop website | M 9 - 24 | SFE | EVSE |
| Task 4 | Conduct stakeholder engagement prior to project | 3 community meetings | M 1 - 6 | SFE | - |

| Component | Activity Description | Milestone | Duration | Lead | Support |
|---|---|--|----------|------|------------------|
| EV Charging Plaza Expansion | development and incorporate feedback into planning | | | | |
| | Use processes and products from Tasks 2 and 3 to expedite permitting, zoning, interconnection processes | Sites identified and developed | M 6 - 36 | SFE | EVSE |
| Task 5 E-bike Pilot for App-Based Delivery Workers | Finalize pilot design and implementation plan with key partners | Final Implementation Plan | M 1-3 | SFE | GRID, DSC, LAFCo |
| | Conduct project initiation meeting with project partners, app-based delivery companies, and other relevant stakeholders | Agenda and list of participants | M 4 | SFE | GRID, DSC, LAFCo |
| | Recruit participants | Outreach list from LAFCo study | M 4 | SFE | DSC, GRID, LAFCo |
| | Launch "Cohort #1 (15 participants) and begin data collection period | Kick off meeting for participants Safety Training | M 5 | SFE | GRID, DSC, LAFCo |
| | Launch Cohort #2 (15 participants) and begin data collection period | Kick off meeting for participants Safety Training | M 8 | SFE | GRID, DSC, LAFCo |
| | Administer participant surveys at 6 and 12 months milestones | Survey instruments | M 10-21 | SFE | GRID, LAFCo |
| | Transfer e-bike titles of ownership to participants | Pilot completed | M 17-21 | SFE | GRID |
| Task 6 Outreach/Dissemination | Complete final project report and case study: <ul style="list-style-type: none"> review, analyze, synthesize study results identify challenges and best practices recommend incentive levels for future e-bike programs | Final Report and Case Study | M 21-24 | SFE | GRID, DSC, LAFCo |
| | <ul style="list-style-type: none"> Update Playbook Organize webinars to share case studies and results | Present to 3 audiences | M 24-36 | SFE | SFCCC, |

9. Project partners, relationships and obligations

SF Environment is the project lead. Partners include the SFPUC, the SFMTA, EVgo, Google, LAFCo, Driver's Seat Cooperative, SF Bicycle Coalition, and GRID Alternatives. Support is also provided by other charging providers, SF Planning, the Mayor's Office, the SF Dept of Building Inspection, the Golden Gate Restaurant Association, Postmates, DoorDash, and UberEats.

| Organization | Role | Relationship/Match |
|--------------------------------|--|--|
| Driver's Seat Cooperative | Recruit program participants; develop, distribute, collect, and analyze operating data. | Subcontractor to the project. |
| EVgo | EV Charging Plaza projects development, construction, commissioning and operation. Provide consultation and support to operationalize the EV-ombudsperson. | Subcontractor to project and also committed to \$634,390 match. |
| Google | Develop the Mapping Tool, co-lead engagement with regional partners, and integrate resident and commercial feedback into new iterations. Work with San Francisco to work out any issues with the tool and support dissemination | Committed to continuing public/private partnership with San Francisco. Committed to \$150,000 match. |
| GRID Alternatives | E-bike Pilot Implementer: procurement and management of bikes and equipment, case management and worker support. | Subcontractor to the project. Long-term relationship to the City and SF Environment. |
| LAFCo | Consultation, coordination with UC Santa Cruz, update Commission and Board of Supervisors, support program design technical assistance and stakeholder coordination. | Providing in-kind staff time match of \$13,500. |
| SF Bike Coalition | Safety training for e-bike pilot participants (in class and on e-bike). | Subcontractor to the project. Existing long-term relationship with the City. |
| SF Dept of Building Inspection | Operationalize the ombudsperson. | Committed partner. Long-term relationship in streamlining many permitting issues including for solar installations and green building/LEED certification. In-kind staff. |
| SF Planning Department | Operationalize the EV-ombudsperson. | Committed partner. Long-term relationship in code and policy development. In-kind staff. |
| SFMTA | Provide technical assistance and guidance on e-bike pilot design and implementation. Share research on transportation behavior changes. | Committed partner. Long-term collaborator to SF Environment on accelerating EV adoption. In-kind staff. |
| SFPUC | Provide consultation and support to operationalize the ombudsperson. Provide engineering support for construction of public charging plaza. Ensure that SFPUC's e-bike customer program aligns with and/or is complimentary to this project's e-bike pilot. | Committed partner. Long-term relationship grid-related technical assistance. In-kind staff support equivalent to \$125,312. |

10. Expected and new information

The City's Phase II will prove that a combination of technology enhancement, streamlined process, and comprehensive stakeholder engagement. Together, they will result in measurable advancement and acceleration of transportation electrification. It will enable the voice of the everyday citizen to guide future EV charging locations. Through a series of root cause analysis, Phase II will generate a comprehensive list of institutional barriers, and associated mitigation strategies. These outcomes will inform the creation, and operation, of a system that consolidates several different municipal processes to accelerate the development of charging infrastructure projects. The march to fueling parity will enable an acceleration in EV purchases in the City—particularly in neighborhoods where residents have limited access to mass transit, as well as limited funding for vehicle purchases. At the same time, this also readies the City for the 2030 EV goal. Overall, the project seeks to investigate:

Blueprint Mapping Tool

- Do siting recommendations from the Blueprint Mapping Tool ultimately result in more charging infrastructure in SF?
- Does the analysis of under-utilized lots and garages lead to new policy pathways for charging requirements (i.e. gas stations)?
- Does it result in civic engagement from residents on charger placement preferences?
- Is the Blueprint Mapping Tool useful as a siting tool for commercial partners, like EV charging providers, TNC companies, and fleet operators?
- Do interconnection features produce accurate grid analyses that result in siting time savings?

Ombudsperson

- Does expedited permitting and clear processes result in faster installation times, reduced costs, and ultimately more installations in SF?
- Do more efficient processes and increased coordination among City departments result in reduced staff time and resources processing applications?
- Does a single-point-of-contact and increased process transparency simplify communication for both City department staff and station developers?

EV Charging Plaza Expansion

- How many EVs are served per charger?
- What are the charging utilization considerations? (for example, average length of a charging session, patterns of time of day when charging sessions are initiated. These considerations help us understand how these charging plazas are being used: as destination charging, as workplace charging alternatives, or as home charging alternatives)
- What are the grid impacts of fast charging plazas?
- What pricing schemes are most effective?
- What are the impacts on surrounding business? Does charging, as an amenity, lead to increase in sales, customer-traffic, and even future developments?
- What are the impacts on the surrounding community?
- Does the establishment of a charging plaza increase purchase of EVs in DACs?
- Which user segments are the most frequent users of the charging plaza: residents who live in the neighborhoods surrounding the plaza, visitor to San Francisco, or other San Francisco residents?
- Besides maintenance and/or software updates, when a charger goes off-line, what are the causes and how long does it take to repair?

E-bike Pilot for App-Based Delivery Workers - New information will not only inform future e-bike programs, but also last-mile delivery models. This pilot unifies the intersectionality between mode-shift and transportation electrification, and seeks to investigate the following:

- How does scaling the pilot contribute to San Francisco’s Transit First and sustainable trips goals?
- Do e-bike deliveries increase wages for app-based delivery workers as compared to vehicle deliveries?
- Can e-bike deliveries significantly reduce GHG, VMT, and even vehicle congestion?
- Can e-bike deliveries improve delivery times, number of deliveries made, and worker safety?
- Can e-bikes create new careers and opportunities? There are several community-based organizations in San Francisco providing workforce and youth development opportunities in bike repair. The project team will engage them to discuss the potential for integrating e-bike mechanic training.
- Do e-bike deliveries reduce demand on the curb, decrease double-parking, improve bicycle safety?
- Is the data gathered useful in planning future bicycle safety protocol and traffic-safety management?
- Beyond e-bike procurement incentives, what other incentive mechanisms would incentivize livery and cargo drivers to switch from cars to e-bikes?
- Does providing bike safety training reduce minor accidents and increase driver (sense of) safety?
- Do delivery workers report feeling safer while biking? Or a more concrete metric around number of minor accidents?
- If not, what are the recommendations to improve safety?

11. Method to Track activities and evaluate factors influencing outcomes.

SF Environment will track and evaluate each task based on the timeline indicated in the Scope of Work. It will assess activities by collecting and analyzing information about the task or pilot program while it is undertaken. Using the information, SF Environment staff will conduct ongoing internal evaluations and provide assessment of the activities, tasks and pilot program outcomes to inform course corrections.

For the tracking process, SF Environment will:

- reassess key performance indicators (as described in the Scope of Work) and conduct any necessary revisions in order to focus on key issues, driving forces, and questions.
- identify who needs to be involved, identify the information critical to informing key performance indicators and how to collect them and by when.

All critical information will be stored in the SF Environment’s existing database, modified specifically for Phase II activities. Information will be separated into categories: quantitative, qualitative and general information and a different approach for tracking each of these will be taken. The process will include regular evaluation for SF Environment, stakeholders, and the CEC to make course corrections to influence outcomes.

B. Team Qualifications and Experience

1. Key personnel and responsibility

| Key Personnel | Role | Qualifications |
|--|--|--|
| <i>Lowell Chu</i> <i>SF Environment,</i> <i>Energy Program</i> <i>Manager</i> | <i>Project Manager: Interact with</i> <i>CAM, ensure contract</i> <i>compliance, and monitor budget</i> <i>and lead overall administration of</i> <i>grant</i> | <i>17 years experience in mechanical</i> <i>and software engineering, energy</i> <i>efficiency, and clean transportation;</i> <i>LEED AP, CEM, LC. BS in</i> <i>Mechanical Engineering</i> |
| Suzanne Loosen, | Manage e-bike pilot project, Coordinate outreach and education | 10 years experience in EVs and alt fuels, including managing or co- |

| | | |
|--|--|---|
| SF Environment, Clean Transportation Specialist | with Ombudsperson, Coordinate dissemination through CCC | managing six CEC grants and two DOE grants. |
| Tessa Sanchez, SF Environment, Clean Transportation Specialist | Lead tracking and monitoring of Blueprint Mapping Tool enhancement, coordinate with EV Ombudsperson, dissemination, reporting, coordinate update of Playbook | 8 years experience in technology, energy efficiency, and clean transportation. BA/Env Policy |
| Andrew Bevington, SFPUC, Utility Analyst | Tech support for e-bike pilot | 10 years experience in sustainability and energy. BA/poly sci, MS/sustainability |
| Sandy Carter, SFPUC, Utility Analyst | General coordination on all aspects of project—grid, e-bikes, ombudsperson | 5 years experience in energy, conservation, and water issues, Extensive project management experience for non-profits and public agencies. MS/Env Sci |
| David Christopher, SFPUC Utility Specialist | Work with Google on Blueprint Mapping Tool and data integration | 8+ years of experience in economic and environmental consulting, litigation, and policy analysis. MPA, BS/Geo |
| Nicole Lombardo, Google, Business Development & Partnerships, Google - Environmental Insights, | Project Manager for enhancing Mapping Tool | 10 years experience in renewable energy and software technologies. BS/Marketing |
| Linda Khamoushian, GRID Alternatives, Director of Shared Mobility | Program Manager of e-bike pilot | 10 years experience in mobility and planning and community engagement BA/Poly, MS/Planning |
| Justin Dawe, Mobility Executive, GRID Alternatives | Procurement, management, storage, distribution of e-bikes and equipment. | Experienced at building high-performing organizations, leading complex partnership processes in the US/ internationally. BS/MS/Eng, MBA |
| Cynthia Ibarra, GRID Alternatives | Pilot and participant support | Provides support for clean mobility and solar programs. BS/Env Sci |
| Vanessa Morelan, GRID Alternatives | Pilot and participant support | Provides case management services in English and Spanish to Clean Cars for All program. BS/Env Policy |
| Matt Schumwinger | Manage e-bike program data analytics and reporting | 7 years experience providing data analytics solutions, graduate-level training in data mining and applications. BS/Ind Rel, Certificate/Data Mining |
| Jeremy Whaling, EVgo, EV Systems Engineer | Technical expert for charging plazas | 10 years experience mobility and EVs BS/EE |

| | | |
|--|---|--|
| Lars Peters, EVgoSr Director of Business Development | Primary point of contact for Phase II charging plazas, and project developer | 15 years of experience in Technology, Management Consulting, EV and alt fuels. MBA and MS/Economics |
| Paul Dinh, EVgo, Field Operations Manager | Manage and improve user experience at charging plazas | 18 years of renewable energy project management. BS/ME |
| Sami Ghantous, EVgo, Vice President, Engineering & Construction | Oversight of development of charging plaza in DAC. Manage relationships with site development, utilities, contractors, and project managers | 20 years experience in renewable energy and software technologies. BA/ME, MBA |
| Bryan Goebel, LAFCo | Provide technical assistance on program design, connect with key stakeholders and participants, and provide ongoing research. | Adviser to the SF Board of Supervisors and supervises labor research |
| Eliana Marcu-Tyler, SF Bike Coalition, Program Coordinator | Develop and implement e-bike safety training program | Program Management and implementation of bike safety programs. BA/Soc |
| Hays Witt, Co-Founder Driver's Seat Cooperative | Manage e-bike data collection program | 21 years of experience facilitating the direct engagement of low-wage workers in policy changes that raise industry standards. |
| TBD, SF Environment, EV Ombudsperson | Establish, operationalize and document EV permit streamlining processes, lead stakeholder coordination, develop and implement one-stop-shop website, primary point of contact for Phase II charging plazas. | Successful candidate will have a baccalaureate degree in public administration, business administration, environmental sciences, or a related field and 4 years experience in EVs and public policy. |

2. Qualifications and Relevance to Project.

San Francisco is among the leading cities nationally in providing publicly accessible charging stations and has one of the largest EV markets in the country.³ It established one of the first Clean Cities Coalitions in 1994, was a founding board member of Bay Area EV Coordinating Council, and is recognized globally as a leader in clean transportation initiatives.

San Francisco Department of the Environment – SF Environment will lead the Team and has the ultimate responsibility for implementing the project. Created by voter mandate in 1996, it is responsible for tracking and meeting the City's GHG reduction goals, designing and implementing its advanced energy and green building policies, delivering energy efficiency programs, launching innovative financing solutions, and advancing the use of distributed energy resources including solar, storage, and clean transportation. Since 2015, SF Environment has co-lead the City's EV Working Group (EVWG) representing thirteen City departments, workforce development and community organizations, industry partners, and state and regional government agencies. The EVWG has identified actions and policies to accelerate EV adoption and ensure that EVs are available and affordable to all residents. SF

³ <https://theicct.org/publications/surge-EVs-US-cities-2019>

Environment led the process of creating Phase I and was instrumental in crafting two pioneering ordinances. The 2017 Municipal Fleet ZEV Ordinance requires all light-duty passenger vehicles in the City's fleet to be ZEVs by 2022. The 2017 EV Readiness Ordinance (in collaboration with Oakland and Fremont, through CEC funding) mandates sufficient electrical infrastructure in new residential, commercial, and municipal buildings, and major renovations.⁴ From co-leading the EVWG to leading the City's Green Building Task Force, SF Environment has ample experience creating and implementing a range of policies and direct programs. It spearheads the City's EV initiatives and has demonstrated experience in developing dynamic plans to accelerate EV-adoption and has facilitated a range of vehicle electrification projects.

San Francisco Public Utilities Commission (SFPUC) – The SFPUC is the City's primary electricity provider and operates two distinct services: 1) Hetch Hetchy Power, a publicly owned utility that has been providing GHG-free hydroelectric power to municipal operations, the school district, and select businesses, residents, and wholesale customers for over 100 years; and, 2) CleanPowerSF, the City's CCA, which has been providing residents and businesses clean energy at competitive rates since 2016 and currently serves over 375,000 customers. Through these two programs, SFPUC provides more than 70% of the overall electricity use in San Francisco.

EVgo – Founded in 2010, EVgo is leading the way on transportation electrification. With almost 2000 Level 2 and fast chargers in 66 metropolitan areas across 34 states, EVgo has the largest public fast EV charging network in the US. EVgo partners with automakers, fleets and rideshare operators, retail hosts like hotels, shopping centers, gas stations, and parking lot operators, and other stakeholders to make it easier for all Americans to take advantage of the benefits of driving an EV. Most recently EVgo has committed to working with General Motors to triple the size of the nation's largest public fast charging network over the next five years.

Google – The Environmental Insights Explorer (EIE), an online tool created by Google in collaboration with the Global Covenant of Mayors for Climate & Energy, is designed to help level the playing field for smaller cities, amplify the emissions insights of big cities, and ultimately accelerate the transition to a low-carbon future. Developed by the Google Earth Outreach team, EIE analyzes Google Maps data to provide rich insights into our surroundings. EIE pairs this information with third-party data and standard greenhouse gas (GHG) emissions factors, deriving carbon estimates and reduction potential for cities around the world. With EIE, data sets that once required on-site measurements can now be assessed virtually, reducing the barriers that prevent cities from taking action.

GRID Alternatives Bay Area – GRID Alternatives is the national leader in making renewable energy technologies accessible to low-income families and communities of color. GRID Alternatives Bay Area has a 17-year track record of providing access to clean energy and clean mobility solutions to environmental justice communities in San Francisco and throughout the Bay Area, with measurable results. GRID Alternatives Bay Area has an established track record of providing clean mobility program and case management support for local income-qualified households. For example, in 2018 GRID Bay Area was selected by Bay Area Air Quality Management District to serve as the exclusive case manager for their Clean Cars 4 All "scrap and replace" vehicle replacement program throughout the San Francisco Bay Area. GRID Alternatives' multilingual, multicultural community outreach staff work directly with qualifying program participants to access up to \$9,500 in funding to replace their older polluting vehicle with a hybrid vehicle, plug-in hybrid vehicle, battery EV, fuel cell vehicle, e-bike, or public transit voucher. GRID Alternatives' case managers support low-income consumers from diverse backgrounds through all aspects of the client journey, including application paperwork, income verification, vehicle scrapping, vehicle purchasing, and access to charging infrastructure.

⁴ <https://sfbos.org/sites/default/files/o0092-17.pdf>

SF Municipal Transportation Agency (SFMTA) – The SFMTA oversees the Municipal Railway (Muni) public transit, as well as bicycling, paratransit, parking, traffic, walking, and taxis. Established by voter mandate in 1999, the SFMTA aggregated multiple San Francisco city agencies, including the Department of Parking and Traffic, Muni, and since 2007, the Taxi Commission. It is one of the first municipal transit agencies in the US to outline goals and objectives for “Transit Equity” to ensure that all San Franciscan’s have the resources to traverse the City. Its staff includes subject-matter experts in shared mobility, bike safety, slow streets, and curb management.

3. Meeting deadlines, milestones and controlling costs.

Project team leads have extensive experience managing projects and budgets of this size and scope. They have successfully managed numerous projects of similar size and scope, including several for the CEC (see attachment 10). The bulk of the expenditures for each component are known quantities, so there should be no unanticipated costs.

4. Team function and partner interactions

Upon project initiation, the team will enter into a standard project charter describing roles, responsibilities, timelines and agreements. The Project Manager will flesh of the Scope of Work even further using best practices for project management, including and extensive communications and risk management plans. The team will have clearly articulated roles and communications processes and mechanisms for solving any problems that may arise.

C. Project Budget

1. Project budget, scope of work and overhead costs.

For Phase II Community EV Implementation, the team will leverage its ongoing relationships with city departments, which, even if they have not identified a specific match for this project, will be contributing significant staff time. SF Environment will use its position as the SFCCC representative to deepen the team’s ability to provide outreach and dissemination about the project. It will access GreenStacks, its formal decade-long collaboration with the SF Public Library System to engage the public on EVs generally, while also using this relationship to engage residents on the Blueprint Mapping Tool. It has already performed much of the upfront research for various components of the project. The City’s overhead and admin are in keeping with similar projects.

2. Maximizing Benefit-cost score of the proposed project

For Phase II Community EV Implementation, SF Environment used the Transportation Fund for Clean Air cost-effectiveness calculator to determine the benefit-cost score. The assumptions are that enhancing the Blueprint Mapping Tool (Task 2) and recruiting and hiring the EV-Ombudsperson (Task 3) could directly contribute to a 25% increase in the number of publicly-accessible Level 2 chargers installed, and a 100% increase in the number of public-accessible DCFC installed. In total, these could contribute to the installation of 200 publicly-accessible Level 2 chargers, and 54 DCFCs. Additionally, building a new charging plaza in or near a DAC (Task 4) adds eight more DCFCs for a total of 62 DCFCs to Phase II.

Using the following calculation and assumptions for annual DCFC power draw: $.2 * 365 * 24 * 80 * 62 = 8,689,920\text{-kWh}$ (62 chargers at 20% utilization average charge rate of 80 kW). Each kWh should power an EV over three miles for a total of 3,363,840 electric miles annually. Further, the following calculation and assumptions for annual Level 2 power-draw: $.2 * 365 * 24 * .24 * 200 = 84,096\text{-kWh}$ (200 chargers at the same 20% utilization average charge rate of 0.240-kW). Using these assumptions and including admin, the cost effectiveness of combined Tasks 1, 2, 3, and 4 are:

| Cost-Effectiveness | Annual | Lifetime | Units |
|--|------------|------------------|----------------------|
| 1. ROG Emissions Reduced | 4.3648 | 17.4590 | Tons |
| 2. NOx Emissions Reduced | 3.3878 | 13.5511 | Tons |
| 3. PM Emissions Reduced | 0.0651 | 0.2606 | Tons |
| 4. Weighted PM Emissions Reduced | 1.3030 | 5.2120 | Weighted Tons |
| 5. CO2 Emissions Reduced | 9,930.0901 | 39,720.3604 | Tons |
| 6. Total Criterial Emission Reductions | 7.8177 | 31.2707 | Tons |
| 7. TFCA Unweighted Cost Effectiveness | | \$ 54,340 | /ton |
| 8. TFCA Weighted Cost Effectiveness | | \$ 46,912 | /Weighted Ton |

The e-bike pilot proposes to shift up to 35 app-based delivery persons from automobiles to e-bikes. Using the US EPA GHG Equivalencies Calculator, the mode-shift will remove 162 tons of carbon annually, resulting in 243 tons of carbon abated over the course of the pilot project (18 months). The cost-effectiveness is \$2,378.50 per ton of carbon reduced. In 2016, CleanPowerSF's Green Program generated 84.52 g/kWh of GHG emissions. Using this value we can estimate that the GHG emissions generated by charging an e-bike are approximately 2.60 g/mi, compared to an average of 404 g/mi for a standard passenger vehicle, according to the EPA. If 30 participants switch to an e-bike and deliver full-time for a year, they will generate a total of 2.46 metric tons of CO2 instead of 383.44 metric tons generated by 30 passenger vehicles delivering the same number of hours, an abatement of 380.97 tons.

3. Discuss how proposed expenditures are reasonable and necessary for the proposed project.

Project costs are based on San Francisco and its partners experience operating programs of similar size and scope. Confirmed match is approximately 30% of total project. Informal commitments of staff time constitute and even greater match, making the project cost effective for the CEC. In addition, the team has performed extensive upfront planning and community outreach, which reduces project soft costs.

4. Provide a description of the type and source of match – cash and in-kind.

| Organization | Match | Source of Funds |
|--|-------------------|-------------------------|
| EVgo- capital for EV charging plazas | \$634,390/in-kind | EVgo |
| Google Blueprint Mapping Tool | \$150,000/in-kind | Google |
| SF Public Utilities Commission (SFPUC) | \$125,312/in-kind | SFPUC |
| SF Clean Cities Coalition via SF Environment | \$90,000/in-kind | US Department of Energy |
| SF Local Agency Formation Commission (LAFCo) | \$13,500/in-kind | LAFCo |

5. Tracking expenditures (including administration and overhead expenditures)

The City requires stringent and transparent fiscal management systems. SF Environment abides by these requirements and uses standard and accepted accounting practices. It has successfully managed similar CEC and DOE-funded projects.

6. Explain how the project will demonstrably maximize electric vehicle deployments.

This project will demonstrably maximize EV deployments by successfully enhancing advanced mapping technology and removing institutional barriers to siting EV charging assets. Together, they result in more convenient and ubiquitous EV charging. Also, the project also aims to uncover ways to effectuate mode-shift from cars and light-duty trucks to e-bikes to reduce charging demands and thus the number of chargers required.

Enhancement to the Blueprint Mapping Tool, ombudsperson and charging plazas dramatically increases charging infrastructure in the City leading to increase EV purchases. First, the integration of the ICA map into the Blueprint Mapping Tool simplifies initial feasibility assessment. Allowing crowd-sourcing of EV charging locations democratizes the process of charger-siting, making finding site-hosts easier and projecting utilization rates more accurate. Second, by establishing an ombudsperson as a single point-of-contact for all EV-related topics in the City, EV charging providers have a convenient and accessible liaison to facilitate permit and planning streamlining. Combining enhancements, ombudsperson with the three charging plazas, and the decreasing costs of buying and owning an EV, this project will maximize EV deployments

Mode-shifting app-based delivery workers to e-bikes also contribute to maximizing EV deployments. This is because as more workers switch from cars to e-bikes, the demand on charging, from grid to the number of chargers, also decrease. Therefore, the City needs less charging to meet the future EV charging needs.

7. Best value in terms of economic, environmental and technical performance.

This project's combination of technology and human interventions represents best value in terms of economics to accelerate EV adoption and climate initiatives. Prior to launching Phase 2, the team and stakeholders met multiple times to assess which parts of the EV Community Blueprint would result in the most "bang of for the buck". The technologies, enhancements to the Blueprint Mapping Tool, EV-chargers and e-bikes deployment, are built upon existing technology—much of which is being provided as a match. Moreover, equipment prices for EV chargers and e-bikes have dropped dramatically as material and battery technologies have improved. City departments such as SFMTA, SFPUC, DBI, and Planning are enthusiastic and ready to trouble-shoot EV permitting and construction issues. The team has conducted robust research and market characterization studies with ICCT, Harvard, LAFCo, and UC Santa Cruz. It has gathered feedback from stakeholder engagement activities, such as CCC's EV101 workshops and Listening Sessions. In sum, vast pre-work was completed in anticipation of Phase II.

This combination also represents best value in terms of environmental and technical performance. The *direct* environmental benefits, expressed in tons of emissions removed, are described in the cost-effectiveness Section C.2. The *indirect* environmental benefits, from the cleaner air, is reduced exposure to asthma causing pollutants, particularly to children and your adults living in the City's DACs. EVs are also quieter, reducing noise pollutions, and the siting EV charging on underutilized or vacant lots could improve community environment. As for performance, this project represents best value because it brings together a group of experienced, passionate, and capable individuals with excellent performance records. This outstanding team composition will result in a fully realized project.

D. Project Benefits

1. Benefits and Impact of each project included in the application to the selected region.

For more than 20 years, SF Environment's Environmental Justice program has served neighborhoods impacted by environmental stressors such as toxic dumping, air pollution, food insecurity, Superfund sites and brownfields. They are all low-income and many have been designed by CalEnviroScreen as disadvantaged communities. As a trusted institution in these neighborhoods, SF Environment has robust relationships and has worked with well over a hundred CBOs through its EJ, toxics reduction, urban greening, and energy efficiency programs. It is also involved in resiliency planning in the City's DACs.

Among its many collaborations, it is currently working with GRID Alternatives on its "Clean Cars 4 All" and "Clean Vehicle Assistance Program" that provides access to EVs for underserved populations. In parallel with creating an EV charging plaza to serve these communities, it is actively involved in helping residents understand the availability and benefits of having an EV. As noted, one of the charging plazas will be installed in or adjacent to San Francisco's Bayview Hunters Point (DAC). Access to transit was identified by the community as a huge need in the 2018 Bayview Community Based Transportation Plan. Despite a comparatively high number of transit lines, the layout and geographical constraints of Bayview Hunters Point limit the utility and effectiveness of fixed-route transit. This is reflected in Bayview Hunters Point having a far higher single-occupancy-vehicle commute mode than San Francisco as a whole (49% vs 35%) and a lower transit commute mode (34% vs 28%).

In addition, because many residents are low-wage workers, they rely on older, more polluting vehicles. Promoting EVs, in conjunction with developing the charging plaza promises huge community benefits. Low-wage workers that were once profoundly impacted by the expense of car repairs, or even had barriers to employment due to transportation challenges will benefit from access to vehicles that have lower operational costs. The benefit of having these additional funds to spend in the neighborhood may seem small, but over the long run are the kinds of things that strengthen families and communities.

2. Metrics and Methods for verification of benefits.

For the Blueprint Mapping Tool enhancements, ombudsperson and charging plaza metrics, SF Environment will use are the number of Level 2 and DCFC installed in DACs, the average reduction in time and cost of those charging installations, and the increase in the number of EVs registered in SF, particularly in those communities, and the resultant reduction in GHG emissions. Furthermore, SF Environment and EVgo will gather anonymous charging data from each charged vehicle served by the DAC plaza to inform future charging investments in nearby or adjacent neighborhoods. The methods SF Environment will use to verify benefits include: 1) requesting DMV data semi-annually to update the of EVs registered in SF, particularly in the DACs, 2) calculate resultant GHG reductions, 3) conduct stakeholder engagement, "Listening Sessions" with DAC residents who have purchased EVs to verify the EV benefits.

3. Support of state goals to reduce GHG and to increase ZEV adoption.

San Francisco's transportation electrification goals dovetail with California's goals. The City is committed to a range of options to meet these goals. Congestion management and mode shift are both critical, as replacing petroleum-fueled vehicles one-to-one with ZEVs will not go far enough to achieving emissions reduction goals. As a leader in active transportation, San Francisco must shift about 25% of vehicle trips to sustainable modes such as walking, biking, and public transportation to meet its share of the State's emission reduction goals. E-bikes are an important component to mode shift but are not readily available to lower income workers. By documenting their applicability to local deliveries and developing best practices for incentive programs, San Francisco will help other municipalities as they consider how to achieve their climate goals, while ensuring jobs and an equitable distribution of benefits.

Several recent landmark announcements have changed the transportation electrification landscape. The Governor's recent announcement that all car sales must be electric by 2035 underscores the previous orders for 5 million EVs on the road by 2025 with 250,000 charging stations. Cities must accelerate siting and permitting of EV charging to meet these goals and support public adoption of ZEVs. The Clean Miles Standard requires TNCs to electrify fleets, and both Uber and Lyft have committed to going 100% electric by 2030. CARB's Advanced Clean Truck Rule to accelerate a large-scale transition of zero-emission MD/HD vehicles. These announcements signal the imminent arrival of mainstream electrified ride-hailing vehicles and MD/HD trucks on city streets. As noted, municipalities must consider "co-development" in which a single location serves multiple vehicle types. This project provides the base for this co-development in San Francisco, which will further accelerate EV adoption and ensure that infrastructure being created is dynamic and multi-purpose.

E. Local Government Participation

1. Describe how the community provided input and its needs were considered in the project design.

As noted in Section D.1, gaps in public transit has been identified by the Bayview Hunters Point community in multiple public processes including the most recent Bayview Community Based Transportation Plan. The SFMTA is committed to a more equitable system, by extending and adding bus routes in some areas, based on community planning. However, in other areas, it is more difficult to invest in this additional transit infrastructure. Residents of those areas are reliant on petroleum-fueled vehicles for transportation and are prime candidates to purchase EVs for getting to work, school and shopping.

In addition, as part of creating Phase I, EV Ready Community Blueprint, the team engaged several communities and that work is informing the implementation plan. One of the other communities engaged in providing input on project design were potential participants in the e-bike pilot. As noted, the LAFCo study was one of the largest of app-based delivery drivers. Both the drivers and businesses have been engaged on preliminary outline of that implementation component. Finally, many studies have shown that "range anxiety" continues to be a concern. By creating highly visible charging infrastructure, residents will begin to find that EVs are not the "risky" option of 10 years ago.

2) Participation from a wide variety of local city or county governments, etc.

As noted, project stakeholders include staff from many city and county departments that have been engaged in the process of accelerating EV adoption in San Francisco for more than a decade. In addition to local stakeholders, the City has been highly active at the regional and state level to coordinate with other counties.

3) Community engagements

It is understood that any crowdsourcing tool is only as good as the number of people contributing to it, therefore, the project team plans robust outreach to promote citizen use of the Blueprint Mapping Tool. Over the years SF Environment and CCC have worked with the SF Public Library System to provide EV 101 workshops and promote EVs to the 50% of San Franciscans with a library card. It will build on this relationship and promote both the Blueprint Mapping Tool and EVs in general through the SFPL Greenstacks website and webinars. As appropriate, and in accordance with COVID-19 safety requirements, it may also provide face-to-face engagement activities. In keeping with its equity goals, SF Environment has budgeted project funds to provide grants to local community-based organizations to provide community engagement as well, particularly for siting the DAC charging plaza. In closing, SF Environment will build on its ongoing relations from creating Phase I, EV Ready Community Blueprint, as well as its Environmental Justice work.



NOTICE OF PROPOSED AWARDS Grant Solicitation, GFO-19-603 EV Ready Communities Challenge Phase II- Implementation September 13, 2021

On August 12, 2020, the California Energy Commission (CEC) released a grant solicitation and application package entitled "Electric Vehicle Ready Communities Challenge Phase II – Blueprint Implementation Solicitation." This competitive grant solicitation was to fund implementation projects developed and identified in Phase I, Blueprint Development, of the Electric Vehicle (EV) Ready Communities Challenge.

The attached table "Revised Notice of Proposed Awards," identifies each applicant selected and recommended for funding by CEC staff and includes the amount of recommended funding and score.

The CEC added funds to this solicitation and is revising this NOPA as follows:

- 1) Award and fully fund 3 additional projects that passed solicitation scoring, but were not funded due to lack of available funds.
- 2) Add funds to 1 project that was partially awarded, but was not fully funded due to lack of available funds.
- 3) Revise Total Proposed Awards to include additional projects and Total Match Proposed amount which was incorrectly tabulated on previous NOPA.

The attached table, "Revised Notice of Proposed Awards," reflects these changes using strikethrough and bold/underline.

The proposed awards resulting from this solicitation are contingent upon approval at a publicly noticed CEC business meeting and execution of a grant agreement. The CEC reserves the right to negotiate with applicants to modify the project scope, the level of funding, or both. If the CEC is unable to successfully negotiate and execute a funding agreement with an applicant, the CEC, at its sole discretion, reserves the right to cancel the pending award and fund the next eligible application.

NOPA GFO-19-603
September 13, 2021
Page 2

This notice is being mailed to all parties who submitted an application to this solicitation and is also posted on the CEC's website at:
<http://www.energy.ca.gov/contracts/index.html>.

Questions and debriefing requests should be directed to:

Brad Worster, Commission Agreement Officer
California Energy Commission
715 P Street, MS-18
Sacramento, CA 95814
E-mail: Brad.Worster@energy.ca.gov

California Energy Commission
Clean Transportation Program
Solicitation GFO-19-603
EV Ready Communities Phase II - Blueprint Implementation
Revised Notice of Proposed Awards
September 13, 2021



Textual content contained within brackets are removed.

Group 1 -- Proposed Awards

| Proposal Number | Applicant | Project Title | Funds Requested | Proposed Award | Match Amount | Score | Recommendation |
|-----------------|--|---|---|---|---------------------------------------|-------|----------------|
| 3 | Contra Costa Transportation Authority | From Roadmap to Reality: Securing Contra Costa's Electric Mobility Future | \$2,467,067 | \$2,467,067 | \$842,684 | 84.6% | Awardee |
| 2 | <u>San Francisco Department of the Environment</u> | <u>Implementing San Francisco's Community EV Blueprint and Accelerating EV Adoption</u> | <u>\$2,392,473</u> | <u>\$2,392,473</u> | <u>\$1,013,198</u> | 82.8% | <u>Awardee</u> |
| Subtotal: | | | [\$2,467,067] \$4,859,540 | [\$2,467,067] \$4,859,540 | [\$842,684] \$1,855,882 | | |

Group 1 -- Passed But Not Funded

| Proposal Number | Applicant | Project Title | Funds Requested | Proposed Award | Match Amount | Score | Recommendation |
|-----------------|---|--|---|----------------|---|---------|----------------|
| {2} | {San Francisco Department of the Environment} | {Implementing San Francisco's Community EV Blueprint and Accelerating EV Adoption} | {\$2,392,473} | [\$0] | [\$1,013,198] | {82.8%} | {Finalist} |
| 6 | City of Santa Clara | City of Santa Clara Phase II EV Blueprint Implementation | \$2,500,000 | \$0 | \$2,305,676 | 78.5% | Finalist |
| Subtotal: | | | [\$7,284,946] \$2,500,000 | \$0 | [\$4,332,072] \$2,305,676 | | |

Group 2 -- Proposed Awards

| Proposal Number | Applicant | Project Title | Funds Requested | Proposed Award | Match Amount | Score | Recommendation |
|-----------------|------------------------------------|---|---|--|---|-------|----------------|
| 1 | City of Sacramento | Sacramento Electric Vehicle (EV) Blueprint Phase 2 - Implementation | \$1,825,418 | \$1,825,418 | \$1,082,957 | 84.0% | Awardee |
| 7 | <u>Kern Council of Governments</u> | <u>Kern County EV Charging Station Blueprint Implementation</u> | <u>\$2,500,000</u> | [\$707,515] <u>\$2,500,000</u> | <u>\$939,977</u> | 81.3% | <u>Awardee</u> |
| Subtotal: | | | [\$1,825,418] \$4,325,418 | [\$1,825,418] \$4,325,418 | [\$1,082,957] \$2,022,934 | | |

Group 3 -- Proposed Awards

| Proposal Number | Applicant | Project Title | Funds Requested | Proposed Award | Match Amount | Score | Recommendation |
|-----------------|--|---|---|---|---|-------|----------------|
| 8 | Ventura County Regional Energy Alliance | Ready, Set, Go Electric Ventura County | \$2,500,000 | \$2,500,000 | \$1,434,248 | 82.6% | Awardee |
| 5 | <u>City of Long Beach Harbor Department (Port of Long Beach)</u> | <u>Blueprint Phase II: REimagining Vehicle Utilization at the Port (REV-UP)</u> | <u>\$2,500,000</u> | <u>\$2,500,000</u> | <u>\$860,942</u> | 81.9% | <u>Awardee</u> |
| 4 | <u>County of Los Angeles</u> | <u>LA County's EV Ready Disadvantaged Communities (ECDAC) Program</u> | <u>\$2,500,000</u> | <u>\$2,500,000</u> | <u>\$900,000</u> | 81.3% | <u>Awardee</u> |
| Subtotal: | | | [\$2,500,000] \$7,500,000 | [\$2,500,000] \$7,500,000 | [\$1,434,248] \$3,195,190 | | |

Group 3 -- Passed But Not Funded

| Proposal Number | Applicant | Project Title | Funds Requested | Proposed Award | Match Amount | Score | Recommendation |
|-----------------|---|--|--------------------------|----------------|--------------------------|---------|----------------|
| {5} | {City of Long Beach Harbor Department (Port of Long Beach)} | {Blueprint Phase II: REimagining Vehicle Utilization at the Port (REV-UP)} | {\$2,500,000} | [\$0] | [\$860,942] | {81.9%} | {Finalist} |
| 4 | County of Los Angeles | LA County's EV Ready Disadvantaged Communities (ECDAC) Program | {\$2,500,000} | [\$0] | [\$900,000] | {81.3%} | {Finalist} |
| Subtotal: | | | [\$5,000,000] | \$0 | [\$1,760,942] | | |

| Total Funds Requested | Total Proposed Awards | Total Match Proposed |
|-----------------------|--|---|
| \$19,184,958 | [\$7,500,000] \$16,684,958 | [\$9,379,682] \$7,074,006 |

| City and County of San Francisco - Department of the Environment | | |
|---|--|--------------------------------|
| California Energy Commission, Electric Vehicle Ready Communities Phase 2 – Blueprint Implementation | | |
| ENV Personnel | | |
| Job Classification / Title | Summary of Responsibilities | CEC Funds |
| 5644 (0.25 FTE) | | |
| 5642 (1 FTE) | Grant implementation | \$615,181 |
| 5640 (1.22 FTE) | | |
| | ENV Personnel Indirect | \$243,271 |
| | ENV Fringe Benefits | \$269,331 |
| | | Subtotal \$1,127,783 |
| Material & Miscellaneous | | |
| Description | Purpose | CEC Funds |
| Additional database licenses and upgrades | Track charging station projects and report to the CEC. | \$10,000 |
| Graphics and report production | To complete the final version of the report to disseminate information to other CA jurisdictions. | \$5,500 |
| Bicycle safety Helmets, Raincoats, Panniers, Security Locks | Property and personal safety equipment for participants while operating electric bicycles in the app-based delivery pilot program. | \$6,189 |
| Incentives for participants to share data and opinions of using electric bicycles for last-mile deliveries. | Incentives to participants to share their data and opinions. | \$3,000 |
| | | Subtotal \$24,689 |
| Subcontractors | | |
| Name | Purpose | CEC Funds |
| TBD: Community-based Organization (s) will be hired using standard city procurement processes | Conduct outreach and stakeholder engagement in DACs and impacted neighborhoods. | \$150,000 |
| Evgo | Build a public EV charging plaza | \$526,141 |
| Grid Alternatives | Administer and implement the e-bike pilot; procure, store and distribute electric bicycles to participants. | \$469,684 |
| Driver's Seat Cooperative | Provides app-based data collection and reporting of electric bicycles. | \$80,000 |
| SF Bicycle Coalition | Provides electric bicycle safety training to participants. | \$6,500 |
| | | Subtotal \$1,232,325 |
| | | Grand Total \$2,384,797 |

Exhibit A
SCOPE OF WORK
San Francisco Department of the Environment

TECHNICAL TASK LIST

| Task # | CPR | Task Name |
|--------|-----|---|
| 1 | | Administration |
| 2 | | Add Additional Datasets and Functionalities to Mapping Tool |
| 3 | X | Establish the EV-Ombudsperson |
| 4 | | Open 3 New Public Fast Charging Plazas |
| 5 | | Electric Bike Program for App-Based Delivery Workers |
| 6 | | Outreach and Dissemination |

KEY NAME LIST

| Task # | Key Personnel | Key Subcontractor(s) | Key Partner(s) |
|--------|--|--|--|
| 1 | Lowell Chu – SFE | - | - |
| 2 | Nicole Appenzeller – SFE | | Google & SFPUC |
| 3 | Lowell Chu – SFE | - | EVgo, SFPUC |
| 4 | Lowell Chu – SFE | EVgo | EVgo, PG&E & SFPUC |
| 5 | Suzanne Loosen – SFE | GRID Alternatives Driver’s Seat Cooperative | SFMTA, SFPUC, GRID Alternatives, Driver’s Seat Cooperative |
| 6 | Lowell Chu, Suzanne Loosen, Nicole Appenzeller -SFE | GRID Alternatives, | Google, SFPUC. SF Clean Cities |

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

| Term/ Acronym | Definition |
|--------------------|--|
| App-based Delivery | A service by which a consumer can order food or goods delivered via an application hosted by a third-party company. |
| API | Application Program Interface |
| Beta-testing | Field testing of the beta version of a software by testers outside of the company developing it and conducted prior to commercial release. |
| BEV | Battery Electric Vehicle |
| Caltrans | California Department of Transportation |
| CAM | Commission Agreement Manager |
| CARB | California Air Resources Board |
| CBO | Community Based Organization |
| CCA | Community Choice Aggregator |
| CEQA | California Environmental Quality Act – In San Francisco, environmental impact documents, agendas, and notices are filed with the Office of the County Clerk and are posted for 30 calendar days. |
| CleanPowerSF | CleanPowerSF is San Francisco’s community choice aggregator, and it is a program of the SFPUC. |
| CTP | Clean Transportation Program |
| CPR | Critical Project Review |

| | |
|--------------------------------|---|
| CPUC | California Public Utilities Commission |
| CVRP | Clean Vehicle Rebate Project promotes clean vehicle adoption in California by offering rebates of up to \$7,000 for the purchase or lease of new, eligible zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles. |
| DAC | Disadvantaged Communities are defined as communities scoring in the 50 th and greater percentile according to CalEnviroScreen 3.0. |
| DPW | Department of Public Works is a public agency with many responsibilities including sidewalk and sidewalk vault maintenance and public street signage production and installation. |
| E-Bike | Battery-electric Bicycle |
| EIE | Environmental Insights Explorer |
| EV | Electric Vehicle |
| FCEV | Fuel Cell Electric Vehicle is a type of EV that primarily uses high pressure hydrogen stored in a fuel cell, instead of fuel tank, to power the vehicle's electric motor. A fuel cell has higher bursting capacity than a fuel tank. |
| FTD | Fuels and Transportation Division |
| GO-Biz | California Governor's Office of Business and Economic Development |
| ICA | Integration Capacity Analysis is a digital map designed, maintained and updated by PG&E to assist contractors, developers and other stakeholders to find information on potential project sites for distributed energy resources, including EV-charging. The ICA map shows hosting capacity, grid needs, and other information about PG&E's electric distribution grid. |
| ICCT | International Council on Clean Transportation is an independent nonprofit organization that provides technical and scientific analysis to environmental regulators and select local governments. |
| ICE | Internal Combustion Engine |
| LAFCO | Local Agency Formation Commission is an independent regulatory body that oversees changes to the boundaries of cities and special districts in San Francisco. LAFCO's primary functions are to provide oversight and research on forming a community choice aggregator and to conduct special studies regarding municipal services. |
| LD | Light Duty – LD vehicles include cars, vans, and trucks (classes 1 to 2a). |
| Mapping Tool | Blueprint Mapping Tool developed in Phase 1 of the EV-Ready Community Blueprint. |
| MHDEV | Medium- (classes 2b to 6) and Heavy-Duty (classes 7 and 8) Electric Vehicles |
| Phase 1 Community EV Blueprint | San Francisco's Phase 1 Electric Vehicle Ready Community Blueprint, July 2019 (ARV-17-047) |
| PG&E | Pacific Gas and Electric is San Francisco's investor-owned utility. |
| Recipient | San Francisco Department of the Environment |
| RCA | |
| SF Clean Cities | San Francisco Clean Cities Coalition, housed at the San Francisco Department of the Environment |
| SFCTA | San Francisco County Transportation Authority is a public agency, chartered by the State of California to provide sub-regional transportation planning and |

| | |
|---------------|--|
| | programming for San Francisco County. The agency primarily works to reduce congestion. |
| SFDBI | San Francisco Department of Building Inspections is the public regulatory building safety agency responsible for overseeing the effective and efficient enforcement of building, electrical, plumbing, disability access, and housing codes for the City and County of San Francisco. |
| SFMTA | San Francisco Municipal Transportation Authority – It is a public agency created by consolidation of the San Francisco Municipal Railway, the Department of Parking and Traffic, and the Taxicab Commission. The agency oversees public transport, taxis, bicycle infrastructure, pedestrian infrastructure, and paratransit for the City and County of San Francisco. |
| SFO | San Francisco International Airport |
| SFPUC | San Francisco Public Utilities Commission is a public agency of the City and County of San Francisco that provides water, wastewater, and electric power services to the city and an additional 1.9 million customers within three San Francisco Bay Area counties. |
| SFE | SF Environment - Also known as the San Francisco Department of the Environment, SFE is responsible for drafting the City’s Climate Action Plan, including the strategies, objectives, and tactics, as well as for tracking emissions and ensuring environmental justice is served. |
| The City | City & County of San Francisco |
| TNC | Transportation Network Companies, typically known as Lyft and Uber, but there are others |
| UAT | User Acceptance Testing is the last phase of software testing to ensure that the software conforms to the engineering specifications, and prior to beta-testing. |
| Vehicle | A vehicle is a thing that transports people and goods from one location to another on land, such as a car, truck, motorcycle, scooter, motor-driven cycle, or bicycle. |
| Working Group | A committee or group appointed to study and report on a particular question and make recommendations based on its findings. |
| ZEV | A zero-emission vehicle is one which produces no emissions from the on-board source of power (e.g., an electric vehicle). |

Background

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Clean Transportation Program. The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state’s climate change, clean air, and alternative energy policies. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the Clean Transportation Program through January 1, 2024. The Clean Transportation Program has an annual budget of approximately \$100 million and provides financial support for projects that:

- Reduce California’s use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.

- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

On August 12, 2020, the CEC released a Grant Solicitation and Application Package entitled “Electric Vehicle Ready Communities Phase II-Blueprint Implementation” under the Clean Transportation Program. This competitive grant solicitation was to grant funds for projects that will implement projects developed and identified in Phase I, Blueprint Development, of the Electric Vehicle (EV) Ready Communities Challenge. In response to GFO-19-603, the Recipient submitted application #2 under Group 1, which was proposed for funding in the CEC’s Revised Notice of Proposed Awards on September 13, 2021. GFO-19-603 and Recipient’s application are hereby incorporated by reference into this Agreement in their entirety.

In the event of any conflict or inconsistency between the terms of the Solicitation and the terms of the Recipient’s Application, the Solicitation shall control. In the event of any conflict or inconsistency between the Recipient’s Application and the terms of CEC’s Award, CEC’s Award shall control. Similarly, in the event of any conflict or inconsistency between the terms of this Agreement and the Recipient’s Application, the terms of this Agreement shall control.

Problem Statement:

In 2019, under grant ARV-17-047, the Recipient completed *San Francisco’s Phase 1 Electric Vehicle Ready Community Blueprint* (“the Phase 1 Community EV Blueprint”). As stated in the Phase 1 Community EV Blueprint, transportation electrification is primarily hindered by a lack of access to convenient public charging. Moreover, Transportation Network Company (TNC) vehicles are causing major congestion and increasing emissions in San Francisco.

The Public Fast Charging Problem – EV adoption is hindered by a lack of access to convenient public charging infrastructure. San Francisco is falling behind in expanding public charging infrastructure, particularly fast-chargers. The International Council on Transportation (ICCT) published a report in September 2020 that indicates that San Francisco needs 156 fast-chargers in order to meet its 2030 EV goal of 100% of new passenger vehicle registrations. To date, San Francisco has 39 public fast-chargers, averaging three new charging installations per year. In high density cities, like San Francisco, private charging options are limited, and EV-drivers must rely on public charging.

- **INSTITUTIONAL** - The construction of public fast chargers is slowed by myriad institutional issues. Zoning and permitting add significant costs and time delay to proposed projects. Currently, charging providers do not have a single point of contact with the City, and must engage with multiple staff, across several agencies, many of whom are new the world of EVs.
- **GRID**- The construction of public fast-chargers can be complicated by various grid-related issues. A developer may lack critical information about grid hosting

capacity for potential charging sites and must rely on the utility technicians to determine available capacity. Where capacity is insufficient, upgrades may be necessary, increasing developer costs. The process for applying for utility interconnections can also be complicated by the fact that San Francisco's grid is managed by both Pacific Gas and Electric (PG&E) and San Francisco Public Utilities Commission (SFPUC), adding delays to a project schedule that result in mounting soft costs for developers. Finally, fast-charger projects have a high-potential of unexpected issues, not only because of their power-demand, but also because the chargers and ancillary equipment require a large amount of space thereby impacting land-use.

- **ECONOMICS** - The construction of public fast-chargers is expensive because of their upfront costs. Prospecting for land and a site host is a tedious, time-consuming and expensive process. Once the site is identified, the charging provider is faced with a protracted process to evaluate electrical capacity and to identify interconnection issues such as moratorium on street excavation and right-of-way disputes. Until institutional challenges are addressed, public fast charging costs will remain prohibitively high, delaying implementation by businesses who would otherwise be interested in participating.

The Emerging Mobility Problem - The operation of TNC and food delivery vehicles is a major cause of congestion in San Francisco. In 2018, the San Francisco County Transportation Authority (SFCTA) found that TNC vehicles accounted for approximately 50% of the rise in congestion in San Francisco between 2010 and 2016. TNCs also caused the greatest increases in congestion in the densest parts of the city - up to 73% in the downtown financial district - and along many of the city's busiest corridors.

Further, as the number of TNC and food delivery vehicles and their miles driven on city streets increase, emissions and the likelihood for traffic accidents will rise. Emissions from the transportation sector increased 1% from 2017 to 2018. Overall, this sector was responsible for nearly half of San Francisco's 2018 emissions. Additionally, increased TNC and food delivery operations increase the potential for accidents. This is because the vehicle accident rate calculation is dependent on mileage driven for a given period plus the number of vehicles.

- **MARKET** - Few app-based delivery workers know about the benefits of e-bikes. E-bikes have many innovative and practical characteristics that benefit gig-workers: thoughtfully integrated batteries and drivetrain to supplement human motive power, avoidance of congestion and parking, and reduction in expenditure, including maintenance. According to a recent report by UC Santa Cruz, few app-based delivery drivers are aware of these benefits, however, once they learn more, are interested in the potential.
- **ECONOMICS** - E-bikes are too expensive for many app-based delivery workers. A report in 2019 found that an app-based delivery worker earned an average of \$624 per month. This low wage forces many to work multiple gigs in order to maintain their livelihoods. With new e-bike prices ranging from \$1,000 to \$10,000, despite the interest, even at the low end of the price spectrum, e-bikes are cost-prohibitive to many app-based delivery workers.

Goals of the Agreement:

The goal of this Agreement is to successfully implement three strategies from the Phase 1 Community EV Blueprint—Increase Public Awareness, Expand Charging Infrastructure and accelerate Mode Shift. More specifically, San Francisco will facilitate the opening of three public fast-charging plazas [one in or adjacent to a Disadvantaged Community (DAC)], find additional sites for more plazas and installations, get delivery-app workers out of cars and onto e-bikes to make app-deliveries, and create processes to streamline development of infrastructure while increasing public awareness and participation.

Objectives of the Agreement:

The objectives of this Agreement are to:

- A. Reduce time spent on siting public fast-charger installations and capacity analysis by up to 20% and their associated costs by up to 10%.
- B. Reduce time spent on permitting, planning, and interconnection by up to 20%, and their associated costs by up to 10%.
- C. Facilitate the installation of a minimum of 100 Level 2 and 25 Direct Current Fast Charger (DCFC) across San Francisco, with a focus on underutilized sites and underserved communities.
- D. Open three public fast-charging plazas, with one located near or in a DAC.
- E. Identify and recruit under-utilized or vacant lots and petroleum stations for more public fast-charging plazas and installations, prioritizing those near Multi-Unit Dwellings (MUDs) and DAC/DAC-adjacent and major thoroughfares.
- F. Establish a pilot program to shift app-based workers, particularly those driving for TNCs, from vehicles to e-bikes for deliveries, to determine if e-bike operation improves efficiency, improves worker safety, reduces demand on the curb, reduces greenhouse gas (GHG) emissions, Vehicle Miles Traveled (VMT), and vehicle congestion, and creates workforce development opportunities.
- G. Update the “EV-Ready Community Blueprint Playbook” with new best practices, findings, analysis, and Mapping Tool. The Playbook will instruct Bay Area jurisdictions and beyond, on how to replicate and scale the implementation of transportation electrification initiatives.
- H. Disseminate information about the project to stakeholders, including other municipalities.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement. The Commission Agreement Manager (CAM) shall designate the date and location of this meeting and provide an agenda to the Recipient prior to the meeting.

The Recipient shall:

- Attend a “Kick-Off” meeting with the CAM, the Commission Agreement Officer (CAO), and a representative of the California Energy Commission (CEC) Accounting Office. The Recipient shall bring their Project Manager, Agreement Administrator, Accounting Officer, and any others determined necessary by the Recipient or specifically requested by the CAM to this meeting.
- Provide a written statement of project activities that have occurred after the notice of proposed awards but prior to the execution of the agreement using match funds. If none, provide a statement that no work has been completed using match funds prior to the execution of the agreement. All pre-execution match expenditures must conform to the requirements in the Terms and Conditions of this Agreement.
- Discuss the following administrative and technical aspects of this Agreement:
 - Agreement Terms and Conditions
 - Critical Project Review (Task 1.2)
 - Match fund documentation (Task 1.7) No reimbursable work may be done until this documentation is in place.
 - Permit documentation (Task 1.8)
 - Subawards needed to carry out project (Task 1.9)
 - The CAM’s expectations for accomplishing tasks described in the Scope of Work
 - An updated Schedule of Products and Due Dates
 - Monthly Calls (Task 1.4)
 - Quarterly Progress Reports (Task 1.5)
 - Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
 - Final Report (Task 1.6)

Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits
- Written Statement of Match Share Activities

Commission Agreement Manager Product:

- Kick-Off Meeting Agenda

Task 1.2 Critical Project Review (CPR) Meetings

CPRs provide the opportunity for frank discussions between the CEC and the Recipient. The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

The CAM may schedule CPR meetings as necessary, and meeting costs will be borne by the Recipient.

Meeting participants include the CAM and the Recipient and may include the CAO, the Fuels and Transportation Division (FTD) program lead, other CEC staff and Management as well as other individuals selected by the CAM to provide support to the CEC.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the CEC, but they may take place at another location or remotely.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. Prepare a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see section 8 of the Terms and Conditions). If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Lead Commissioner for Transportation for his or her concurrence.
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the CAM and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

CAM Products:

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

Recipient Product:

- CPR Report(s)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with CEC staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by, at a minimum, the Recipient and the CAM. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the CAM.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The CAM will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the CAM about the following Agreement closeout items:

- What to do with any equipment purchased with CEC funds (Options)
 - CEC request for specific “generated” data (not already provided in Agreement products)
 - Need to document Recipient’s disclosure of “subject inventions” developed under the Agreement
 - “Surviving” Agreement provisions
 - Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.

Products:

- Written documentation of meeting agreements
- Schedule for completing closeout activities

Task 1.4 Monthly Calls

The goal of this task is to have calls at least monthly between CAM and Recipient to verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement on time and within budget.

The objectives of this task are to verbally summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, to verify match funds are being proportionally spent concurrently or in advance of CEC funds or are being spent in accordance with an approved Match Funding Spending Plan, to form the basis for determining whether invoices are consistent with work performed, and to answer any other questions from the CAM. Monthly calls might not be held on those months when a quarterly progress report is submitted, or the CAM determines that a monthly call is unnecessary.

The CAM shall:

- Schedule monthly calls.
- Provide questions to the Recipient prior to the monthly call.
- Provide call summary notes to Recipient of items discussed during call.

The Recipient shall:

- Review the questions provided by CAM prior to the monthly call
- Provide verbal answers to the CAM during the call.

Product:

- Email to CAM concurring with call summary notes.

Task 1.5 Quarterly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

The Recipient shall:

- Prepare a Quarterly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Progress reports are due to the CAM the 10th day of each January, April, July, and October. The Quarterly Progress Report template can be found on the ECAMS Resources webpage available at <https://www.energy.ca.gov/media/4691>.

Product:

- Quarterly Progress Reports

Task 1.6 Final Report

The goal of the Final Report is to assess the project's success in achieving the Agreement's goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further projects and improvements to the FTD project management processes.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the CEC and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

The Recipient shall:

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Final Report following the latest version of the Final Report guidelines which will be provided by the CAM. The CAM shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed at least 60 days before the end of the Agreement Term.
- Submit one bound copy of the Final Report with the final invoice.

Products:

- Outline of the Final Report, if requested
- Draft Final Report
- Final Report

Task 1.7 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the CEC budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the CAM at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the CEC awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the CEC awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.
 - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact

name, address and telephone number, and the address where the property is located.

- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured. For match funds provided by a grant a copy of the executed grant shall be submitted in place of a letter of commitment.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the CAM if during the course of the Agreement additional match funds are received.
- Notify the CAM within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR meeting.

Products:

- A letter regarding match funds or stating that no match funds are provided
- Copy(ies) of each match fund commitment letter(s) (if applicable)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

Task 1.8 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the CEC budget for this task will be zero dollars, the Recipient may budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditure for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the CAM at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies the:
 - Type of permit
 - Name, address and telephone number of the permitting jurisdictions or lead agencies
 - The schedule the Recipient will follow in applying for and obtaining these permits.

- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the CAM.
- As permits are obtained, send a copy of each approved permit to the CAM.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required
- A copy of each approved permit (if applicable)
- Updated list of permits as they change during the term of the Agreement (if applicable)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable)
- A copy of each final approved permit (if applicable)

Task 1.9 Obtain and Execute Subawards

The goal of this task is to ensure quality products and to procure subrecipients required to carry out the tasks under this Agreement consistent with the Agreement Terms and Conditions and the Recipient's own procurement policies and procedures.

The Recipient shall:

- Manage and coordinate subrecipient activities.
- If requested by the CAM, submit a draft of each subaward required to conduct the work under this Agreement to the CAM for review.
- If requested by the CAM, submit a final copy of the executed subaward.
- If Recipient intends to add new subrecipients or change subrecipients, then the Recipient shall notify the CAM.

Products:

- Letter describing the subawards needed, or stating that no subawards are required
- Draft subcontracts (if requested)

- Final subcontracts (if requested)

TECHNICAL TASKS

TASK 2 – ADD ADDITIONAL DATASETS, FUNCTIONALITIES, AND FEATURES TO MAPPING TOOL

The goal of this task is to add new datasets and functionalities to the Blueprint Mapping Tool to inform Tasks 3 and 4.

The Recipient shall:

- Evaluate and scrub electrical grid, traffic, socio-economic and under-utilized/vacant lots datasets for integration into the mapping tool.
- Integrate clean datasets into the Blueprint Mapping Tool and establish a process and intervals to refresh data.
- Develop and enable new functionalities:
 - a. Enable public users to nominate and upvote sites or locations for EV charging via uploading photographs, location description, or address.
 - b. Enable business and property owners to express interest in becoming a site-host for EV charging by uploading contact and locational information for follow-up.
- Establish open data-sourcing model to bridge connection with EV charging providers to direct inbound site-leads from public and business/property owners and establish a process for following up.
- Test the Blueprint Mapping Tool prototype for functionality and accuracy.
- Develop a Product-to-Market Plan to bring the Blueprint Mapping Tool to the public and submit to the CAM.
- Launch the Blueprint Mapping Tool to the public.

Products:

- A link to the Blueprint Mapping Tool prototype
- Product-to-Market Plan
- A link to the public-facing version of the Blueprint Mapping Tool

TASK 3 – ESTABLISH THE EV-OMBUDSPERSON

The goal of this task is to increase public awareness, eliminate institutional barriers to developing public fast-charger installation and identify new sites and hosts for additional fast-chargers so that a *minimum* of 100 Level 2 and 25 DCFC are installed or in construction by the end of the grant.

The Recipient shall:

- Recruit and fill a full-time ombudsperson position.
- Represent public and charging provider interests and facilitate efficient communication among all relevant stakeholders such as utilities, charging provider, and other City agencies.
- Draft a “Challenges Summary Analysis” and submit to the CAM. The analysis includes a baseline of challenges confronted by charging providers in a dense urban environment, such as San Francisco. It will include the following for each challenge identified.
 1. Description of the Challenge
 2. Impact Level (on project advancement)
 3. Identify Root Cause and Other Causal Factors
 4. Identify Responsible Parties
 5. Recommend Solution / Pathway
 6. Measure of Success
 7. Implementation Plan and Timeline
- Collaborate with relevant stakeholders to conduct beta-testing of the Blueprint Mapping Tool by creating a Citywide Fast-charging Site Plan. The Site Plan includes, but is not limited to, the following:
 1. Geo-location Data - address, parcel block and lot identifications
 2. Electrical Capacity and Interconnection Accuracy
 3. Hardware Upgrades Required
 4. Quantity of Charging Stations and Ports
 5. Develop a process to follow-up with sites upvoted by the public and businesses and properties interested in becoming charging site-host
 6. Field validate the sample results from the Mapping Tool
- Secure private funding for the installation and commissioning of 100 Level 2 chargers throughout the city of San Francisco.
- Develop a system to track public EV-charging installation projects to document that a minimum of 100 Level 2 and 25 DCFC are installed or in construction by the end of the grant. Results will be provided as a Summary Report and included in the final report. The tracking system includes, but is not limited to, the following:
 1. Geo-location – address, block, and lot
 2. Project Milestone to indicate the various phases of the project, from project development to completion
 3. Quantity of Charging Stations and Ports
 4. Project Lead and Team Members and Contact Information
 5. Issues Log and Follow-up Date(s)
 6. Anticipated Completion Date

7. Estimated Initial and Final Project Costs, where available – installation labor, engineering, legal, admin, permitting, material (hardware), software, and signage

- Identify additional site hosts and provide as-needed support to San Francisco International Airport (SFO) and the Port of San Francisco in an effort to initiate fast-charging projects at those locations.
- Implement feedback from charging station providers to improve permitting processes.
- Provide as-needed technical assistance to charging-providers to facilitate California Environmental Quality Act (CEQA)-compliance and notices.
- Liaise between the SFPUC, PG&E, EV charging providers and other stakeholders to explore a smart charging pilot program that informs tactics to balance the electrical grid.
- Develop a “Guidebook for City Stakeholders” and submit to the CAM. This internal, dynamic document will guide city officials with advice, information, and contact information to effectuate EV charging projects.
- Develop and maintain a “one-stop shop” website to assist charging providers and the public with EV charging project development. Submit link to the CAM.

Products:

- Challenges Summary Analysis Report
- One-stop Shop Website Link
- Guidebook for City Stakeholders
- Summary Report with Tracking System Documentation

TASK 4 - OPEN 3 PUBLIC FAST-CHARGING PLAZAS AND INSTALL 100 L2 CHARGERS THROUGHOUT THE CITY OF SAN FRANCISCO

The goal of this task is to open three public fast-charging plazas, with one installed within a DAC.

The Recipient shall:

- Deploy, test, and refine the EV ombudsperson program (Task 3)
- Follow the “Public Engagement Plan” from the Phase 1 Community EV Blueprint and conduct three community meetings to engage stakeholders prior to project development phase to bring in community organizations, residents, and businesses potentially impacted by the plazas.
- Collaborate with at least one community-based organization or the San Francisco Clean Cities Coalition (SF Clean Cities) to assist with outreach and engagement.
- Incorporate stakeholder feedback into planning.

- Use the Blueprint Mapping Tool to assist in developing a list of selected sites that will result in the development and installation of 100 L2 and 25 fast-chargers. Conduct field verifications and disseminate the list to electric vehicle charging providers. Use Task 3 to facilitate project initiations.
- Use processes as described in the “Guidebook for City Stakeholders” and One-stop Shop Website from Task 3 to expedite permitting, zoning, interconnection processes.
- Use the Blueprint Mapping tool and grant funding to construct and commission at least two (2) public fast-charging plazas in the city of San Francisco and install in the two plazas a total of 17 fast-chargers.
- Use the Blueprint Mapping tool and grant funding to develop, construct, and commission 1 public fast-charging plaza in or adjacent to San Francisco’s DAC, Bayview Hunters Point, consisting of 8 public fast-chargers.
- Use the Blueprint Mapping tool to construct and commission 100 Level 2 chargers throughout the city of San Francisco.
- Develop a Summary Report demonstrating how products from Tasks 2 and 3 improved charging plaza development in cost and time reductions and submit to the CAM.
- Submit an AB 841 Certification that certifies the project has complied with all AB 841 (2020) requirements specified in Exhibit C or describes why the AB 841 requirements do not apply to the project. The certification shall be signed by Recipient’s authorized representative and submitted to the CAM.
- Submit EVITP Certification Numbers of each Electric Vehicle Infrastructure Training Program (EVITP) certified electrician that installed electric vehicle charging infrastructure or equipment. EVITP Certification Numbers are not required to be submitted if AB 841 requirements do not apply to the project.

Products:

- Documentation of Community Meetings – Attendance list, summary of meetings notes, stakeholder comments and feedback, and presentation materials.
- List and description of selected sites and follow-up documentation to affirm outreach to public electric vehicle charging providers.
- Summary Report documenting Charging Plaza Development
- AB 841 Certification
- EVITP Certification Number(s), if applicable

TASK 5 – ELECTRIC BIKE PROGRAM FOR APP-BASED DELIVERY WORKERS

The goal of this task is to design and then implement a program to get electric bikes to delivery workers. The program will collect data from delivery workers on how the bikes are used and the capabilities of electric bikes for completing local food deliveries. For local governments, the findings will inform policies and incentives to decarbonize last-mile delivery services. For app-

based delivery companies, the findings will inform strategies to incentivize the use of electric bikes for their delivery contractors.

The Recipient shall:

- Finalize program design and implementation plan with key partners and submit to the CAM. The plan shall include:
 - Coordinating committee schedule and communications plan
 - Procurement and asset management program for e-bikes and participant safety equipment
 - Participant recruitment plan and participation agreements
 - Data collection and participant survey elements and schedule
 - Recruitment of local bike shop to provide maintenance services
 - Bike safety training plan and schedule
- Recruit Program participants for Cohorts #1 and #2. Each cohort will have 30 total participants. 50% of participants will use e-bikes and 50% of participants will use car. Recipient shall collect and compare data from both modes.
- Launch Cohort #1
 - Host kick off meeting for participants
 - Compile agenda, meeting summary, and attendee list and submit to the CAM.
 - Provide bike safety training and two-week test period for participants
 - Administer pre-program survey
 - Data collection period using Driver's Seat app for cohort #1
 - Administer participant surveys at 6 months
 - Prepare summary of pre-program and 6-month participant surveys and submit to the CAM
 - Evaluate and adjust data collection
 - Administer participant surveys at 12 months
- Launch Cohort #2
 - Host kick off meeting for participants
 - Compile agenda, meeting summary, and attendee list and submit to the CAM.
 - Provide bike safety training and two-week test period for participants
 - Administer pre-program survey
 - Data collection period using Driver's Seat app for cohort #2
 - Administer participant surveys at 6 and 12 months
- Transfer title of bikes to participants upon completion of surveys
- Complete E-Bike Program Report and Case Study and submit to the CAM. The E-Bike Program Report and Case Study should:
 - Review, analyze, synthesize study results
 - Identify challenges and best practices
 - Recommend incentive levels for future programs

Products:

- Implementation Plan
- Summary of Cohort #1 Pre-Program and 6-Month Participant Surveys

- Documentation of Cohort Kick off Meetings (agenda, notes, attendees)
- E-Bike Program Report and Case Study

TASK 6 – OUTREACH AND DISSEMINATION

The goal of this task is to ensure that results from this project are shared to assist other cities throughout the San Francisco Bay Area and State. This task will ensure knowledge transfer among stakeholders, professionals, and municipal colleagues. This task is the vehicle to glean best practices and transmit shared learning with a vision to scale up to other California cities.

The Recipient shall:

- Increase public awareness of EVs and mode shift and disseminate information about the project to a range of stakeholders.
- Conduct outreach via SF Clean Cities to continue to promote EVs and mode shift, including organizing or hosting educational workshops. Compile agenda, meeting summary, and attendee list and submit to the CAM.
- Promote the use of the Blueprint Mapping Tool's crowd-sourcing feature by the public through SF Environment's robust social media network, as well as through partners.
- Work with the Greenstacks program, a collaboration between SF Environment and SF Public Libraries, to promote the Mapping Tool and provide webinars and other activities to increase awareness of the accessibility of EVs to all residents of the city.
- Update San Francisco's EV Ready Playbook and submit to the CAM. Playbook will include:
 - The updated Mapping Tool
 - Guidelines for implementing an Ombudsperson process to streamline charging station installations and promote EVs, focusing on replicating processes (since some municipalities may not have the resources or inclination to create a new position, the focus is on how to replicate the process rather than the position).
 - Findings from research, reports, and studies conducted.
- Develop case study and presentation to disseminate information about the project and ensure that other municipalities access the Mapping Tool and submit to the CAM.
- Develop case study and presentation on e-bike pilot results to help public- and private-sector actors improve and scale bike delivery programs and submit to the CAM.
- Organize at least three webinars to share case studies and results with California local governments and community choice aggregators, individually and through networks such as the Clean Cities Coalitions, Green Cities CA, Urban Sustainability Directors Network, C40, and California Community Choice Association. Compile agenda, slide deck, and attendee list for each and submit to the CAM

Products:

- Documentation of Educational Workshops (agenda, notes, attendees)

- Final, Updated EV Ready Playbook
- Case study and presentation for Blueprint Mapping Tool
- Case study and presentation for e-bike program
- Documentation of Three Webinars presenting Case Studies and Results (agenda, slide deck, attendees)

Exhibit A

Schedule of Products and Due Dates

| Task Number | Task Name | Product(s) | Due Date |
|--------------------|--|--|--|
| 1.1 | Attend Kick-off Meeting | | |
| | | Updated Schedule of Products | 2 days before the kick-off meeting |
| | | Updated List of Match Funds | 2 days before the kick-off meeting |
| | | Updated List of Permits | 2 days before the kick-off meeting |
| | Kick-Off Meeting Agenda (CEC) | 2 days before the kick-off meeting | |
| 1.2 | Critical Project Review Meetings | | |
| | | 1st CPR Meeting | |
| | CPR Report | TBD Commission | |
| | Written determination (CEC) | TBD Commission | |
| 1.3 | Final Meeting | | |
| | | Written documentation of meeting agreements | 3/29/2024 |
| | | Schedule for completing closeout activities | 3/29/2024 |
| 1.4 | Monthly Progress Reports | | |
| | | Monthly Progress Reports | The 10th calendar day of each month during the approved term of this Agreement |
| 1.5 | Final Report | | |
| | | Final Outline of the Final Report | 9/29/2023 |
| | | Draft Final Report (no less than 60 days before the end term of the agreement) | 12/29/2023 |
| | Final Report | 3/29/2024 | |
| 1.6 | Identify and Obtain Match Funds | | |
| | | A letter regarding match funds or stating that no match funds are provided | 4/25/2022 |
| | | Copy(ies) of each match fund commitment letter(s) (if applicable) | 4/25/2022 |
| | | Letter(s) for new match funds (if applicable) | Within 10 days of identifying new match funds |
| | Letter that match funds were reduced (if applicable) | Within 10 days of identifying reduced funds | |

| | | |
|--|--|--|
| 1.7 Identify and Obtain Required Permits | Letter documenting the permits or stating that no permits are required | 6/27/2022 |
| | A copy of each approved permit (if applicable) | Within 10 days of receiving each permit |
| | Updated list of permits as they change during the term of the Agreement (if applicable) | Within 10 days of change in list of permits |
| | Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable) | Within 10 days of change in schedule for obtaining permits |
| 1.8 Obtain and Execute Subcontracts | Letter describing the subcontracts needed, or stating that no subcontracts are required | 6/27/2022 |
| | Draft subcontracts | 15 days prior to the scheduled execution date |
| | Final subcontracts | |
| 2 ADD ADDITIONAL DATASETS AND FUNCTIONALITIES TO MAPPING TOOL | A link to the Blueprint Mapping Tool prototype | 10/31/2022 |
| | Product-to-Market Plan | 1/30/2023 |
| | A link to the public-facing version of the Blueprint Mapping Tool | 4/3/2023 |
| 3 ESTABLISH THE EV OMBUDSPERSON | Challenges Summary Analysis Report | 6/30/2023 |
| | One Stop Shop Website Link | 9/29/2023 |
| | Guidebook for City stakeholders | 12/29/2023 |
| | Summary Report with Tracking System Documentation | 12/29/2023 |
| 4 OPEN THREE NEW PUBLIC FAST CHARGING PLAZAS | Documentation of Community Meetings | 12/30/2022 |
| | List and Description of Selected Sites | 1/31/2023 |
| | Summary Report Documenting Charging Plaza Development | 2/29/2024 |
| | AB 841 Certificate | 2/29/2024 |
| | EVITP Certification Number(s) if applicable | 2/29/2024 |
| 5 ELECTRIC BIKE PROGRAM FOR APP-BASED DELIVERY WORKERS | Implementation Plan | 7/25/2022 |
| | Summary of Cohort #1 Pre-Program and 6 month Participant Surveys | 8/1/2022 |
| | Documentation of Cohort Kick-Off Meetings | 9/26/2022 |
| | E-Bike Program Report and Case Study | 1/30/2024 |

| | | |
|----------|--|-----------|
| 6 | OUTREACH AND DISSEMINATION | |
| | Documentation of Educational Workshops | 3/29/2024 |
| | Final Updated EV Ready Playbook | 3/29/2024 |
| | Case Study and Presentation for Blueprint Mapping Tool | 9/25/2023 |
| | Case Study and Presentation for Ebike Program | 1/30/2024 |
| | Documentation of Three Webinars | 3/29/2024 |

Workbook Instructions

Input Data: Enter information as required in all cells highlighted in Blue.

Restricted Editing: All cells not highlighted in Blue are locked from editing. Locked cells include: cells with formulas highlighted in Gray or Light Yellow, cells with no color fill (white), etc.

For the Agreement Budget Template ONLY: Colored Tabs:

The "Equipment" and "Subrecipients & Vendors" budget category tabs are colored **ORANGE** to indicate that line item details can be entered for these budget categories. The other budget category tabs (Direct Labor, Fringe Benefits, Travel, Materials & Misc., and Indirect Costs & Profit) only contain category totals.

Regarding Confidential Information: Avoid disclosing trade secrets and confidential information on any agreement document, since these documents are publicly accessible.

Rules for decimal places on values:

- **Budget and Invoice values:**
 - Rounding of any values, as described below, should be performed using standard rounding practices.
 - For all currency rates (e.g., Direct Labor, and Unit Cost): Round to the cent (\$0.01).
 - For all percentage rates (e.g., Fringe Benefits, Indirect Cost, and Profit): Round to a maximum of two decimal places of a percent (e.g., 25.12%). You can round to less if desired, such as one decimal place (e.g., 25.1%), or zero decimal places (e.g., 25%).
 - For all quantity values (e.g., # of hours, # of months, and # of units): Round to a maximum of two decimal places (e.g., 50.12). You can round to less if desired, such as one decimal place (e.g., 50.1), or zero decimal places (e.g., 50).
- **Budget values:**
 - For entered and totaled (via calculation) CEC and Match share budget values: Round to the dollar (\$1).
 - For all calculated currency values (e.g., rate x hours, rate x months, base amount, and rate x base amount): Round to the dollar (\$1).
- **Invoice values:**
 - For entered and totaled (via calculation) CEC and Match share expense invoice values: Round to the cent (\$0.01).
 - For all calculated currency values (e.g., rate x hours, rate x months, base amount, and rate x base amount): Round to the cent (\$0.01).
 - **SPECIAL CIRCUMSTANCE for calculated currency values:** **ONLY** if a calculated value (e.g., rate x hours = actual labor expense) does **NOT** equal the actual expense, because of the decimal place rules provided for rates and quantity values listed above, it is acceptable to use as many decimal places as necessary for rates and quantity values listed above to ensure that the calculated value **DOES** equal the actual expense.

Invoice Supporting Documentation Requirements, per Budget Category:

The list below contains the supporting documentation that is required to be submitted with an invoice. **IMPORTANT:** The recipient and subrecipients must still retain supporting documentation for all project expenses in case of an audit ("supporting documents" are also known as "backup documents").

- **Direct Labor** – No supporting documentation required with invoice.
- **Fringe Benefits** – No supporting documentation required with invoice.
- **Travel** - Receipts are required only for: Lodging, Airfare, Rental car (including gasoline expenses), Bus/train.
- **Equipment** – 1) For equipment that is equal to or greater than \$100,000 per line item total (including both CEC and Match Funds), documentation showing the payment terms must be provided to the CAM. 2) CAM must be able to verify equipment purchases for: 1) equipment with a per line item incurred cost of \$500,000 or greater; or 2) a single equipment vendor with \$500,000 or more in equipment incurred costs. See Invoice Review Checklist for methods to verify.
- **Materials & Miscellaneous** – Receipt required for any line item total that is \$5,000 or more.
- **Subrecipients & Vendors** – Major subrecipients (Budget of 100k or more) follow the same budget requirements as the Recipient when submitting an invoice. For Minor subrecipients and Vendors, subrecipient or vendor invoice required.
- **Indirect Costs & Profit** – No supporting documentation required with invoice.

Adding Rows: If additional rows are needed within a section, unhide the hidden rows (i.e., select the row directly above and below the hidden rows, then right-click the selection and select "Unhide"). Hide any unused rows. **DO NOT USE THE LAST TWO ROWS THAT ARE MARKED "CEC USE ONLY"**. If all but the last 2 rows are used, and more rows are required, please contact the ECAMS Support team (ECAMS.Support@energy.ca.gov).

FOR ECAMS SUPPORT TEAM ONLY: ADDING ROWS:

To add additional rows and maintain the formulas within the totals, (1) unprotect the sheet, (2) copy the second to the last row in the section, (3) insert the copied row just above the last row, (4) repeat steps 2 - 3 as required, (5) correct formatting and REFERENCE IDs as required, (6) delete "CEC USE ONLY" from all but the last two rows in the section, and (7) re-protect the sheet.

Updating Modification Date on Budgets:

After making modifications to a budget file, update the modification date as described below.

- **Budget Worksheet file** – Update the "*Date of Last Budget Worksheet Modification*" to the date the modifications were completed. Update the "Date of Last Budget Worksheet Modification" in cell D1 of the "Category Budget" tab—this updates the rest of the tabs in the template.
- **Agreement Budget file** – Update the "*Date of Last Approved Agreement Budget Modification*" to the date the modifications were approved. Update the "Date of Last Approved Agreement Budget Modification" in cell D1 of the "Category Budget" tab—this updates the rest of the tabs in the template.

FOR ECAMS SUPPORT TEAM ONLY: UPDATING "TEMPLATE VERSION" DATE:

After making modifications to a budget or invoice template, update the "*Template Version*" date to the date the modifications were completed. For the budget templates, update the "*Template Version*" date in cell A1 of the "Category Budget" tab—this updates the rest of the tabs in the template. For the invoice templates, update the "*Template Version*" date in cell A1 of the "Invoice Payment Cover Sheet" tab—this updates the rest of the tabs in the template.

ECAMS Support: For support on how to complete this template, please visit the ECAMS Resources web page. The link to this web page is provided in the cell below:

<https://www.energy.ca.gov/funding-opportunities/funding-resources/ecams-resources>

AGREEMENT BUDGET

Category Budget

| Agreement Number | ARV-21-045 | | |
|--|---|---------------------|---------------------|
| Name of Organization | San Francisco Department of the Environment | | |
| Recipient | | | |
| None | | | |
| Cost Category | CEC Share | Match Share | Total |
| Direct Labor | \$ 615,181 | \$ 62,069 | \$ 677,250 |
| Fringe Benefits | \$ 269,331 | \$ 27,931 | \$ 297,262 |
| Total Labor | \$ 884,512 | \$ 90,000 | \$ 974,512 |
| Travel | \$ - | \$ - | \$ - |
| Equipment | \$ - | \$ - | \$ - |
| Materials/Miscellaneous | \$ 24,688 | \$ 3 | \$ 24,691 |
| Subrecipients/Vendors | \$ 1,232,326 | \$ 1,063,198 | \$ 2,295,524 |
| Total Other Direct Costs | \$ 1,257,014 | \$ 1,063,201 | \$ 2,320,215 |
| Indirect Costs | \$ 243,271 | \$ - | \$ 243,271 |
| Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - |
| Total Indirect and Profit | \$ 243,271 | \$ - | \$ 243,271 |
| Grand Totals | \$ 2,384,797 | \$ 1,153,201 | \$ 3,537,998 |
| Total CEC Reimbursable Funds Spent in California or Paid to California-Based Entities (if applicable) | \$ 2,384,797 | | |
| Percentage of CEC Reimbursable Funds Spent in California or Paid to California-Based Entities | 100.00% | | |

AGREEMENT BUDGET

Direct Labor (Unloaded)

ARV-21-045: San Francisco Department of the Environment

| | CEC Share | Match Share | Total |
|---------------------|----------------------|------------------------|-------------------|
| Grand Totals | \$ 615,181 | \$ 62,069 | \$ 677,250 |

AGREEMENT BUDGET

Fringe Benefits

ARV-21-045: San Francisco Department of the Environment

| | CEC Share | Match Share | Total |
|---------------------|----------------------|------------------------|-------------------|
| Grand Totals | \$ 269,331 | \$ 27,931 | \$ 297,262 |

AGREEMENT BUDGET

Travel

ARV-21-045: San Francisco Department of the Environment

| | CEC Share | Match Share | Total |
|---------------------|----------------------|------------------------|--------------|
| Grand Totals | \$ - | \$ - | \$ - |

AGREEMENT BUDGET

Equipment

ARV-21-045: San Francisco Department of the Environment

| Reference ID | Task # | Seller of item(s) | Description | Purpose | # of Units | Unit Cost | Total: # of Units x Unit Cost | CEC Share | Match Share | Total | Line Item Revised Since Last Approved Budget? | Revision Notes |
|---------------------|--------|-------------------|-------------|---------|------------|-----------|-------------------------------------|--------------|----------------|-------|--|----------------|
| E-1 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-2 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-3 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-4 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-5 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-6 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-7 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-8 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-9 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| E-10 | | | | | 0.00 | \$ - | \$ - | \$ - | \$ - | \$ - | Select Yes or No | |
| Grand Totals | | | | | | | | \$ - | \$ - | \$ - | | |

Worksheet Specific Instructions

CONDITIONAL FORMATTING APPLIED: If the "Line Item Revised Since Last Approved Budget?" column is changed to Yes, the text in the entire row will turn red in order to highlight the change.

AGREEMENT BUDGET

Materials & Miscellaneous

ARV-21-045: San Francisco Department of the Environment

| | CEC Share | Match Share | Total |
|---------------------|----------------------|------------------------|------------------|
| Grand Totals | \$ 24,688 | \$ 3 | \$ 24,691 |

AGREEMENT BUDGET

Subrecipients & Vendors

ARV-21-045: San Francisco Department of the Environment

| Subrecipients | | | | | | | | | | |
|---------------|---------|---|--|---|--|------------|-------------|--------------|---|----------------|
| Reference ID | Task # | Subrecipient (Please Use Legal Name) | Entity Number (CA Secretary of State) | Purpose | CA Business Certifications DVBE/SB/MB/None | CEC Share | Match Share | Total | Line Item Revised Since Last Approved Budget? | Revision Notes |
| S-1 | 2 | Google | | Enhance, update and maintain the Blueprint Mapping Tool, provide data collection and digital analysis. | None | \$ - | \$ 150,000 | \$ 150,000 | No | |
| S-2 | 3,4 & 5 | San Francisco Public Utilities Commission | | Provides technical assistance with interconnection and e-bike pilot and assist with establishing the EV Ombudsperson. | None | \$ - | \$ 125,308 | \$ 125,308 | No | |
| S-3 | 4 | TBD: Community-based Organization (s) will be hired using standard city procurement processes | | Conduct outreach and stakeholder engagement in DACs and impacted neighborhoods. | None | \$ 150,000 | | \$ 150,000 | No | |
| S-4 | 4 | EVgo Services LLC | 201128310279 | Build charging plaza in or adjacent to a DAC or low-income community. | None | \$ 526,142 | \$ 774,390 | \$ 1,300,532 | No | |
| S-5 | 5 | Grid Alternatives Bay Area, Inc. | C4182427 | Administer and implement the e-bike pilot; procure, store and distribute the e-bikes to pilot participants. | None | \$ 469,684 | \$ - | \$ 469,684 | No | |
| S-6 | 5 | Driver's Seat Cooperative | | Provides app-based data collection and reporting. | None | \$ 80,000 | \$ - | \$ 80,000 | No | |
| S-7 | 5 | San Francisco Bicycle Coalition | | Provides bicycle safety training for pilot participants. | None | \$ 6,500 | \$ - | \$ 6,500 | No | |
| S-8 | 5 | San Francisco Local Agency Formation Commission | | Provide technical assistance to the e-bike pilot project. | None | \$ - | \$ 13,500 | \$ 13,500 | No | |
| S-9 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |

| | | | | | | | | | |
|----------------------------|--|--|--|--|------|---------------------|---------------------|---------------------|------------------|
| S-10 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No |
| Subrecipient Totals | | | | | | \$ 1,232,326 | \$ 1,063,198 | \$ 2,295,524 | |

| Vendors | | | | | | | | | | |
|----------------------|--------|-----------------------------------|--|---------|--|-------------|-------------|-------------|---|----------------|
| Reference ID | Task # | Vendor (Please Use Legal Name) | Entity Number (CA Secretary of State) | Purpose | CA Business Certifications DVBE/SB/MB/None | CEC Share | Match Share | Total | Line Item Revised Since Last Approved Budget? | Revision Notes |
| V-1 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-2 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-3 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-4 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-5 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-6 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-7 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-8 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-9 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| V-10 | | | | | None | \$ - | \$ - | \$ - | Select Yes or No | |
| Vendor Totals | | | | | | \$ - | \$ - | \$ - | | |

| Subrecipients & Vendors Grand Totals | | | |
|--------------------------------------|---------------------|---------------------|---------------------|
| | CEC Share | Match Share | Total |
| Grand Totals | \$ 1,232,326 | \$ 1,063,198 | \$ 2,295,524 |

Worksheet Specific Instructions

CONDITIONAL FORMATTING APPLIED: If the "Line Item Revised Since Last Approved Budget?" column is changed to Yes, the text in the entire row will turn red in order to highlight the change.

AGREEMENT BUDGET

Indirect Costs and Profit

ARV-21-045: San Francisco Department of the Environment

Select an Indirect Cost Rate Option

| Indirect Cost(s) | | | |
|------------------------------------|------------|-------------|------------|
| | CEC Share | Match Share | Total |
| Indirect Costs Grand Totals | \$ 243,271 | \$ - | \$ 243,271 |

| Profit | | | |
|----------------------------|-----------|-------------|-------|
| | CEC Share | Match Share | Total |
| Profit Grand Totals | \$ - | \$ - | \$ - |

AGREEMENT BUDGET

Budget Updates after Agreement Execution

ARV-21-045: San Francisco Department of the Environment

| Change # | Date Approved | Budget Categories | All values should be rounded to the dollar (\$1) | | | | | | Brief Description of and Justification for Change | Total Amount of CEC Funds Moving Between Categories | Cumulative CEC Total (will reset after DD review) | Has this budget been approved by the Deputy Director (DD)?** | |
|----------|--|--|--|--------------------------------------|---|---|--------------------------------------|---|---|---|---|--|------|
| | | | CEC Share Funds | | | Match Share Funds | | | | | | | |
| | | | FROM <i>(Approved Budget Totals)</i> | TO <i>(Revised Budget Totals)</i> | Amount of CEC Funds Moving Between Categories | FROM <i>(Approved Budget Totals)</i> | TO <i>(Revised Budget Totals)</i> | Amount of Match Funds Moving Between Categories | | | | | |
| 1 | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | \$0 | \$0 | Select Yes or No | |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Profit <i>(not allowed for grant recipients)</i> | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | | |
| | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | | | |
| 2 | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | \$0 | \$0 | Select Yes or No | |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Profit <i>(not allowed for grant recipients)</i> | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | | |
| | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | | | |
| 3 | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | \$0 | \$0 | Select Yes or No | |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Profit <i>(not allowed for grant recipients)</i> | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | \$ - |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | | |
| | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | | | |
| | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | | | |

| Change # | Date Approved | Budget Categories | All values should be rounded to the dollar (\$1) | | | | | | Brief Description of and Justification for Change | Total Amount of CEC Funds Moving Between Categories | Cumulative CEC Total (will reset after DD review) | Has this budget been approved by the Deputy Director (DD)?** |
|----------|--|--|--|----------------------------|---|-------------------------------|----------------------------|---|---|---|---|--|
| | | | CEC Share Funds | | | Match Share Funds | | | | | | |
| | | | FROM (Approved Budget Totals) | TO (Revised Budget Totals) | Amount of CEC Funds Moving Between Categories | FROM (Approved Budget Totals) | TO (Revised Budget Totals) | Amount of Match Funds Moving Between Categories | | | | |
| 4 | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$0 | \$0 | Select Yes or No |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | |
| | | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | |
| | 5 | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | |
| | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | | |
| 6 | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$0 | \$0 | Select Yes or No |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | |
| | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | | |
| 7 | | Direct Labor | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$0 | \$0 | Select Yes or No |
| | | Fringe Benefits | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Travel | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Equipment | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Materials/Misc. | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Subrecipients/Vendors | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Indirect Cost | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Profit (not allowed for grant recipients) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Totals | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | | | |
| | | Reallocation Decrease Subtotal | | | \$ - | | | \$ - | | | | |
| | | Reallocation Increase Subtotal | | | \$ - | | | \$ - | | | | |
| | Total Budget Reallocation Between Budget Categories | | | \$ - | | | \$ - | | | | | |

| Change # | Date Approved | Budget Categories | All values should be rounded to the dollar (\$1) | | | | | | Brief Description of and Justification for Change | Total Amount of CEC Funds Moving Between Categories | Cumulative CEC Total (will reset after DD review) | Has this budget been approved by the Deputy Director (DD)?** | |
|----------|--|--|--|----------------------------|---|-------------------------------|----------------------------|---|---|---|---|--|------------------|
| | | | CEC Share Funds | | | Match Share Funds | | | | | | | |
| | | | FROM (Approved Budget Totals) | TO (Revised Budget Totals) | Amount of CEC Funds Moving Between Categories | FROM (Approved Budget Totals) | TO (Revised Budget Totals) | Amount of Match Funds Moving Between Categories | | | | | |
| | | Reallocation Decrease Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Increase Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Total Budget Reallocation Between Budget Categories | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| 8 | | Direct Labor | \$ | - | \$ | - | \$ | - | \$ | - | \$0 | \$0 | Select Yes or No |
| | | Fringe Benefits | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Travel | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Equipment | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Materials/Misc. | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Subrecipients/Vendors | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Indirect Cost | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Profit (not allowed for grant recipients) | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Totals | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Decrease Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Increase Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | Total Budget Reallocation Between Budget Categories | \$ | - | \$ | - | \$ | - | \$ | - | | | | |
| 9 | | Direct Labor | \$ | - | \$ | - | \$ | - | \$ | - | \$0 | \$0 | Select Yes or No |
| | | Fringe Benefits | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Travel | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Equipment | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Materials/Misc. | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Subrecipients/Vendors | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Indirect Cost | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Profit (not allowed for grant recipients) | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Totals | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Decrease Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Increase Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | Total Budget Reallocation Between Budget Categories | \$ | - | \$ | - | \$ | - | \$ | - | | | | |
| 10 | | Direct Labor | \$ | - | \$ | - | \$ | - | \$ | - | \$0 | \$0 | Select Yes or No |
| | | Fringe Benefits | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Travel | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Equipment | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Materials/Misc. | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Subrecipients/Vendors | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Indirect Cost | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Profit (not allowed for grant recipients) | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Totals | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Decrease Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | | Reallocation Increase Subtotal | \$ | - | \$ | - | \$ | - | \$ | - | | | |
| | Total Budget Reallocation Between Budget Categories | \$ | - | \$ | - | \$ | - | \$ | - | | | | |

Worksheet Specific Instructions

Rounding: All budget values should be rounded to the dollar (\$1). Rounding of any values should be performed using standard rounding practices.

| Change # | Date Approved | Budget Categories | All values should be rounded to the dollar (\$1) | | | | | | Brief Description of and Justification for Change | Total Amount of CEC Funds Moving Between Categories | Cumulative CEC Total (will reset after DD review) | Has this budget been approved by the Deputy Director (DD)?** |
|--|---------------|-------------------|--|----------------------------|---|-------------------------------|----------------------------|---|---|---|---|--|
| | | | CEC Share Funds | | | Match Share Funds | | | | | | |
| | | | FROM (Approved Budget Totals) | TO (Revised Budget Totals) | Amount of CEC Funds Moving Between Categories | FROM (Approved Budget Totals) | TO (Revised Budget Totals) | Amount of Match Funds Moving Between Categories | | | | |
| **Regarding Deputy Director Approval: The cumulative total will reset automatically when it passes \$300K, or the budget has been approved by the Deputy Director for any other reason listed in the Changes to Grants: Level of Approval and Notification Chart . | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the amount of funding (CEC or Match Share funds) moving between categories is positive, the corresponding Category Budget cell will turn green with conditional formatting (dark green text, light green fill). | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the amount of funding (CEC or Match Share funds) moving between categories is negative, the corresponding Category Budget cell will turn red with conditional formatting (dark red text, light red fill). | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the Budget Category Total for the "Amount of CEC Funds Moving Between Categories" is anything other than zero, the cell fill will turn red with conditional formatting. Also, the associated "Total Budget Reallocation Between Budget Categories" cell will display "Not Balanced", and the cell fill will turn red with conditional formatting. This indicates there is not an equal amount of funds moving between categories and may require a correction. However, if the overall CEC Funds are to be increased or decreased, a formal amendment is required. Contact your CAM for more instructions. | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the Budget Category Total for the "Amount of Match Funds Moving Between Categories" is negative, the cell fill will turn red with conditional formatting. This indicates Match Funds are decreasing and requires a formal amendment. Contact your CAM for more instructions. | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the Budget Category Total for the "Amount of Match Funds Moving Between Categories" is anything other than zero, the associated "Total Budget Reallocation Between Budget Categories" cell will display "Not Balanced", and the cell fill will turn red with conditional formatting. This indicates there is not an equal amount of funds moving between categories and may require a correction. However, if the overall Match Share Funds are to be increased or decreased, an amendment is required. Contact your CAM for more instructions. | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the "Total Amount of CEC Funds Moving Between Categories" is greater than or equal to \$150,000, and less than or equal to \$300,000, the cell fill will turn yellow with conditional formatting. This indicates an amendment is required with a higher level of approval. Contact your CAM for more instructions. | | | | | | | | | | | | |
| CONDITIONAL FORMATTING APPLIED: If the "Total Amount of CEC Funds Moving Between Categories" is greater than \$300,000, the cell fill will turn orange with conditional formatting. This indicates an amendment is required with an even higher level of approval. Contact your CAM for more instructions. | | | | | | | | | | | | |

EXHIBIT C
CLEAN TRANSPORTATION PROGRAM (CTP) TERMS AND
CONDITIONS

TABLE OF CONTENTS

| SECTION | PAGE NO. |
|---|-----------------|
| 1. Grant Agreement..... | 2 |
| 2. Documents Incorporated by Reference | 2 |
| 3. Funding Limitations | 3 |
| 4. Due Diligence | 3 |
| 5. Products..... | 3 |
| 6. Reports..... | 3 |
| 7. Publications - Legal Statement on Reports and Products | 5 |
| 8. Changes to the Agreement..... | 5 |
| 9. Contracting and Procurement Procedures | 6 |
| 10. Bonding and Insurance..... | 8 |
| 11. Permits and Clearances | 8 |
| 12. Equipment..... | 8 |
| 13. Termination..... | 8 |
| 14. Stop Work..... | 9 |
| 15. Travel and Per Diem | 9 |
| 16. Standard of Performance..... | 10 |
| 17. Payment of Funds | 11 |
| 18. Fiscal Accounting Requirements..... | 13 |
| 19. Indemnification | 16 |
| 20. Workers' Compensation Insurance..... | 16 |
| 21. General Provisions..... | 16 |
| 22. Certifications and Compliance | 18 |
| 23. Site Visits | 20 |
| 24. Confidentiality..... | 20 |
| 25. Budget Contingency Clause..... | 21 |
| 26. Public Works -- Payment of Prevailing Wages..... | 21 |
| 27. Intellectual Property | 24 |
| 28. Commission Remedies for Recipient's Non-Compliance..... | 24 |
| 29. Assembly Bill 841 (2020)..... | 24 |

TERMS AND CONDITIONS

1. **Grant Agreement**

This project is being funded with a grant from the California Energy Commission's (Energy Commission) Clean Transportation Program (CTP, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program).

This Agreement is comprised of the grant funding award, the Terms and Conditions, and all attachments. These Terms and Conditions are standard requirements for grant awards. The Energy Commission may impose additional special conditions in this grant Agreement that address the unique circumstances of this project. Special conditions that conflict with these standard provisions take precedence.

The Recipient's authorized representative shall sign all copies of this Agreement and return all signed packages to the Energy Commission's Grants and Loans Office within 30 days. Failure to meet this requirement may result in the forfeiture of this award. When all required signatures are obtained, an executed copy will be returned to the Recipient.

The term of this Agreement or the Agreement Period is the length of this Agreement between the Energy Commission and the Recipient. Project means Recipient's specific project that is funded in whole or in part by this Agreement. The Recipient's project may coincide with or extend outside the Agreement Period.

All reimbursable work and/or the expenditure of funds must occur within the approved term of this Agreement. The Energy Commission cannot authorize any payments until all parties sign this Agreement.

2. **Documents Incorporated by Reference**

The documents below are incorporated by reference into this Agreement. These terms and conditions will govern in the event of a conflict with the documents below, with the exception of the documents in subsection (f). Where this Agreement or California laws and regulations are silent or do not apply, the Energy Commission will use the federal cost principles and acquisition regulations listed below as guidance in determining whether reimbursement of claimed costs is allowable. Documents incorporated by reference include:

Solicitation Documents (if award is made through a competitive solicitation)

- a. The funding solicitation under which this Agreement was awarded.
- b. The Recipient's proposal submitted in response to the solicitation

Federal Cost Principles (applicable to state and local governments, Indian tribes, institutions of higher education, and nonprofit organizations)

- c. 2 Code of Federal Regulations (CFR) Part 200, Subpart E (Sections 200.400 et seq.)

Federal Acquisition Regulations (applicable to commercial organizations)

- d. 48 CFR, Ch.1, Subchapter E, Part 31, Subpart 31.2: Contracts with Commercial Organizations (supplemented by 48 CFR, Ch. 9, Subchapter E, Part 931, Subpart 931.2 for Department of Energy grants)

Nondiscrimination

- e. 2 California Code of Regulations, Section 11099 et seq.: Contractor Nondiscrimination and Compliance

General Laws

- f. Any federal, state, or local laws or regulations applicable to the project that are not expressly listed in this Agreement

3. *Funding Limitations*

Any federal, State, and local laws and regulations applicable to your project not expressly listed in this Agreement are incorporated herein as part of this Agreement.

4. *Due Diligence*

The Recipient is required to take timely actions which, taken collectively, move this project to completion. The Energy Commission Agreement Manager (CAM) will periodically evaluate the Schedule of Products and Due Dates for completion of the Statement of Work tasks. If the CAM determines (1) the Recipient is not being diligent in completing the tasks in the Statement of Work or (2) the time remaining in this Agreement is insufficient to complete all project work tasks by the approved Agreement end term date, the CAM may recommend that this Agreement be terminated, and the Agreement may, without prejudice to any of the Energy Commission's remedies, be terminated.

5. *Products*

Products are defined as any tangible item specified in the Statement of Work. Unless otherwise directed, draft copies of all products identified in the Work Statement shall be submitted to the CAM for review and comment. The Recipient will submit an original and two copies of the final version of all products to the CAM.

6. *Reports*

- a. Progress Reports

The Recipient shall submit progress reports to the CAM as indicated in the Special Conditions or Work Statement. At a minimum, each progress report shall include the following:

Work Statement: This section should include a brief restatement of the approved tasks in the Work Statement and a report on the status of each, including a discussion of any products due and whether or not the project is progressing according to schedule. This section also should include a discussion of any problems encountered, proposed changes to the tasks in the Work Statement, and anticipated accomplishments in the upcoming quarter.

Financial Status: This section should include a narrative report comparing costs incurred to date with the approved Budget. The report should state whether or not the project is progressing within the approved Budget and discuss any proposed changes.

Additional Information: Additional information may be required in the progress reports as specified in the Work Statement or Special Conditions.

b. Final Reports

A draft final report shall be submitted to the CAM in accordance with the currently approved Schedule of Products and Due Dates. At a minimum, the report shall include:

- Table of Contents.
- Abstract.
- A brief summary of the objectives of the project and how these objectives were accomplished.
- Any findings, conclusions, or recommendations for follow-up or ongoing activities that might result from the successful completion of the project.
- A statement of future intent of the grant Recipient to maintain or further develop the project.
- A consolidated list of subcontractors funded in whole or in part by the grant Recipient. Include the name, address, concise statement of work done, period, and value of each.
- Additional information as specified in this Agreement or as directed by the CAM.

The CAM will review the draft report. The Recipient will incorporate applicable comments and submit the final report (the original and two copies) to the CAM.

c. Rights in Reports

The Energy Commission reserves the right to use and reproduce all reports and data produced and delivered pursuant to this Agreement, and reserves the right to authorize others to use or reproduce such materials. Each report becomes the property of the Energy Commission.

d. Failure to Comply with Reporting Requirements

Failure to submit a product required in the Scope of Work may be considered material noncompliance with the Agreement terms. Without prejudice to any other remedies, noncompliance may result in actions such as the withholding of future payments or awards, or the suspension or termination of the Agreement.

7. Publications - Legal Statement on Reports and Products

The Recipient is encouraged to publish or otherwise make publicly available the results of the work conducted under the award.

No product or report produced as a result of work funded by this program shall be represented to be endorsed by the Energy Commission, and all such products or reports shall include the following statement:

LEGAL NOTICE

This document was prepared as a result of work sponsored by the California Energy Commission. It does not necessarily represent the views of the Energy Commission, its employees, or the State of California. The Energy Commission, the State of California, its employees, contractors, and subcontractors make no warranty, express or implied, and assume no legal liability for the information in this document; nor does any party represent that the use of this information will not infringe upon privately owned rights.

8. Changes to the Agreement

a. Procedure for Requesting Changes

The Recipient must submit a written request to the CAM for any change to the Agreement. The request must include:

- A brief summary of the proposed change;
- A brief summary of the reason(s) for the change;
- Justification for the change; and
- The revised section(s) of the Agreement, with changes made in underline/ strikethrough format.

b. Approval of Changes

No amendment or variation of this Agreement shall be valid unless made in writing and signed by both of the parties except for the Commission's unilateral termination rights in Section 13 of these terms. No oral understanding or agreement is binding on any of the parties. Changes to the Agreement must be approved at a Commission business meeting or by the Executive Director (or his/her designee).

The CAM or Commission Agreement Officer will provide the Recipient with guidance regarding the level of Commission approval required for a proposed change.

c. Personnel or Subcontractor Changes

All changes below require advance written approval by the CAM, in addition to the appropriate level of Commission approval as described in subsection (b).

1) Replacement of Key Personnel, Subcontractors, and Vendors

The CAM must provide advance written approval of the replacement of personnel, subcontractors, and vendors who are identified in the Agreement and are critical to the outcome of the project, such as the Project Manager.

2) Assignment of New Personnel to an Existing Job Classification

If the Recipient or a subcontractor seeks to assign new personnel to a job classification identified in Exhibit B, the Recipient or subcontractor must submit the individual's resume and proposed job classification and rate to the CAM for approval. The proposed rate may not exceed the maximum rate identified for the job classification. Neither the Recipient nor any subcontractor may use the job classifications or rates of their subcontractors for personnel.

If the individual performs any work prior to the effective date of the amendment documenting the change, the Recipient will bear the expense of the work.

3) Promotion of Existing Personnel (Applies to Recipients and major subcontractors)

Promotion of existing Recipient and major subcontractor personnel to rates higher than those listed for their current classification in Exhibit B will not be approved. If the actual rates (e.g., direct labor rates, fringe benefit rates, and indirect rates) exceed the approved rates in the Budget, the difference may be charged to the agreement as a match share expenditure.

4) Addition of job classifications and changes in hours.

5) Increased direct operating expenses and rates that exceed the expenses and rates identified in Exhibit B.

9. Contracting and Procurement Procedures

This section provides general requirements for an agreement between the Recipient and a third party ("subcontractor").

All subcontracts must be submitted to the CAM for review prior to execution. For subcontracts that are listed as "to be determined" in the Budget, the Recipient must submit a revised Budget to the CAM, identifying the subcontractor and specific items of cost expected to be incurred by that subcontractor. In addition, Recipient must have a fully executed subcontract before the subcontractor can incur any costs for which the Recipient will seek reimbursement.

The Recipient is required, where feasible, to employ contracting and procurement practices that promote open competition for all goods and services needed to complete this project. Recipient shall obtain price quotes from an adequate number of sources for all subcontracts.

The Energy Commission will defer to the Recipient's own regulations and procedures as long as they reflect applicable state and local laws and regulations and are not in conflict with the minimum standards specified in this Agreement.

Upon request, the Recipient must submit to the CAM a copy of all solicitations for services or products required to carry out the terms of this Agreement and copies of the proposals or bids received.

The Recipient is responsible for handling all contractual and administrative issues arising out of or related to any subcontracts it enters into under this Agreement.

All subcontracts must incorporate all of the following:

- A clear and accurate description of the material, products, or services to be procured as well as a detailed budget and timeline.
- Provisions that allow for administrative, contractual, or legal remedies in instances where subcontractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.
- Provisions for termination by the Recipient, including termination procedures and the basis for settlement.
- Language conforming to the "Nondiscrimination" provision in this Agreement.
- The Standard of Performance provisions specified in this Agreement.
- Retention of Records provisions specified in this Agreement.
- Audits provisions specified in this Agreement.
- Language conforming to the "Indemnification" provision in this Agreement.
- Public Work -- Payment of Prevailing Wages Generally Required by Law provisions in this Agreement.
- Assembly Bill 841 (2020) provision specified in this Agreement.

Recipients who are subcontracting with University of California (UC) may use the terms and conditions negotiated by the Energy Commission with UC for their subcontracts. Recipients who are subcontracting with the Department of Energy (DOE) national laboratories may use the terms and conditions negotiated with DOE.

Without limiting any of the Commission's other remedies, failure to comply with the above requirements may result in the termination of this Agreement.

10. Bonding and Insurance

The Recipient will follow its own bonding and insurance requirements relating to bid guarantees, performance bonds, and payment bonds without regard to the dollar value of the subcontract(s) as long as they reflect applicable state and local laws and regulations.

11. Permits and Clearances

The Recipient is responsible for ensuring all necessary permits and environmental documents are prepared and clearances are obtained from the appropriate agencies.

12. Equipment

Equipment is defined as having a useful life of at least one year, having an acquisition unit cost of at least \$5,000, and purchased with Energy Commission funds. Equipment means any products, objects, machinery, apparatus, implements or tools purchased, used or constructed within the Project, including those products, objects, machinery, apparatus, implements or tools from which over thirty percent (30%) of the equipment is composed of materials purchased for the Project. For purposes of determining depreciated value of equipment used in the Agreement, the Project shall terminate at the end of the normal useful life of the equipment purchased, funded and/or developed with Energy Commission funds. The Energy Commission may determine the normal useful life of such equipment.

Title to equipment acquired by the Recipient with grant funds shall vest in the Recipient. The Recipient shall use the equipment in the project or program for which it was acquired as long as needed, whether or not the project or program continues to be supported by grant funds, and the Recipient shall not encumber the property without CAM approval. When no longer needed for the original project or program, the Recipient shall contact the CAM for disposition instructions.

13. Termination

This project may be terminated for any reason set forth below.

a. With Cause

The Energy Commission may, for cause, terminate this Agreement upon giving five (5) calendar days advance written notice to the Recipient. In this event, the Recipient will use all reasonable efforts to mitigate its expenses and obligations.

The term "for cause" includes but is not limited to the following:

- Partial or complete loss of match funds;
- Reorganization to a business entity unsatisfactory to the Energy Commission;
- Retention or hiring of subcontractors, or replacement or addition of personnel, that fail to perform to the standards and requirements of this Agreement;

- The Recipient's inability to pay its debts as they become due and/or the Recipient's default of an obligation that impacts its ability to perform under this Agreement; or
 - Significant change in state or Energy Commission policy such that the work or product being funded would not be supported by the Commission.
- b. Without Cause
- The Energy Commission may terminate this Agreement without cause upon giving thirty (30) days advance written notice to the Recipient. In this event, the Recipient will use all reasonable efforts to mitigate its expenses and obligations.

14. Stop Work

Energy Commission staff may, at any time, by written notice to Recipient, require Recipient to stop all or any part of the work tasks in this Agreement. Stop work orders may be issued for reasons such as a project exceeding budget, standard of performance, out of scope work, delay in Project schedule, misrepresentations and the like.

- a. Compliance. Upon receipt of such stop work order, Recipient shall immediately take all necessary steps to comply therewith and to stop the incurrence of costs allocable to the Energy Commission.
- b. Canceling a Stop Work Order. Recipient shall resume the work only upon receipt of written instructions from Energy Commission staff.

15. Travel and Per Diem

- a. The Recipient shall be reimbursed for travel and per diem expenses using the same rates provided to non-represented State employees. The Recipient must pay for travel in excess of these rates. The Recipient may obtain current rates from the Energy Commission's Web Site at: http://www.energy.ca.gov/contracts/TRAVEL_PER_DIEM.PDF.
- b. For purposes of payment, Recipient's headquarters shall be considered the location of the Recipient's office where the employees' assigned responsibilities for this award are permanently assigned.
- c. Travel identified in the Budget section of this Agreement is approved and does not require further authorization.
- d. Travel that is not included in the Budget section of this Agreement shall require written authorization from the CAM and Commission Agreement Officer prior to travel departure. The Energy Commission will reimburse travel expenses from the Recipient's office location.

- e. The Recipient must retain documentation of travel expenses in its financial records. The documentation must be listed by trip and include dates and times of departure and return, departure and destination cities. Travel receipts, including for travel meals and incidentals, shall be submitted with payment requests requesting reimbursement from the Energy Commission.

16. Standard of Performance

Recipient, its subcontractors and their employees, in the performance of Recipient's work under this Agreement shall be responsible for exercising the degree of skill and care required by customarily accepted good professional practices and procedures used in the Recipient's field.

Any costs for failure to meet the foregoing standard or to correct otherwise defective work that requires re-performance of the work, as directed by CAM, shall be borne in total by Recipient and not the Energy Commission. The failure of a project to achieve the performance goals and objectives stated in the Work Statement is not a basis for requesting re-performance unless the work conducted by Recipient and/or its subcontractors is deemed by the Energy Commission to have failed the foregoing standard of performance.

In the event Recipient/subcontractor fails to perform in accordance with the above standard:

- a. Recipient/subcontractor will re-perform, at its own expense, any task which was not performed to the reasonable satisfaction of the CAM. Any work re-performed pursuant to this paragraph shall be completed within the time limitations originally set forth for the specific task involved. Recipient/subcontractor shall work any overtime required to meet the deadline for the task at no additional cost to the Energy Commission;
- b. The Energy Commission shall provide a new schedule for the re-performance of any task pursuant to this paragraph in the event that re-performance of a task within the original time limitations is not feasible; and
- c. The Energy Commission shall have the option to direct Recipient/subcontractor not to re-perform any task which was not performed to the reasonable satisfaction of the CAM pursuant to application of (a) and (b) above. In the event the Energy Commission directs Recipient/subcontractor not to re-perform a task, the Energy Commission and Recipient shall negotiate a reasonable settlement for satisfactory work performed. No previous payment shall be considered a waiver of the Energy Commission's right to reimbursement.

Nothing contained in this section is intended to limit any of the rights or remedies which the Energy Commission may have under law.

17. **Payment of Funds**

The Energy Commission agrees to reimburse the Recipient for actual allowable expenditures incurred in accordance with the Budget. The rates in the Budget are rate caps, or the maximum amount allowed to be billed.

The Recipient can only bill for actual expenses incurred at the Recipient's actual rates not to exceed the rates specified in the Budget (e.g., direct labor rates, fringe benefit rates, and indirect rates). For example, if the Budget includes an employee's hourly rate of \$50/hour but the employee is only paid \$40/hour, the Recipient can only bill for \$40/hour. Under the same example, if the employee earned \$70/hour but the Budget only lists \$50/hour, the Recipient can only bill for \$50. Another example is if the maximum fringe benefit rate listed in the Budget is 20% but the Recipient's actual fringe benefit rate is only 15%, the Recipient can only bill at 15%. If the actual rates (e.g., direct labor rates, fringe benefit rates, and indirect rates) exceed the approved rates in the Budget, the difference may be charged to the agreement as a match share expenditure.

a. **Payment Requests**

The Recipient may request payment from the Energy Commission at any time during the term of this Agreement. The final payment request must be received by the Energy Commission by either (1) the approved agreement end term date or (2) the date specified in the Special Terms and Conditions of this agreement (if any), whichever is earlier.

Payments will generally be made on a reimbursement basis for Recipient expenditures, i.e., after the Recipient has incurred the cost for a service, product, supplies, or other approved budget item. No reimbursement for food or beverages shall be made other than allowable per diem charges.

Funds in this Agreement have a limited period in which they must be expended. All Recipient expenditures must occur within the approved term of this Agreement.

b. **Documentation**

All payment requests must be submitted using a completed Payment Request form. This form must be accompanied by an itemized list of all charges and copies of all receipts or invoices necessary to document these charges for both Energy Commission and match share, including backup documentation for actual expenditures, such as time cards, vendor invoices, and proof of payment. Any payment request that is submitted without the itemization will not be authorized. If the itemization or documentation is incomplete, inadequate, or inaccurate, the CAM will inform the Recipient via a Dispute Notification Form (Std. 209) and hold the invoice until all required information is received or corrected. Any penalties imposed on the Recipient by a subcontractor because of delays in payment will be paid by the Recipient.

Any documentation in foreign currency must be converted to dollars, and the conversion rate must be included in your itemization.

c. Certification

The following certification shall be included on each Payment Request form and signed by the Recipient's authorized officer:

I certify that this invoice is correct and proper for payment, and reimbursement for these costs has not and will not be received from any other sources, including but not limited to a government entity contract, subcontract or other procurement method.

Additional certification required related to the payment of prevailing wages. Refer to section 26 of these terms and conditions for more information.

d. Government Entity

Government Entity is defined as a governmental agency from California or any state or a state college or state university from California or any state; a local government entity or agency, including those created as a Joint Powers Authority; an auxiliary organization of the California State University or a California community college; the Federal Government; a foundation organized to support the Board of Governors of the California Community Colleges or an auxiliary organization of the Student Aid Commission established under Education Code 69522.

e. Release of Funds

The CAM will not process any payment request during the Agreement term until the following conditions have been met:

- All required reports have been submitted and are satisfactory to the CAM.
- All applicable special conditions have been met.
- All appropriate permits or permit waivers from governmental agencies have been issued to the Recipient and copies have been received by the CAM.
- All products due have been submitted and are satisfactory to the CAM.
- Other prepayment conditions as may be required by the CAM have been met. Such conditions will be specified in writing ahead of time, if possible.

f. Fringe Benefits, Indirect Overhead, and General and Administrative (G&A),

Indirect cost rates must be developed in accordance with generally accepted accounting principles. If the Recipient has an approved fringe benefits or indirect cost rate (indirect overhead or G&A) from their cognizant Federal Agency, the Recipient may bill at the federal rate up to the Budget rate caps if the following conditions are met:

- The Recipient may bill at the federal provisional rate but must adjust annually to reflect their actual final rates for the year in accordance with the Labor, Fringe, and Indirect Invoicing Instructions which can be accessed in this agreement.
- The cost pools used to develop the federal rates must be allocable to the Energy Commission Agreement, and the rates must be representative of the portion of costs benefiting the Energy Commission Agreement. For example, if the federal rate is for manufacturing overhead at the Recipient's manufacturing facility and the Energy Commission Agreement is for research and development at their research facility, the federal indirect overhead rate would not be applicable to the Energy Commission Agreement.
- The federal rate must be adjusted to exclude any costs that are specifically prohibited in the Energy Commission Agreement.
- The Recipient may only bill up to the Agreement Budget rate caps unless and until an amendment to the Agreement Budget is approved.

g. Retention

It is the Energy Commission's policy to retain 10 percent of any payment request or 10 percent of the total Energy Commission award at the end of the project. After the project is complete the Recipient must submit a completed payment request form requesting release of the retention. The CAM will review the project file and, when satisfied that the terms of the funding Agreement have been fulfilled, will authorize release of the retention.

h. State Controller's Office

Payments are made by the State Controller's Office.

18. Fiscal Accounting Requirements

a. Accounting and Financial Methods

The Recipient shall establish a separate ledger account or fund for receipt and disbursement of Energy Commission funds for each project funded by the Energy Commission. Expenditure details must be maintained in accordance with the approved budget details using appropriate accounting practices.

b. Retention of Records

The Recipient shall retain all project records (including financial records, progress reports, and payment requests) for a minimum of three (3) years after the final payment has been received or three years after the federal grant term, whichever is later, unless otherwise specified in the funding Agreement.

Records for nonexpendable personal property acquired with grant funds shall be retained for three years after its final disposition or three years after the federal grant term, whichever is later.

c. Audits

Upon written request from the Energy Commission, the Recipient shall provide detailed documentation of all expenses at any time throughout the project. In addition, the Recipient agrees to allow the Energy Commission or any other agency of the State, or their designated representative, upon written request, to have reasonable access to and the right of inspection of all records that pertain to the project during the term of this Agreement and for a period of three (3) years thereafter or three years after the federal grant term, whichever is later, unless the Energy Commission notifies the Recipient, prior to the expiration of such three-year period, that a longer period of record retention is necessary. Further, the Recipient agrees to incorporate an audit of this project within any scheduled audits, when specifically requested by the State. Recipient agrees to include a similar right to audit in any subcontract.

Recipients are strongly encouraged to conduct annual audits in accordance with the single audit concept. The Recipient should provide two copies of the independent audit report and any resulting comments and correspondence to the CAM within 30 days of the completion of such audits.

d. Match Share Requirements

Match Share means cash or in-kind (non-cash) contributions provided by Recipient, subcontractors or third parties that will be used in performance of this Agreement.

The Recipient agrees to provide the Minimum Match Share Percentage of Total Allowable Project Costs, even if the Agreement is terminated early or otherwise ends before project completion. The Minimum Match Share Percentage is the Minimum Match Share Required (as specified on the CEC-146) divided by the Total of Reimbursable Amount and Minimum Match Share Required (as specified on the CEC-146). Total Allowable Project Costs is the sum of all actual, allowable costs incurred in performance of the Agreement and approved by the Energy Commission.

For example, if the CEC-146 specifies the following,

| | |
|---|-----------|
| Reimbursable Amount | \$200,000 |
| Minimum Match Share Required | \$50,000 |
| Total of Reimbursable Amount and Minimum Match Share Required | \$250,000 |
| Minimum Match Share Percentage of Total Allowable Project Costs | 20% |

the Recipient agrees to be liable for a minimum of 20% (\$50,000 divided by \$250,000) of Total Allowable Project Costs. In this example and at the end of the agreement, if Total Allowable Project Costs is \$125,000, the Recipient shall have provided a minimum of \$25,000 (\$125,000 times 20%) as match share.

Without limiting any of the Energy Commission's other rights or remedies, the Recipient agrees that if it fails to provide the Minimum Match Share Percentage of Total Allowable Project Costs, and if requested by the Energy Commission, the Recipient shall repay an amount to ensure the Recipient provides, at a minimum, the Minimum Match Share Percentage of Total Allowable Project Costs.

For example, and building upon the previous example, if:

- A. Energy Commission funds disbursed = \$110,000
- B. Match Share Documented and Approved = \$15,000
- C. Total Allowable Project Costs = \$125,000 (Line A plus Line B)
- D. Minimum Match Share Percentage of Total Allowable Project Costs = 20%
- E. Minimum Match Share Amount Required = \$25,000 (Line C multiplied by Line D)

the Energy Commission may request, and the Recipient would be required to repay upon such request, \$10,000 (Line E minus Line B) to the Energy Commission.

The maximum amount to be reimbursed by the Energy Commission under this Agreement is the Reimbursable Amount specified on the CEC-146. The Energy Commission award amount is fixed and will not be augmented. If actual Total Allowable Project Costs exceed estimated Total Allowable Project Costs, the Recipient is responsible for those additional costs.

The Recipient must maintain accounting records detailing the expenditure of the Match Share and provide documentation of expenditures as described in this Agreement (e.g., under this Exhibit C "Payment of Funds" and "Fiscal Accounting Requirements").

In the event of any conflict or inconsistency between the Minimum Match Share Required specified on the CEC-146 and the Match Share specified on other Exhibits to this Agreement, the Minimum Match Share Required specified on the CEC-146 shall control.

19. Indemnification

The Recipient agrees to indemnify, defend, and save harmless the State, its officers, agents, and employees from any and all claims and losses accruing or resulting to Recipient and to any and all contractors, subcontractors, materialmen, laborers, and any other person, firm, or corporation furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims and losses accruing or resulting to any person, firm, or corporation who may be injured or damaged by the Recipient in the performance of this Agreement.

20. Workers' Compensation Insurance

- a. Recipient hereby warrants that it carries Worker's Compensation Insurance for all of its employees who will be engaged in the performance of this Agreement, and agrees to furnish to the CAM satisfactory evidence of this insurance at any time the CAM may request.
- b. If Recipient is self-insured for worker's compensation, it hereby warrants such self-insurance is permissible under the laws of the State of California and agrees to furnish to the CAM satisfactory evidence of this insurance at any time the CAM may request.

21. General Provisions

- a. Governing Law

It is hereby understood and agreed that this Agreement shall be governed by the laws of the State of California as to interpretation and performance.

- b. Independent Capacity

The Recipient, and the agents and employees of the Recipient, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of the Energy Commission.

- c. Assignment

Without the written consent of the Energy Commission in the form of a formal written amendment, this Agreement is not assignable or transferable by Recipient either in whole or in part.

- d. Timeliness

Time is of the essence in this Agreement.

- e. Unenforceable Provision

In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby.

f. Waiver

No waiver of any breach of this Agreement shall be held to be a waiver of any other or subsequent breach. All remedies afforded in this Agreement shall be taken and construed as cumulative, that is, in addition to every other remedy provided therein or by law.

g. Assurances

The Energy Commission reserves the right to seek further written assurances from the Recipient and its team that the work of the project under this Agreement will be performed consistent with the terms of the Agreement.

h. Change in Business

(1) Recipient shall promptly notify the Energy Commission of the occurrence of each of the following:

- (a) A change of address.
- (b) A change in the business name or ownership.
- (c) The existence of any litigation or other legal proceeding affecting the project.
- (d) The occurrence of any casualty or other loss to project personnel, equipment or third parties of a type commonly covered by insurance.
- (e) Receipt of notice of any claim or potential claim against Recipient for patent, copyright, trademark, service mark and/or trade secret infringement that could affect the Energy Commission's rights.

(2) Recipient shall not change or reorganize the type of business entity under which it does business except upon prior written notification to the Energy Commission. A change of business entity or name change requires an amendment assigning or novating the Agreement to the changed entity. In the event the Energy Commission is not satisfied that the new entity can perform as the original Recipient, the Energy Commission may terminate this Agreement as provided in the termination paragraph.

i. Survival of Terms

It is understood and agreed that certain provisions shall survive the completion or termination date of this Agreement for any reason. The provisions include, but are not limited to:

- "Payments of Funds"
- "Equipment"
- "Change in Business"
- "Termination"

- “Audit”
- “Indemnification”
- “Fiscal Accounting Requirements”

22. *Certifications and Compliance*

a. Federal, State and Municipal Requirements

Recipient must obtain any required permits and shall comply with all applicable federal, State, and municipal laws, rules, codes, and regulations for work performed under this Agreement.

b. Nondiscrimination Statement of Compliance

During the performance of this Agreement, Recipient and its subcontractors shall not unlawfully discriminate, harass or allow harassment, against any employee or applicant for employment because of sex, sexual orientation, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, and denial of family care leave. Recipient and its subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination and harassment. Recipient and its subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code Sections 12990 et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 11000 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4.1 of Title 2 of the California Code of Regulations are incorporated into this Agreement by reference and made a part of it as if set forth in full. Recipient and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other Agreement.

The Recipient shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under this Agreement.

c. Drug-Free Workplace Certification

By signing this Agreement, the Recipient hereby certifies under penalty of perjury under the laws of the State of California that the Recipient will comply with the requirements of the Drug-Free Workplace Act of 1990 (Government Code Section 8350 et seq.) and will provide a drug-free workplace by taking the following actions:

- (1) Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations as required by Government Code Section 8355(a)(1).
- (2) Establish a Drug-Free Awareness Program as required by Government Code Section 8355(a)(2) to inform employees about all of the following:
 - The dangers of drug abuse in the workplace;
 - The person's or organization's policy of maintaining a drug-free workplace;
 - Any available counseling, rehabilitation, and employee assistance programs; and
 - Penalties that may be imposed upon employees for drug abuse violations.
- (3) Provide, as required by Government Code Section 8355(a)(3), that every employee who works on the proposed project:
 - Will receive a copy of the company's drug-free policy statement;
 - Will agree to abide by the terms of the company's statement as a condition of employment on the project.

Failure to comply with these requirements may result in suspension of payments under the Agreement or termination of the Agreement or both, and the Recipient may be ineligible for any future State awards if the Energy Commission determines that any of the following has occurred: (1) the Recipient has made false certification, or (2) violates the certification by failing to carry out the requirements as noted above.

d. Child Support Compliance Act (Applicable to California Employers)

For any Agreement in excess of \$100,000, the Recipient acknowledges that:

- It recognizes the importance of child and family support obligations and shall fully comply with all applicable State and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with section 5200) of Part 5 of Division 9 of the Family Code; and

- To the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of all new employees to the New Hire Registry maintained by the California Employment Development Department.
- e. Americans with Disabilities Act
- By signing this Agreement, Recipient assures the State that it complies with the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. 12101, et seq.), which prohibits discrimination on the basis of disability, as well as applicable regulations and guidelines issued pursuant to the ADA.

23. Site Visits

The Energy Commission and/or its designees have the right to make site visits at reasonable times to review project accomplishments and management control systems and to provide technical assistance, if required. Recipient must provide and must require subawardees to provide reasonable facilities and assistance for the safety and convenience of the government representatives in the performance of their duties. All site visits and evaluations must be performed in a manner that does not unduly interfere with or delay the work.

24. Confidentiality

a. Information Considered Confidential

Confidential information is information designated confidential pursuant to the procedures specified in 20 CCR 2505. If applicable, all Recipient information considered confidential at the commencement of this Agreement is designated in the Attachment to this Exhibit.

b. Confidential Deliverables: Labeling and Submitting Confidential Information

Prior to the commencement of this Agreement, if applicable, the parties have identified in the Attachment to this Exhibit, specific Confidential Information to be provided as a deliverable. All such confidential deliverables shall be marked, by the Recipient, as "Confidential" on each page of the document containing the Confidential Information and presented in a sealed package to the Commission Agreement Officer. (Non-confidential deliverables are submitted to the Accounting Office.) All Confidential Information will be contained in the "confidential" volume: no Confidential Information will be in the "public" volume.

c. Submittal of Unanticipated Confidential Information as a Deliverable

The Recipient and the Energy Commission agree that during this Agreement, it is possible that the Recipient may develop additional data or information not originally anticipated as a confidential deliverable. In this case, Recipient shall follow the procedures for a request for designation of Confidential Information specified in 20 CCR 2505. The Energy Commission's Executive Director makes the determination of confidentiality. Such subsequent determinations may be added to the list of confidential deliverables in the Attachment to this Exhibit.

d. Disclosure of Confidential Information

Disclosure of Confidential Information by the Energy Commission may only be made pursuant to 20 CCR 2506 and 2507. All confidential data, records or deliverables that are legally disclosed by the Recipient or any other entity become public records and are no longer subject to the above confidentiality designation.

25. Budget Contingency Clause

It is mutually agreed that this Agreement shall be of no further force and effect if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the work identified in the Scope of Work. In this event, the Energy Commission shall have no liability to pay any funds whatsoever to the Recipient or to furnish any other consideration under this Agreement, and the Recipient shall not be obligated to perform any provisions of this Agreement.

If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, the Energy Commission shall have the option to either: 1) cancel this Agreement with no liability occurring to the Energy Commission; or 2) offer an Agreement Amendment to the Recipient to reflect the reduced amount.

26. Public Works -- Payment of Prevailing Wages

Generally Required by Law

Projects that receive an award of public funds from the Energy Commission often involve construction, alteration, demolition, installation, repair or maintenance work over \$1,000.

NOTE: Projects that receive an award of public funds from the Energy Commission are likely to be considered public works under the California Labor Code. See Chapter 1 of Part 7 of Division 2 of the California Labor Code, commencing with Section 1720 and Title 8, California Code of Regulations, Chapter 8, Subchapter 3, commencing with Section 16000.

Accordingly, the Energy Commission assumes that all projects it funds are public works. Projects deemed to be public works require among other things the payment of prevailing wages.

NOTE: Prevailing wage rates can be significantly higher than non-prevailing wage rates.

By accepting this Agreement, Recipient as a material term of this Agreement shall be fully responsible for complying with all California public works requirements including but not limited to payment of prevailing wage. Therefore, as a material term of this Agreement, Recipient must either:

- (a) Proceed on the assumption that the project is a public work and ensure that:
- (i) prevailing wages are paid; and
 - (ii) the project budget for labor reflects these prevailing wage requirements; and
 - (iii) the project complies with all other requirements of prevailing wage law including but not limited to keeping accurate payroll records, and complying with all working hour requirements and apprenticeship obligations;

or,

(b) Timely obtain a legally binding determination from DIR or a court of competent jurisdiction before work begins on the project that the proposed project is not a public work.

NOTE: Only the California Department of Industrial Relations (DIR) and courts of competent jurisdiction have jurisdiction to issue legally binding determinations that a particular project is or is not a public work.

If the Recipient is unsure whether the project receiving this award is a “public work” as defined in the California Labor Code, it may wish to seek a timely determination from the California Department of Industrial Relations (DIR) or an appropriate court.

NOTE: Such processes can be time consuming and therefore it may not be possible to obtain a timely determination before the date for performance of the award commences.

If the Recipient does not timely obtain a binding determination from DIR or a court of competent jurisdiction that the project is not a public work, before this Agreement from the Energy Commission is executed, the Recipient shall assume that the project is a public work and that payment of prevailing wages is required and shall pay prevailing wages unless and until such time as the project is subsequently determined to not be a public work by DIR or a court of competent jurisdiction.

NOTE: California Prevailing Wage law provides for substantial damages and financial penalties for failure to pay prevailing wages when payment of prevailing wages is required.

Subcontractors and Flow-down Requirements. Recipient shall ensure that its subcontractors, if any, also comply with above requirements with respect to public works/prevaling wage. Recipient shall ensure that all agreements with its contractors/subcontractors to perform work related to this Project contain the above terms regarding payment of prevailing wages on public works projects. Recipient shall be responsible for any failure of Recipient's subcontractors to comply with California prevailing wage and public works laws.

Indemnification and Breach. Any failure of Recipient or its subcontractors to comply with the above requirements shall constitute a breach of this Agreement that excuses the Energy Commission's performance of this Agreement at the Energy Commission's option, and shall be at Recipient's sole risk. In such a case, Energy Commission may refuse payment to Recipient of any amount under this Agreement and Energy Commission shall be released, at its option, from any further performance of this award or any portion thereof. By accepting this Agreement, and as a material term of this Agreement, Recipient agrees to indemnify the Energy Commission and hold the Energy Commission harmless for any and all financial consequences arising out of or resulting from the failure of Recipient and/or any of Recipient's subcontractors to pay prevailing wages or to otherwise comply with the requirements of prevailing wage law.

Budget. Recipient's budget on public works projects must indicate which job classifications are subject to prevailing wage. For detailed information about prevailing wage and the process to determine if the proposed project is a public work, Recipient may wish to contact the California Department of Industrial Relations (DIR) or a qualified labor attorney of their choice for guidance.

Covered Trades. For public works projects, Recipient may contact DIR for a list of covered trades and the applicable prevailing wage.

Questions. If Recipient has any questions about this contractual requirement or the wage, record keeping, apprenticeship or other significant requirements of California prevailing wage law, it is recommended that Recipient consult DIR and/or a qualified labor attorney of its choice before accepting this Agreement.

Certification. Recipient shall certify to the Energy Commission on each Payment Request Form, either that (1) prevailing wages were paid to eligible workers who provided labor for work covered by the payment request and that the Recipient and all contractors and subcontractors otherwise complied with all California prevailing wage laws, or (2) that the project is not a public work requiring the payment of prevailing wages. In the latter case, Recipient shall provide competent proof of a DIR or court determination that the project is not a public work requiring the payment of prevailing wages.

Prior to the release of any retained funds under this Agreement, the Recipient shall submit to the Energy Commission the above-described certificate signed by the Recipient and all contractors and subcontractors performing public works activities on the project. Absent such certificate, Recipient shall have no right to any funds under this Agreement, and Energy Commission shall be relieved of any obligation to pay said funds.

27. *Intellectual Property*

The Energy Commission makes no claim to intellectual property developed under this Agreement that is not specified for delivery, except as expressly provided herein.

28. *Commission Remedies for Recipient's Non-Compliance*

Without limiting any of its other remedies, the Commission may, for Recipient's noncompliance of any Agreement requirement, withhold future payments, demand and be entitled to repayment of past reimbursements, or suspend or terminate this Agreement. The tasks in the Scope of Work are non-severable, and completion of all of them is material to this Agreement. Thus, the Commission, without limiting its other remedies, is entitled to repayment of all funds paid to Recipient if the Recipient does not timely complete all tasks in the Scope of Work.

29. *Assembly Bill 841 (2020)*

By signing this Agreement, Recipient as a material term of this Agreement shall be fully responsible for complying with this section. AB 841 (Ting, 2020) added Public Utilities Code (PUC) section 740.20, which requires Electric Vehicle Infrastructure Training Program (EVITP) certification to install electric vehicle charging infrastructure and equipment for work performed on or after January 1, 2022, subject to certain exceptions. As a policy matter, the CEC is applying the EVITP certification requirements to project work funded under this Agreement, regardless of whether it might be performed prior to January 1, 2022, unless an exception applies.

Therefore, applying PUC 740.20 EVITP requirements to this Agreement means that all electric vehicle charging infrastructure and equipment located on the customer side of the electrical meter shall be installed by a contractor with the appropriate license classification, as determined by the Contractors' State License Board, and at least one electrician on each crew, at any given time, who holds an EVITP certification. Projects that include installation of a charging port supplying 25 kilowatts or more to a vehicle must have at least 25 percent of the total electricians working on the crew for the project, at any given time, who hold EVITP certification. One member of each crew may be both the contractor and an EVITP certified electrician. The requirements stated in this paragraph do not apply to any of the following:

- (1) Electric vehicle charging infrastructure installed by employees of an electrical corporation or local publicly owned electric utility.
- (2) Electric vehicle charging infrastructure funded by moneys derived from credits generated from the Low Carbon Fuel Standard Program (Subarticle 7 (commencing with Section 95480) of Article 4 of Subchapter 10 of Chapter 1 of Division 3 of Title 17 of the California Code of Regulations).
- (3) Single-family home residential electric vehicle chargers that can use an existing 208/240-volt outlet.

STREAMLINING GRANT TERMS AND CONDITIONS

The Energy Commission (CEC) has undergone a significant effort to improve its grant agreements across its programs. To implement these improvements, the CEC and existing grant recipients must amend existing agreements. Because different CEC programs have different terms and conditions and because even the same CEC programs can have different terms depending on when the agreements were executed, individually changing the terms in each existing grant agreement is impractical. Instead, the CEC has developed these terms and conditions and placed them in their own document. Existing grant agreements can be amended to include this document.

The CEC acknowledges that terms in this document will conflict with some of the terms and other requirements in existing grant agreements. Accordingly, where there is a conflict, the CEC and Recipient agree that this document controls. Outside of the changes made by this document, all other grant terms and requirements remain unchanged.

Acronyms and Terms Used in this Document and Their Meaning

| | |
|---------------------------------------|---|
| Agreement | The grant agreement executed between the CEC and the Recipient. |
| Budget Categories | Means the following categories in Exhibit B, Budget: Direct Labor, Fringe Benefits, Travel, Equipment, Materials and Miscellaneous, Subrecipients and Vendors (formerly Subcontractors), and Indirect Costs and Profit. |
| CAM | Commission Agreement Manager |
| CEC | California Energy Commission |
| Existing Terms | The terms that might be found in any of the CEC grant agreements in any of its programs, including the terms for this Agreement. |
| Incurred Costs | An expense for which the Recipient has become liable (legally obligated) to pay. |
| MTDC | Modified Total Direct Costs, which means all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first \$25,000 of each subaward (regardless of the period of performance of the subawards under the award). MTDC excludes equipment, capital expenditures, rental costs, tuition remission, scholarships and fellowships, and the portion of each subaward in excess of \$25,000. |
| Paid Costs | An expense for which the Recipient has already made payment. |
| Recipient | The entity that executed this Agreement with the CEC. |
| Subaward | For the Recipient, a Subaward means all agreements it has with Subrecipients and Vendors. For a Subrecipient, a Subaward means all agreements it has with Sub-Subrecipients and Vendors. For any lower-tiered level of Sub-Subrecipient, a Subaward means all agreements it has with its own Sub-Subrecipients and Vendors. |
| Subrecipient (formerly Subcontractor) | A person or entity that receives grant funds directly from the Recipient and is entrusted by the Recipient to make decisions about how to conduct some of |

EXHIBIT C
APPENDIX C-1

| | |
|------------------|--|
| | the grant’s activities. A Subrecipient’s role involves discretion over grant activities and is not merely just selling goods or services. |
| Sub-Subrecipient | Has the same meaning as a Subrecipient except that it receives grant funds from a Subrecipient or any lower tier level of a Sub-Subrecipient. |
| Vendor | A person or entity that sells goods or services to the Recipient, Subrecipient, or any lower-tiered level of Sub-Subrecipient, in exchange for some of the grant funds, and does not make decisions about how to perform the grant’s activities. The Vendor’s role is ministerial and does not involve discretion over grant activities. |
| These Terms | The terms in this document titled “ Streamlining Grant Terms and Conditions. ” |

1. Decoupling Products from Invoices

Existing Terms typically require grant recipients to submit products with invoices. This is no longer required. Recipients can separately submit products and invoices.

2. Quarterly Instead of Monthly Reports

Most grants include within their scopes of work an administrative task requiring grant recipients to submit monthly progress reports, often concurrent with submission of an invoice. This is no longer required. Instead, Recipients will now submit progress reports quarterly instead of monthly. Unless a different arrangement is discussed with and approved by the Commission Agreement Manager (CAM) in writing, which can be done without amending these terms (e.g., as simple as an email from the CAM), quarterly means by the tenth day of each January, April, July, and October.

3. New Requirement for Monthly Calls with the CAM

Instead of monthly progress reports currently required under Task 1, Recipients shall participate in brief phone calls that will occur at least monthly and which will be initiated by the CAM to briefly discuss project progress and identify any emerging issues. Monthly calls might not be held on those months when a quarterly progress report is submitted or the CAM determines that a monthly call is unnecessary.

4. Amendments and Other Changes

Existing Terms typically require a written amendment signed by both the CEC and Recipient for any change to the grant agreement. In contrast, These Terms allow certain changes, as described in this document, to be made to this Agreement without a formal amendment.

A. Budget Reallocations

No CEC approval is needed for a Recipient, Subrecipient, or any lower-tiered level of Sub-Subrecipient to move funds **within** each of the following Budget Categories listed in the Exhibit

EXHIBIT C
APPENDIX C-1

B: Direct Labor, Fringe Benefits, Travel, Equipment, Materials and Miscellaneous, Subrecipients, and Indirect Costs. (However, please note that per section 4.B. below, any new M&M, Equipment, Subrecipient or Vendor not listed in the budget does need to be approved prior to reimbursement.) If the Recipient wants to move funds between Budget Categories or submits an invoice that if paid would exceed a Budget Category, the Recipient has at least the following choices:

1. Request an amendment from the CEC. The CEC will not pay the invoice if and until an amendment is approved, except possibly for the final invoice per section 4.A.3 below. In its sole discretion, the CEC might pay the portion of the invoice that does not involve the amount that goes beyond the Budget Category.
2. Retract the invoice and resubmit a corrected one that keeps within Budget Categories. The Recipient can treat the amount paid beyond the Budget Category as match funds if the expenditure meets all of the applicable Agreement requirements for match funds.
3. If there is a Budget Category overage on the final invoice, the Recipient can discuss with the CAM if the invoice can be approved without needing the amendment in section 4.A.1 above. The CAM will require a written justification for the budget category overage to determine if the invoice can be approved.

This new flexibility does NOT mean the Recipient can exceed the overall Agreement amount.

Because Existing Terms may define “Budget Reallocation” to mean the movement of funds between tasks and possibly in other ways than moving funds between Budget Categories, such definitions are considered deleted and superseded by These Terms.

B. New Items under Materials and Miscellaneous, and Equipment

The CAM must approve in writing of any new materials and miscellaneous expenses of \$5,000 or more or new equipment the Recipient plans to purchase and be reimbursed under this Agreement that is not already listed in Exhibit B, Budget. To accomplish this, the Recipient can submit either prior to invoicing or with its invoice a completed form titled "[NEW EQUIPMENT/M&M FORM](#)" which includes a description of the item and a brief explanation of the need for the item. The CAM will approve items that he or she determines to be necessary to the Agreement and do not exceed budgeted amounts for each Budget Category unless Recipient follows the processes in section 4.A. “Budget Reallocation” directly above.

Any restrictions in the solicitation or elsewhere in the Agreement still apply to the specific items under Materials and Miscellaneous, and Equipment that can be purchased using CEC Funds or Match Share Funds. The restrictions still apply even though the CAM does not have to approve new materials and miscellaneous expenses under \$5,000.

C. An Amendment is No Longer Needed to Replace “Key Personnel.”

Existing Terms typically require Recipients and their Subrecipients to obtain advance written approval, sometimes through a formal written amendment, before the Recipient added or replaced key or other personnel, or added or removed job classifications. Now, except when replacing “key personnel” the Recipient and its Subrecipients and any lower-tiered level of Sub-Subrecipient, can make change related to their respective personnel without written approval. Although changes to “key personnel” do require written approval, that approval can be requested and granted simply through an e-mail communication or other form of written communication.

These Terms clarify that Recipients may be reimbursed for actual expenses incurred by new “key personnel” during the term of the Agreement, even if written approval comes after an individual begins work on the project. However, if the replacement is not approved, then the Energy Commission will not reimburse for any expenses charged for the individual. Accordingly, Recipients are strongly encouraged to obtain advance written approval for “key personnel” or risk not being reimbursed for their work.

Recipient must keep the CAM informed of personnel changes through monthly calls and quarterly progress reports. In addition to any other rights and remedies available to the CEC, the Energy Commission retains its authority to issue a Stop Work Order if it becomes clear that a Recipient or Subrecipient’s personnel, key or otherwise, are unable to fulfill their responsibilities under the Agreement.

Please note that the process in the Existing Terms for replacing Subrecipients and Vendors, and each tier lower of Sub-Subrecipients, may have changed. See section 7 below titled “Subrecipients and Vendors.”

D. Assignment of New Personnel to an Existing Job Classification

Existing Terms might require Recipients to submit a resume and other information to the CAM to approve before assigning new personnel to existing job classifications. The Existing Terms might also require an amendment, and that an amendment must be fully executed before new personnel can begin work on the agreement. This pre-approval is no longer required. Instead, Recipient will keep the CAM informed of personnel changes and provide any information requested by the CAM during monthly calls and/or quarterly progress reports. Please see section 5.A. below in the “Budgets and Payment of Funds” term for how direct labor rates will now be handled.

E. Promotion of Existing Personnel to an Existing Job Classification

EXHIBIT C
APPENDIX C-1

Existing Terms might require grant recipients to execute an amendment or otherwise provide information to, and obtain approval from, the CAM before promoting existing personnel to existing job classifications. None of this is required any longer. Please see section 5.A. below in the “Budgets and Payment of Funds” term for how direct labor rates will now be handled.

5. Budgets and Payment of Funds

A. No More Capped Maximum Rates for Direct Labor and Fringe Benefits

Existing Terms typically state that rates in Exhibit B, Budget, for Direct Labor, Fringe Benefits, Indirect Costs, and Profit (for Subrecipients) are maximum rates and Recipients can invoice for actual expenses up to these capped, maximum rates.

Under These Terms, the rates in Exhibit B, Budget, for Direct Labor and Fringe Benefits are now treated as estimates and not capped rates. The Recipient can invoice at higher rates as long as it is only invoicing for actual expenditures it has made. However, the Recipient cannot invoice and be paid for more than the total amount in each Budget Category without an amendment (please see section 4.A. above in these terms), or for more than the total Agreement amount.

Please note this new flexibility only applies to rates for Direct Labor and Fringe Benefits. Except as otherwise provided in These Terms, restrictions on Indirect Costs and Profit in the Existing Terms still apply.

Please also note that rates listed in the budget are NOT “negotiated rates” that can be charged by a Recipient or Subrecipient – documentation must be made available upon request to show that the rates charged reflect actual costs incurred.

B. Options for Indirect Costs

Existing Terms typically allow grant recipients to invoice and receive reimbursement for actual Indirect Costs up to the maximum amount listed in Exhibit B, Budget. Indirect Costs are subject to audit, and recipients are required to provide backup documentation upon request proving the actual amount of their Indirect Costs. These Terms provide two additional options.

The following options may be available to any Recipient who has not yet invoiced for indirect costs at the time of this amendment. These options are not available to any Recipient that has opted not to claim indirect. A Recipient may not use these options to increase a current indirect rate on which the Recipient was scored in the application process. Once a Recipient has been reimbursed for indirect costs, they may not switch among options.

1. De Minimis Option

EXHIBIT C
APPENDIX C-1

Under These Terms, the Recipient can elect to invoice and receive a de minimis amount at the set rate of 10% of the Modified Total of Direct Costs (MTDC) for Indirect Costs. This cannot be combined with any other Indirect Rate option.

MTDC is defined for purposes of These Terms as all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first \$25,000 of each subaward (regardless of the period of performance of the subawards under the award). MTDC excludes equipment, capital expenditures, rental costs, tuition remission, scholarships and fellowships, and the portion of each subaward in excess of \$25,000. This is the same definition used in federal grants. Keeping this the same as the federal definition should make this easy for recipients with both federal and CEC grants that elect this option.

If the Recipient chooses this de minimis option for Indirect Costs, the Recipient will not have to provide backup documentation for the de minimis amount and will not be audited on it. However, the Existing Term requirements, including for backup documentation and audits, still apply to any Indirect Costs invoiced by the Recipient and reimbursed by the CEC not utilizing the de minimis amount.

2. Defense Contract Audit Agency (DCAA) or other Federally Approved Indirect Rate

An entity that has a federally approved indirect rate from DCAA or another Federal agency may use the approved indirect rate for Energy Commission grants. A copy of the Federal agency's letter must be provided.

This rate will typically shift annually, and this shift is generally acceptable. This is the only Indirect Cost option that is not strictly subject to the max rate cap that typically applies to Indirect Costs. If the federal rate decreases from year to year, that will be a cost savings under this budget category. If the federal rate increases from year to year, this will require a budget reallocation. If the Energy Commission, in its sole discretion, determines that a budget reallocation to accommodate an increased Indirect Rate would risk the ultimate success of the project, or is otherwise not in its best interest, the Energy Commission reserves the right to either propose a smaller increase that would not risk the ultimate success of the project, or refuse to increase the Indirect Rate. For any increase the Energy Commission will not reimburse from CEC Funds, the Recipient or Subrecipient may choose to charge the increase as Match Funds.

If the Recipient chooses this option for Indirect Costs, the Recipient will not be audited on this budget category. However, the Existing Term requirements, including for backup documentation and audits, still apply to any Indirect Costs invoiced by the Recipient and reimbursed by the CEC not utilizing this option.

C. Travel and Per Diem

EXHIBIT C
APPENDIX C-1

1. Travel not listed in Exhibit B, Budget, can be added without an amendment via CAM approval. CAM approval can come in one of two forms: written authorization from the CAM prior to the Recipient taking the trip, or through the invoice review. Outside of a budget reallocation, additional travel requests are submitted using the CEC's [Travel Form](#). Recipient understands, however, that any travel taken that is not listed in Exhibit B, the Budget, or not pre-approved by the CAM in writing, is at the Recipient's own financial risk. The CAM might not approve the trip as part of invoice review. Please note that the Recipient cannot invoice and be paid for more than the total amount in the Travel Budget Category without an amendment (please see section 4.A. above in These Terms), or for more than the total Agreement amount.

2. Existing Terms explain what recipients can invoice for and be reimbursed for travel and per diem expenses. After this Agreement is amended to include These Terms, Recipients can instead invoice and be reimbursed using the rates listed on the ECAMS Resources webpage. Because the rates maintained on the ECAMS Resources webpage can change over time, the Recipient will be allowed to be reimbursed for the rates in place when the trip expenses become an Incurred Cost. The CEC shall notify the Recipient in writing by way of the Active Agreements listserve if the travel rates change. Please sign up for the Active Agreements listserve to stay informed of all updates.

3. Lodging

The Recipient can invoice at standard room rates. The CEC will not reimburse for luxury accommodations.

4. Airfare

The Recipient can invoice at coach rates on commercial carriers. The CEC will not pay for upgrades on flights.

5. Rental Car

The Recipient can invoice for vehicles appropriate for the purpose of the travel. The CEC will not reimburse expenses for luxury vehicles.

6. Bus/Train

The Recipient can invoice for standard coach rates. The CEC will not reimburse for upgrades.

7. Per Diem

EXHIBIT C
APPENDIX C-1

Per diem is allowable for actual costs incurred up to the total daily maximum for the following combined expenses:

- Meals
- Incidentals (i.e. tips for hotel staff and taxi/ride share drivers)
- Parking
- Tolls
- Taxi/ride share

The CEC will not reimburse any expenses under this Agreement for alcoholic beverages. In addition, the daily per diem is for the individual expenses of those traveling and working on the Agreement only. It cannot be used to pay for expenses of others (e.g., it cannot be used to buy a meal for someone else).

D. Payment Request Format

Existing Terms may list specific items the Recipient must include in its invoices. These requirements in the Existing Terms is no longer required. Instead, the CAM will provide an invoice template, and any further modifications to it, that the Recipient shall use.

E. Rounding

Under These Terms, the only exception to the CEC paying actual expenses is rounding to the nearest cent. Recipient, Subrecipients, and each lower-tiered level of Sub-Subrecipients shall round invoiced amounts to the nearest cent (\$0.01) using standard rounding, which is rounding down for \$0.000 through \$0.004, and rounding up for \$0.005 through \$0.009. Rounding cannot be used to exceed the amount in any Budget Category (see section 4.A. above in These Terms) or exceed the total Agreement amount.

F. New Certification for Payment Requests

Existing Terms may require recipients to include and sign a certain certification in its payment requests. These Terms instead require the Recipient to include and sign the certification provided by the CAM in the Invoice Template. The CAM can change this certification without amending this Agreement.

G. The CEC No Longer Must Use a Specific Dispute Notification Form to Dispute Invoices

Existing Terms may require the CEC to use a Dispute Notification Form, Std. 209 Form, or other specific form when disputing invoices. These requirements no longer apply. Under These Terms, the CEC can now dispute an invoice in any manner it chooses as long as it is provided in writing to the Recipient.

6. Incurred Costs

EXHIBIT C
APPENDIX C-1

Existing Terms may not allow recipients to be reimbursed for Incurred Costs. Accordingly, These Terms change that and allow the CEC to reimburse the Recipient for Incurred and Paid Costs that are (1) incurred during the Agreement Term; (2) invoiced within the required timeframes of this Agreement; (3) made in accordance with the Agreement's Budget; and (4) actual and allowable expenses under this Agreement.

The Recipient shall pay ALL Incurred Costs for which it has invoiced the CEC within 14 calendar days of receiving payment under this Agreement for the Incurred Costs. For example, if the Recipient invoices the CEC and then receives payment on September 15 for an Incurred Cost of \$10,000, the Recipient shall pay the entire \$10,000 by September 29. This requirement is needed to prevent Recipient from creating long lead times for Incurred Costs (e.g., invoicing and receiving payment from the CEC but not paying for the Incurred Costs for weeks or months).

The Recipient shall only invoice the CEC for Incurred Costs the Recipient will pay within 14 calendar days of receiving payment. For example, assume the Recipient has an Incurred Cost for a piece of equipment that costs \$300,000 and will pay in three installments of \$100,000 each over three months. The Recipient shall only invoice the CEC for \$100,000 each month. The Recipient shall not invoice for the entire \$300,000 and retain the balance over the three months.

For any Incurred Costs for which the Recipient received funds from the CEC and does not pay within 14 calendar days, the Recipient shall on the very next business day after the 14 calendar days submit repayment of the unpaid amount back to the CEC. Repaid funds will be placed back into the Agreement and will be available to reimburse allowable costs in accordance with this Agreement. When making a repayment under this provision, the Recipient shall specify "Repayment of Unspent Funds under Agreement [insert agreement number]." Recipient shall remit the repayment to:

California Energy Commission
Accounting Office
715 P Street, MS-2
Sacramento, CA 95814

This repayment requirement of the Recipient is in addition to any other rights the CEC can enforce relative to this Agreement. Recipient agrees and acknowledges that time is of the essence in paying Incurred Costs and submitting repayments, and the CEC can treat the Recipient's breach of either requirement as a material breach. Recipient can contact the CAM for any questions about the logistics of making repayments.

7. Subrecipients and Vendors

Existing Terms typically only distinguish between the Recipient and any lower tier of subcontractors. But not all subcontractors are the same. Some are entrusted with significant

EXHIBIT C
APPENDIX C-1

responsibility to meet the Agreement's objectives, and others are merely suppliers of goods and services.

These Terms allow the Recipient with CAM written approval to divide subcontractors into Subrecipients and Vendors. If this distinction is not made between Subrecipients and Vendors, all entities currently deemed subcontractors will be treated as Subrecipients.

A Subrecipient is defined as a person or entity that receives grant funds directly from the Recipient and is entrusted by the Recipient to make decisions about how to conduct some of the grant's activities. A Subrecipient's role involves discretion over grant activities and is not merely just selling goods or services.

Characteristics which support the classification of the entity as a subrecipient include when the entity:

- (1) Has its performance measured in relation to whether objectives of a CEC program were met;
- (2) Has responsibility for programmatic decision-making;
- (3) Is responsible for adherence to applicable CEC program requirements specified in the CEC award agreement;
- (4) In accordance with its agreement, uses the CEC funds to carry out a program for a public purpose specified in authorizing statute, as opposed to providing goods or services for the benefit of the recipient or subrecipient; or,
- (5) Provides match share funding contributions to the CEC-funded project.

A Sub-Subrecipient has the same meaning as a Subrecipient except that it receives grant funds from a Subrecipient. There can also be further levels below of Sub-Subrecipients.

A Vendor is defined as a person or entity that sells goods or services to the Recipient, Subrecipient, or any lower-tiered level of Sub-Subrecipient, in exchange for some of the grant funds, and does not make decisions about how to perform the Agreement's activities. The Vendor's role is ministerial and does not involve discretion over Agreement activities. A vendor is an entity selected through a competitive process or is otherwise providing a product or service at a fair and reasonable price. Characteristics indicative of a procurement relationship between the Recipient, Subrecipient, and any lower-tiered level of Sub-Subrecipient and a Vendor are when the Vendor:

- (1) Provides the goods and services within normal business operations;
 - (2) Provides similar goods or services to many different purchasers;
 - (3) Normally operates in a competitive environment;
 - (4) Provides goods or services that are ancillary to the operation of the CEC program;
- and
- (5) may not be subject to compliance with all of the requirements of the CEC program as a result of the agreement, though similar requirements may apply for other reasons.

EXHIBIT C
APPENDIX C-1

A. Subrecipient and Sub-Subrecipient Flow-Down Terms

For Recipient's agreements with Subrecipients, the Recipient shall follow any flow-down requirements in the Existing Terms for subcontractors, except the Recipient does not need to include the following terms if they are not applicable to a given Subrecipient:

1. The Legal Statements on Products term does not have to be included if the Subrecipient will not generate any Products.
2. The Travel and Per Diem term does not have to be included if the Subrecipient will not be reimbursed for travel with CEC funds.
3. The Equipment term does not have to be included if the Subrecipient will not be reimbursed for equipment with CEC funds.
4. The Confidentiality term does not have to be included if the Subrecipient will not have access to or generate confidential information.

B. Vendor Requirements

The flow-down requirements in the Existing Terms either come from the CEC or the law. Recipient does not have to include any CEC-created requirements in agreements with its Vendors unless it is necessary for the Recipient to meet its obligations to the CEC under the Agreement. But the Recipient is still required to make sure the Vendor complies with all applicable laws. For example, the Recipient still must ensure any Vendor complies with applicable Public Work Requirements, including the payment of prevailing wage, and also with the Nondiscrimination clause. These are requirements under the law.

The Recipient does not have to include in its Vendor agreements CEC-created terms, such as Equipment, Confidentiality, Travel and Per Diem, Retention of Records, and Audits, if the Recipient does not need them to fulfill its obligations to the CEC. An example where the Recipient might need to include a CEC-created term in a Vendor agreement is intellectual property. The Recipient must ensure the CEC has the intellectual property rights required under this Agreement. If a Vendor creates intellectual property that the Recipient provides to the CEC as part of the Agreement, the Recipient shall ensure its Vendor agreement secures the appropriate rights.

C. Replacing Subrecipients or Vendors

Under These Terms, all changes to Subrecipients and Vendors require advance written approval by at least the Commission Agreement Manager. A higher level of approval may be required based upon Energy Commission policy. Required approvals are included in the "Changes to Grants - Level of Approval and Notification Chart" commonly referred to as the "Changes Chart."

These Terms clarify that Recipients may be reimbursed for actual expenses incurred by a new **Vendor** during the term of the Agreement, even if written approval comes after the entity has completed work on the project. However, if the new Vendor is not approved, then the Energy Commission will not reimburse for any expenses charged for the entity. Accordingly, Recipients are strongly encouraged to obtain advance written approval for new Vendors or risk not being reimbursed for their work.

However, any work completed by an entity that may replace an existing **Subrecipient** WILL NOT BE REIMBURSED for any work completed prior to advance written approval. If a Subrecipient expends funds prior to approval, they can only be claimed as Match Funds.

8. Match Fund Timing

Existing Terms typically require recipients to proportionally spend match funds concurrently or in advance of CEC funds. But this timing does not always work, especially if the CEC funds are used for expensive equipment early in the project.

These Terms allow a CAM, in writing and with Supervisor approval, to authorize a Recipient to spend CEC funds in advance of Match Funds pursuant to [Match Fund Spending Plan](#). The Plan must estimate how Match Funds and CEC funds will be spent over each quarter and briefly explain why it is not practical to spend Match Funds concurrent with CEC Funds. While These Terms allow additional flexibility, the Recipient agrees to spend the agreed match funds as soon as practicable during the Agreement in order to resume proportionality between CEC funds and Match funds spent.

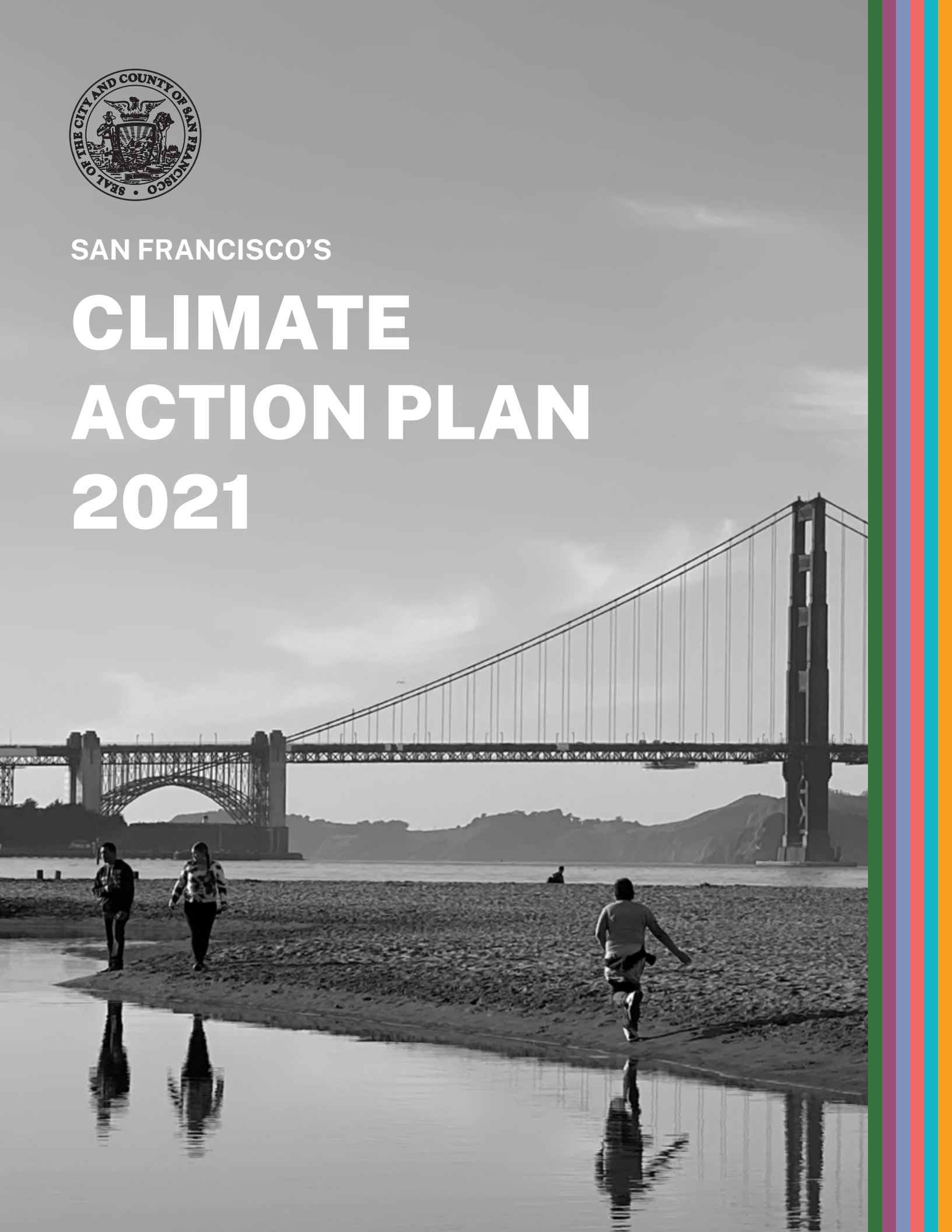
**Exhibit D
CONTACT LIST**

| California Energy Commission | Recipient |
|--|--|
| <p>Commission Agreement Manager: Patrick Brecht California Energy Commission 715 P Street, MS-6 Sacramento, CA 95814 Phone: (916) 805-7484 e-mail: patrick.brecht@energy.ca.gov</p> | <p>Project Manager: SF Department of the Environment Lowell Chu 1455 Market, 12th floor San Francisco, CA 94103 Phone: (415) 355-3700 Fax: (415) 554-6393 e-mail: lowell.chu@sfgov.org</p> |
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SAN FRANCISCO'S

CLIMATE ACTION PLAN 2021



ACKNOWLEDGEMENTS

The 2021 San Francisco Climate Action Plan (CAP) is the result of a multi-year process developed by the San Francisco Department of the Environment with support and collaboration from many individuals and institutions. We would like to sincerely thank all our colleagues, organizations, and residents who were generous with their time and ideas.



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MESSAGE FROM MAYOR LONDON N. BREED

In keeping with our role as a leader in sustainability, I am pleased to present the City and County of San Francisco's updated Climate Action Plan. Since adopting our initial Climate Action Plan in 2004, San Francisco has made great strides in reducing our greenhouse gas emissions. We have achieved this success by working with residents, community-based organizations, and businesses to use cleaner electricity, invest in energy efficiency, and recycle and compost more materials.

In the years since we created the first Climate Action Plan, we have seen marked consequences of a warming planet. Natural disasters like fires throughout California, dramatic hurricanes in the South, and devastating floods in the Midwest have exposed the massive human and economic toll climate-related disasters bring to our communities. These unfolding catastrophes demonstrate the need to accelerate our response to a changing climate — and to do all we can to mitigate the threat while preparing our City to be more resilient.

As of 2019, we have cut our emissions 41% below 1990 levels — reaching our goal six years ahead of schedule. Now we have a responsibility to keep moving forward, to reduce emissions by 61% below 1990 levels by 2030 and reach net-zero emissions by 2040. To reach these ambitious targets, we need to tackle climate change from all angles: housing, transportation and land use, energy, buildings, zero waste, and healthy ecosystems.

Climate change is one of our greatest challenges and meeting these new targets will not be easy. However, there is room for optimism. If our response to the COVID-19 pandemic has shown us anything, it is that when San Franciscans stand together, we can meet any challenge. I am proud of the courage we have shown. We listened to the scientists and took care of our most vulnerable neighbors. We had the drive to meet the pandemic head on and we will do the same in our ongoing response to climate change.

As we seek to reduce our emissions and reach net-zero, it is imperative that we advance climate action goals that will also build a more just, equitable society. One of San Francisco's greatest assets is our diversity, and the steps we take to address climate change must be rooted in equity and ensure that all our communities are supported throughout the transition to a climate-just future. While moving forward demands that we continue reducing emissions, strategies in this plan have multiple benefits for our most vulnerable communities — reduced asthma and respiratory illnesses, access to nature, housing security, and improved access to fresh food for all San Franciscans.

This Climate Action Plan was created with the input and feedback from a diverse cross-section of San Franciscans. Thank you to the thousands of residents, businesses, City agencies, and community institutions that gave their time to create this ambitious plan. We are grateful to have had the engagement of those with decades of experience on the front lines of the environmental movement. Now we must continue to work together to protect our communities, save our planet, and achieve a healthier, more just and sustainable future. I hope that you will join me in implementing this Climate Action Plan and adding to the collective courage required to create a future built on justice, equal opportunity, and environmental protection.



MESSAGE FROM DIRECTOR DEBBIE RAPHAEL

The 2021 San Francisco Climate Action Plan is the result of meticulous work and collaboration among City agencies, community members, local businesses, consultants, and international subject matter experts. The strategies outlined in this report present opportunities to ensure we continue building a city that serves all San Franciscans.

While we have made substantial progress in reducing our emissions, we know there is much more to do. In the last year, we have been asked to reckon with systemic racism built into our institutions while confronting a global pandemic. We have seen just how fragile our societal bonds can be. This past year has taught us that it is truly a moral imperative to create strategies that benefit all of us and our 2021 Climate Action Plan is grounded in equity and inclusion. It recognizes our combined power to ensure that no one is left behind as we deliver on our climate goals.

The Plan articulates strategies that get us to our goals of sending zero waste to landfills; making 80% of all our trips outside of our cars; powering our homes, vehicles, and businesses with 100% renewable energy; and drawing down carbon from the atmosphere. With its focus on equity, the Plan uses our climate goals to create more equitable housing and increase our green infrastructure to draw down carbon. It recognizes the tremendous strength in our communities and allows us to develop even more opportunities to drive implementation and create jobs.

And while it is exciting to see our federal administration stepping up and to witness the tremendous international commitment to climate action, we know that cities will continue leading the way to a carbon-free future. We are proud to join cities across the globe in taking responsibility for our greenhouse gas emissions.

I express my sincere appreciation to the residents, community organizations, city departments and businesses who participated in creating, guiding, and assembling this update. Join us in our commitment and lend your expertise to making sure San Francisco remains a vibrant and livable city for generations to come.



LAND ACKNOWLEDGEMENT¹

The Commission on the Environment acknowledges that we occupy the unceded ancestral homeland of the Ramaytush Ohlone peoples, who are the original inhabitants of the San Francisco Peninsula. We recognize that the Ramaytush Ohlone understand the interconnectedness of all things and have maintained harmony with nature for millennia. We honor the Ramaytush Ohlone peoples for their enduring commitment to wahrep, mother earth. As the indigenous protectors of this land and in accordance with their traditions, the Ramaytush Ohlone have never ceded, lost, nor forgotten their responsibilities as the caretakers of this place, as well as for all peoples who reside in their traditional territory. We recognize that we benefit from living and working on their traditional homeland. As uninvited guests, we affirm their sovereign rights as First Peoples and wish to pay our respects to the Ancestors, Elders and Relatives of the Ramaytush Community. As environmentalists, we recognize that we must embrace indigenous knowledge in how we care for San Francisco and all its people.

DISCLAIMER

This Climate Action Plan (CAP) articulates broad policy objectives to achieve equitable climate action. The CAP does not approve, fund, or authorize implementation of any specific projects. Each implementation project will be reviewed and approved over time and follow protocols and best practices for adoption, which may require additional public review, review by City decision-makers, and/or environmental review under the California Environmental Quality Act. As a result of those reviews, there may be alternatives and mitigation measures developed that may be implemented as well.

CONTENTS

| | | | |
|--------------------------|-----------|---|-----------|
| SECTION 1: | | SECTION 2: | |
| <hr/> | | <hr/> | |
| EXECUTIVE SUMMARY | 12 | Overview | 22 |
| | | VISION AND VALUES | 23 |
| | | CHALLENGES IN UNPRECEDENTED TIMES | 24 |
| | | CLIMATE ACTION: PAST, PRESENT, AND FUTURE | 24 |
| | | MAJOR CLIMATE IMPACTS | 26 |
| | | SAN FRANCISCO'S APPROACH | 28 |
| SECTION 3: | | SECTION 3: | |
| <hr/> | | <hr/> | |
| | | Towards a Net-Zero Future | 32 |
| | | CURRENT EMISSIONS PROFILE | 33 |
| | | EMISSIONS REDUCTIONS PATHWAYS | 36 |
| | | EMISSIONS TARGETS AND CLIMATE GOALS | 41 |

SECTION 6:

**Next Steps for
Implementing the CAP 124**

| | |
|---|-----|
| LEVERAGING OTHER INVESTMENTS | 126 |
| FUNDING THE CAP | 126 |
| MONITORING, EVALUATION, AND REPORTING (MER) | 127 |
| ADDITIONAL TOOLS FOR REACHING NET ZERO | 128 |
| ISSUES FOR FUTURE CONSIDERATION | 129 |
| BOLD, COLLECTIVE ACTION | 130 |

SECTION 4:

Planning for People 42

| | |
|------------------------------|----|
| CENTERING RACIAL EQUITY | 44 |
| CLIMATE ACTION PLAN “LENSES” | 45 |

SECTION 5:

Solutions: A Path Forward 50

| | |
|--------------------------------------|-----|
| ENERGY SUPPLY | 52 |
| BUILDING OPERATIONS | 62 |
| TRANSPORTATION & LAND USE | 72 |
| HOUSING | 94 |
| RESPONSIBLE PRODUCTION & CONSUMPTION | 102 |
| HEALTHY ECOSYSTEMS | 112 |

SECTION 7:

Appendices

| | |
|--|--|
| A. GLOSSARY OF CAP TERMS | |
| B. COMMUNITY ENGAGEMENT MATERIALS | |
| B-1 COMMUNITY ENGAGEMENT FINAL SUMMARY REPORT | |
| B-2 CITY COMMENT RESOLUTION FORM | |
| C. GHG EMISSIONS MODELING: METHODOLOGIES AND ASSUMPTIONS | |
| C-1 SECTOR-BASED AND CONSUMPTION-BASED GHG INVENTORIES | |
| C-2 MODELING BUILDING OPERATIONS GHG IMPACTS | |
| C-3 MODELING TRANSPORTATION & LAND USE GHG IMPACTS | |
| D. RACIAL AND SOCIAL EQUITY ASSESSMENT | |
| E. THE SOCIOECONOMIC VALUE OF CAP COMMUNITY BENEFITS | |
| F. CAP JOB CREATION POTENTIAL | |
| G. FUNDING AND FINANCING CLIMATE ACTION IN SAN FRANCISCO | |

LIST OF FIGURES:

| | | |
|-------------------|---|-----|
| FIGURE 1: | SAN FRANCISCO'S CLIMATE ACTION FRAMEWORK | 14 |
| FIGURE 2: | SAN FRANCISCO'S CLIMATE ACTION GOALS | 16 |
| FIGURE 3: | 1990-2019 SAN FRANCISCO GHG EMISSIONS AND GROWTH TRENDS | 25 |
| FIGURE 4: | SAN FRANCISCO'S 2019 GHG INVENTORY | 34 |
| FIGURE 5: | EMISSIONS: BASELINE (1990) TO CURRENT DAY (2019) | 34 |
| FIGURE 6: | SECTOR-BASED GHG PROJECTIONS | 39 |
| FIGURE 7: | THE RELATIONSHIP BETWEEN SECTOR-BASED AND CONSUMPTION-BASED GHG INVENTORIES | 39 |
| FIGURE 8: | SAN FRANCISCO'S SECTOR-BASED AND CONSUMPTION-BASED GHG INVENTORY, 1990-2015 | 40 |
| FIGURE 9: | HISTORICAL (1990-2015) AND PROJECTED 2030 AND 2050 CONSUMPTION-BASED EMISSION REDUCTION TARGETS | 40 |
| FIGURE 10: | DRAFT ENVIRONMENTAL JUSTICE COMMUNITIES MAP | 45 |
| FIGURE 11: | MEDIAN EARNINGS BY RACE AND ETHNICITY, 2019 | 46 |
| FIGURE 12: | PERCENT CHANGE IN POPULATION BY RACE AND ETHNICITY, 1990 TO 2018 | 46 |
| FIGURE 13: | INTERCONNECTEDNESS OF CLIMATE CHANGE AND HEALTH | 48 |
| FIGURE 14: | CLIMATE ADAPTATION AND MITIGATION CREATE RESILIENCE | 49 |
| FIGURE 15: | PERCENTAGE OF SAN FRANCISCO'S ELECTRICITY SUPPLIED BY RENEWABLE OR EMISSIONS-FREE SOURCES | 52 |
| FIGURE 16: | SAN FRANCISCO ELECTRICITY SUPPLY BY PROVIDER, 2020 | 54 |
| FIGURE 17: | PROJECTED EMISSIONS FROM BUILDINGS | 65 |
| FIGURE 18: | 2019 SAN FRANCISCO'S GHG INVENTORY - TRANSPORTATION SECTOR EMISSIONS | 74 |
| FIGURE 19: | 2050 GHG REDUCTION POTENTIAL PATHWAYS (MTCO2E) BY FOCUS AREA FOR THE TRANSPORTATION AND LAND USE SECTOR | 77 |
| FIGURE 20: | RENT BURDEN BY RACE AND ETHNICITY, 2018 | 96 |
| FIGURE 21: | STATE OPPORTUNITY MAP BY CENSUS TRACT | 97 |
| FIGURE 22: | MATERIALS DISPOSED IN SAN FRANCISCO | 103 |
| FIGURE 23: | RELATIONSHIP BETWEEN HEALTHY ECOSYSTEMS, HEALTH, BIODIVERSITY, AND CLIMATE | 113 |
| FIGURE 24: | NATURE CLIMATE SOLUTIONS (NCS) CONTRIBUTION OF CARBON SEQUESTRATION TOWARDS REACHING NET ZERO EMISSIONS | 129 |

LIST OF TABLES:

| | | |
|-----------------|--|----|
| TABLE 1: | STRATEGIES IN 2021 CLIMATE ACTION PLAN | 19 |
| TABLE 2: | SAN FRANCISCO'S KEY CLIMATE MILESTONES | 25 |
| TABLE 3: | MAJOR CLIMATE IMPACTS | 27 |
| TABLE 4: | 2019 EMISSIONS COMPARED TO 1990 LEVELS | 35 |
| TABLE 5: | 2021 CLIMATE ACTION TARGETS | 41 |
| TABLE 6: | 2021 CLIMATE ACTION GOALS | 41 |
| TABLE 7: | CO-BENEFITS OF LOW CARBON TRANSPORTATION ⁴² | 78 |

SECTION 1:

EXECUTIVE SUMMARY



The consequences of a changing climate are all around us. Rising seas and extreme weather are creating increased flooding and more frequent heat waves, which inflict the most harm on the city’s most vulnerable populations. Reduced snowpack in the Sierra Nevada mountains is threatening the City’s water and hydropower supplies. Ever more destructive fires are polluting the air throughout the state and overwhelming its emergency resources and ability to respond to multiple disasters.

San Francisco, like cities around the world, is faced with the threat of a climate emergency, coupled with long-standing challenges of economic inequality and racial injustice. Local skies have turned orange from wildfires, fueled by decades of unchecked carbon pollution. The American economy is more precarious for working people than it has been in decades, with inequities exacerbated by COVID-19. Demands for action are growing louder, including calls for climate justice, racial justice, disability justice, and economic justice. The most recent [Intergovernmental Panel on Climate Change \(IPCC\) report](#), an international scientific assessment of the threats presented by climate change, was released in August 2021 and indicates that the window in which to act continues to shrink. The most important thing to limit the worst impacts is to rapidly reduce greenhouse gas (GHG) emissions, especially carbon dioxide and methane. This summer, Mayor London Breed sponsored legislation to address the urgent threat of climate change and set new, ambitious goals to slash GHG emissions in San Francisco and reach net-zero emissions by 2040.

While San Francisco is proud of its record on local climate action and pursuit of environmental justice, there is an opportunity to make San Francisco a more affordable, equitable, just and sustainable city for all. The window to avoid climate catastrophe is closing, but there is still time to act. There is an urgent need – and opportunity – to not only reduce emissions, but to build equity,

resilience, and opportunity for the entire city. Bold climate action must give everyone a seat at the table to create a more just society and ensure communities can thrive by guaranteeing clean air and access to good jobs, green space, and healthy housing, and by developing and implementing a shared vision of how to live better together in the face of the growing climate crisis.

LEADING ON CLIMATE ACTION

Since its first Climate Action Plan in 2004, San Francisco has been leading the way on local climate action, environmental justice, and launching innovative community programs and outreach campaigns for residents and businesses.

For decades, San Francisco has created plans, implemented policies, and crafted engaging frameworks to reduce emissions. As of 2019, the city has achieved a 41% reduction in emissions from 1990 levels, while its economic productivity as measured by gross domestic product (GDP) has increased by 199%, and its population has grown by 22%. Its emissions reductions have been driven primarily by cleaner electricity supply, improved energy codes, and city-wide energy efficiency. This progress has not just reduced emissions, but has also come with additional important benefits, such as cutting air pollution and limiting other environmental stressors.



Cities are rapidly growing across the world. Most people live in cities and the cities, in turn, create 70% of global emissions. This means cities have great responsibility and great potential for providing solutions. Further, cities are engaged in international diplomacy on climate change and as a respected leader on the world stage, San Francisco has a vital role to play in modeling climate action for cities around the world.

CLIMATE ACTION PLAN OVERVIEW

Net-Zero Emissions means cutting the overwhelming majority of emissions to zero while relying on biological and technological solutions and offsets to balance out remaining emissions

Tackling the interwoven climate, equity, and racial justice challenges we face has been the driving force for the development of this Climate Action Plan (CAP). It provides a summary of progress through existing programs, and a detailed list of priority actions that San Francisco can take that will have the greatest potential to reduce emissions, while also having the greatest potential to provide an equitable distribution of benefits. The process of creating the CAP brought City departments, residents, community-based organizations, and businesses together to craft a plan focused on science and equity and grounded in compassion and lived experience. This data-driven, community-based plan outlines a detailed list of strategies and actions to achieve net-zero emissions by 2040, while creating solutions that serve intersectional challenges of racial and social equity, public health, economic recovery, and resilient communities (Figure 1).

SAN FRANCISCO'S CLIMATE ACTION FRAMEWORK

Net-Zero Emissions Citywide By 2040
Racial, Social & Economic Equity

SECTORS



THE PATH TO REACH NET-ZERO BY 2040

The imperative to address climate change is simple: cut emissions as quickly as possible. But achieving these goals is complex and demands an integrated approach across society. San Francisco's approach to reaching net-zero emissions is first and foremost grounded in equity. The most significant consequences of climate change will be felt by Black, Indigenous, and People of Color (BIPOC) communities, people with disabilities, and other vulnerable populations. Climate action must also prioritize a just transition, which calls for a strategic, people-focused approach to phasing out polluting industries while creating employment pathways for workers in those industries and a new generation of workers to transition to quality jobs that support economic and climate justice. Further, communities that have been and will continue to be most harmed by climate change have not historically benefited from climate solutions in the past.

To advance climate justice, the CAP makes four core commitments:

- Build greater racial and social equity
- Protect public health
- Increase community resilience
- Foster a more just economy

By integrating these four climate justice commitments, the CAP proposes two ambitious and achievable climate emission reduction targets:

- An interim target of cutting sector-based emissions 61% below 1990 levels by 2030; and
- Net-zero sector-based emissions by 2040, a 90% reduction from 1990 levels

Sector-based emission inventories track traditional emissions in categories produced within municipal boundaries such as transportation, energy use in buildings, and solid waste. The City is beginning to account for the impacts of its "upstream" emissions, which include emissions from the consumption of services and goods produced outside San Francisco. In essence, these emissions are outsourced to other communities, generating harmful climate pollution and exacerbating environmental injustice. In keeping with its commitment to equity, San Francisco is determined

to reduce the impacts of these outsourced emissions and has set two targets:

- A 40% reduction in consumption-based emissions by 2030
- An 80% reduction in consumption-based emissions by 2050
- In total, the Climate Action Plan provides an innovative framework to reach its sector-based (Figure 2) and consumption-based emission targets, while also removing carbon from the atmosphere.

ENGAGING OUR DIVERSE COMMUNITIES

Led by the San Francisco Department of the Environment (SF Environment), crafting the CAP was a highly collaborative process, which engaged expert City staff, community-based organizations, residents, businesses, and other stakeholders to identify high-impact opportunities to reduce emissions and support equity. The CAP public engagement process brought together San Francisco residents with honesty, transparency, and respect. It reached hundreds of thousands of people through social media, websites, surveys, web-based workshops and presentations, and online open houses. Over the course of four months, SF Environment hosted a kick-off webinar with Mayor London Breed, which was followed by eleven public workshops, including in-language sessions in Spanish and Chinese, and eleven additional community presentations. Further, the Department received more than 1,400 comments on the online open house platform as well as nine emailed comment letters from different stakeholder groups. This process ensured the community could identify new actions and integrate their priorities, data, and best practices into the plan.

SAN FRANCISCO'S CLIMATE ACTION GOALS

BUILDINGS

By 2021, require zero onsite fossil fuel emissions from all new buildings; By 2035, require zero onsite fossil fuel emissions from all large existing commercial buildings and all buildings by 2040

'21

ZERO WASTE

By 2030, reduce solid waste generation by at least 15% and reduce the amount of solid waste disposed of by incineration or landfill by at least 50% below 2015 levels

'30

CLEAN ENERGY

By 2025, supply 100% renewable electricity, and by 2040, supply 100% renewable energy

'25

TRANSPORTATION

By 2030, increase low-carbon trips to at least 80% of all trips and increase EVs to at least 25% of all private vehicles registered, and by 2040, increase EVs to 100% of all private vehicles registered

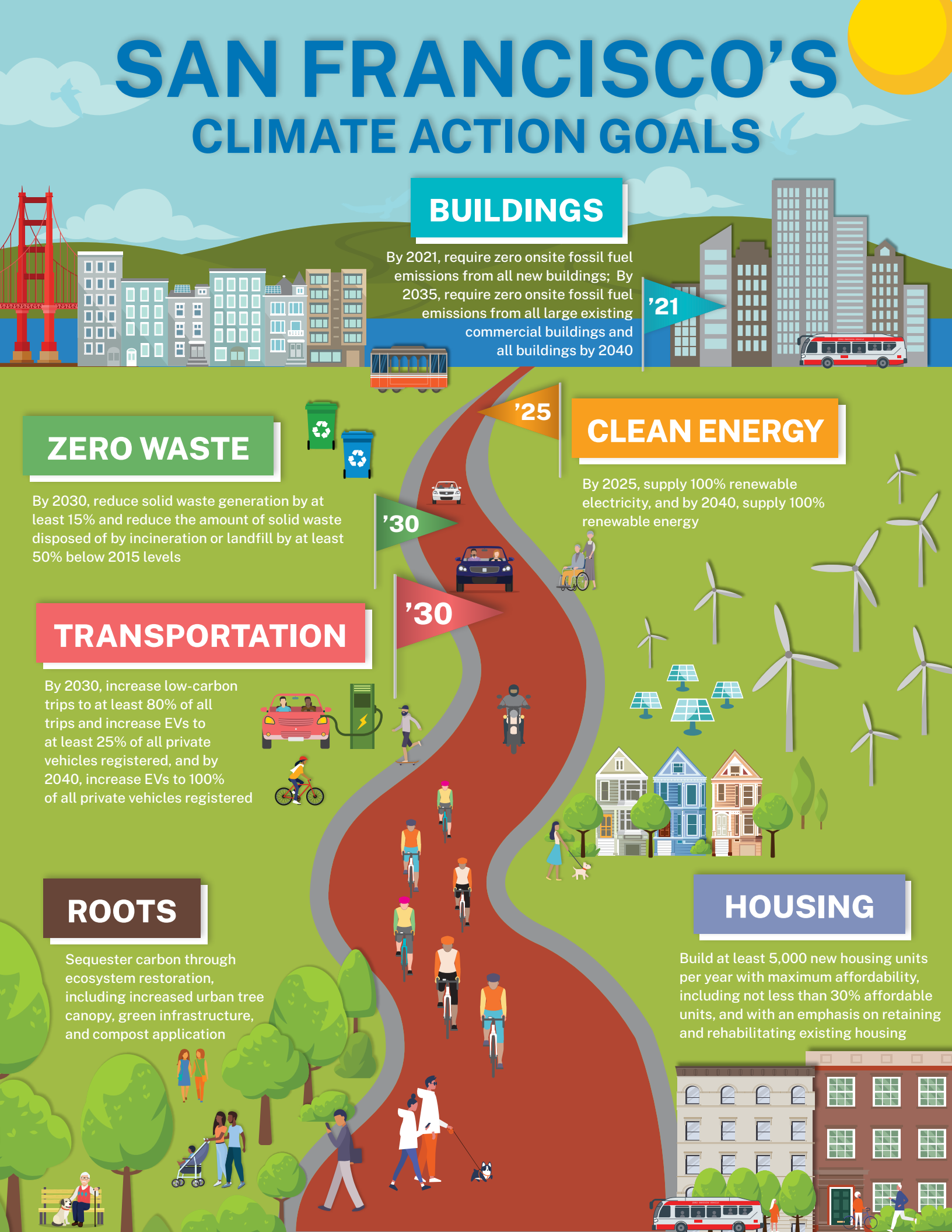
'30

HOUSING

Build at least 5,000 new housing units per year with maximum affordability, including not less than 30% affordable units, and with an emphasis on retaining and rehabilitating existing housing

ROOTS

Sequester carbon through ecosystem restoration, including increased urban tree canopy, green infrastructure, and compost application



PRIORITY SOLUTIONS

Through this robust engagement process the CAP identified 31 strategies (Table 1) and 159 supporting actions for San Francisco to achieve its climate and equity goals across six key areas, or sectors: Energy Supply, Building Operations, Transportation and Land Use, Housing, Responsible Production and Consumption, and Healthy Ecosystems.

Along with stakeholder input, key criteria used to inform the development of the strategies and supporting actions included their emissions reduction potential and their contribution to the four lenses of racial and social equity, public health, community resilience, and a just economy. While the CAP identifies hundreds of possible pathways needed to reach San Francisco's slated target of achieving net-zero emissions by 2040, not all have the same impact. The most critical stand-alone or subsets of strategies and actions have been summarized in the **top ten climate solutions:**

Energy Supply: Use 100% renewable electricity and phase out all fossil fuels

Building Operations: Electrify existing buildings

Transportation and Land Use:

- Invest in public and active transportation projects
- Increase density and mixed land use near transit
- Accelerate adoption of zero emission vehicles and expansion of public charging infrastructure
- Utilize pricing levers to reduce private vehicle use and minimize congestion
- Implement and reform parking management programs

Housing: Increase compact infill housing production near transit

Responsible Production and Consumption: Reduce food waste and embrace plant-rich diets

Healthy Ecosystems: Enhance and maintain San Francisco's urban forest and open space

Now that San Francisco has laid the foundation for a new, more inclusive climate agenda, it is time to move forward from planning to execution. New approaches will be needed to spur action across City departments and change underlying systems to embed climate considerations into municipal operations and ensure the timely delivery of projects.

TRANSPARENCY AND REPORTING

The CAP is not a "stand-alone" document. It leverages progress and momentum from complementary plans and policy initiatives, such as CleanPowerSF; building electrification code efforts; the [Housing](#) and [Transportation Element](#) updates of the General Plan; [urban forest](#) and [biodiversity plans](#); and [zero waste](#) work. These other plans and policies give the CAP a solid platform to help the city meet these pressing issues.

The CAP must and will be revisited and updated regularly, with a formal update every five years. Transparency is crucial for creating a plan that serves all San Franciscans. Further, the CAP is not just a summary of actions government will take on its own. Addressing climate change will require ongoing engagement with the entire community. Indeed, residents are parts of the implementation process too. To that end, the City will create a robust and accessible monitoring, evaluation, and reporting system to track and review the intended results and real progress of the targets, goals, strategies, and actions. This is essential to monitoring the success and effects of climate actions across the city, quantifying the benefits of the policies, and ensuring stakeholders can actively contribute to progress toward our climate goals.

TABLE 1: STRATEGIES IN 2021 CLIMATE ACTION PLAN

| ENERGY SUPPLY (ES) | |
|--|--|
| ES 1 | Supply 100% renewable electricity to residents and businesses. |
| ES 2 | Invest in local renewable energy and energy resilience projects. |
| ES 3 | Design and develop the reliable and flexible grid of the future. |
| ES 4 | Develop workforce capacity to deliver clean energy resources. |
| ES 5 | Plan for the equitable decommissioning of the City's natural gas system. |
| BUILDING OPERATIONS (BO) | |
| BO 1 | Eliminate fossil fuel use in new construction. |
| BO 2 | Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types. |
| BO 3 | Expand the building decarbonization workforce, with targeted support for disadvantaged workers. |
| BO 4 | Transition to low-global warming potential refrigerants. |
| TRANSPORTATION & LAND USE (TLU) | |
| TLU 1 | Build a fast and reliable transit system that will be everyone's preferred way to get around. |
| TLU 2 | Create a complete and connected active transportation network that shifts trips from automobiles to walking, biking, and other active transportation modes. |
| TLU 3 | Develop pricing and financing of mobility that reflects the carbon cost and efficiency of different modes and projects, and correct for inequities of past investments and priorities. |
| TLU 4 | Manage parking resources more efficiently. |
| TLU 5 | Promote job growth, housing, and other development along transit corridors. |
| TLU 6 | Strengthen and reconnect communities by increasing density, diversity of land uses, and location efficiency. |
| TLU 7 | Where motor vehicle use or travel is necessary, accelerate the adoption of zero-emissions vehicles (ZEV's) and other electric mobility options. |
| HOUSING (H) | |
| H 1 | Anchor BIPOC families and advance their return to San Francisco through robust housing and stabilization programs. |
| H 2 | Support vulnerable populations and underserved communities through both the preservation and rehabilitation of existing housing and new housing development that serves their needs. |
| H 3 | Advance zoning and implementation improvements that support new housing production sufficient to meet goals, especially sustainable, small, mid-sized, family, and workforce housing in lower density neighborhoods. |
| H 4 | Expand subsidized housing production and availability for low-, moderate-, and middle-income households. |
| RESPONSIBLE PRODUCTION & CONSUMPTION (RPC) | |
| RPC 1 | Achieve total carbon balance across the buildings and infrastructure sectors. |
| RPC 2 | Reduce the carbon footprint of the food system by reducing waste, promoting climate friendly diets, and getting excess food to communities in need. |
| RPC 3 | Promote reduction, reuse, repair, and recovery of goods and materials. |
| RPC 4 | Lead the aviation sector by reducing emissions across the airline passenger journey. |
| HEALTHY ECOSYSTEMS (HE) | |
| HE 1 | Advance citywide collaboration to continually refine nature-based climate solutions that sequester carbon, restore ecosystems and conserve biodiversity. |
| HE 2 | Increase equitable community participation and perspectives in nature-based climate solutions, including meaningful efforts to prioritize Indigenous science and Traditional Ecological Knowledge. |
| HE 3 | Restore and enhance parks, natural lands and large open spaces. |
| HE 4 | Optimize management of the city's entire urban forest system. |
| HE 5 | Maximize trees throughout the public realm. |
| HE 6 | Maximize greening and integration of local biodiversity into the built environment. |
| HE 7 | Conduct carbon sequestration farming pilot projects and research. |

ACTION MOVING FORWARD

In addition to reducing emissions to net-zero over the next 18 years, the CAP strives to ensure all San Franciscans have the skills, knowledge, and resources to meet the challenges of climate change that lie ahead. Communication will be key to engaging businesses, residents, and communities in ongoing action and ensuring that all San Franciscans benefit from climate action. Climate change is inherently a complicated challenge: it encompasses major sectors of the economy, draws heavily on scientific research and data, merges private and public interests, and has outsized equity implications.

Funding the strategies and actions in the CAP is imperative for success. While the expected initial cost of implementing CAP strategies will be immense, research and the experience of cities already being confronted by climate change show that the financial consequences of inaction will be even worse.² In mid-2021, after strong advocacy from local residents inspired to act by the unfolding climate emergency, the City committed funding to develop high-level accounting of the cost of implementation and perform in-depth research and analysis to identify successful funding models to support implementation of the strategies included in this CAP.

The City must implement policies and creative financing mechanisms to provide ongoing and stable funding and build on support from the private sector and philanthropy, as well as federal, state, and regional agencies. It must continue to illustrate the case for climate action and secure commitments from a range of diverse stakeholders to invest in solutions, while creating incentives to support these investments. As a leader in global sustainability, San Franciscans have a chance to prove to the world that a net-zero future is achievable, advances justice, and creates a vibrant, diverse city where people can thrive.

A CALL TO ACTION

This path forward will be challenging. San Franciscans will need to be bold and courageous to achieve our vision of a city that provides adequate and healthy housing, safe transportation, green space in every community, and expansive employment opportunities. While individual action is important, including each City department, business, and resident working to reduce emissions, collective action will be vital. That includes rapidly getting off fossil fuels, understanding the science of climate change, and helping others grasp the magnitude of the threats to where we live, work, worship and play. Collective action includes listening to and learning from each other, lifting one another up to move forward together, and showing the entire world that San Francisco can lead the way in addressing the climate crisis.



THURSDAY NIGHT

OPEN TILL 9 PM

Larkin



SECTION 2:

OVERVIEW



Over the past twenty years, cities around the globe have responded to the call for local action to address the climate crisis. This Climate Action Plan proposes focused solutions to eliminate greenhouse gas emissions while advancing related goals, such as racial and social equity, health, economic recovery, and resilience.

The climate crisis is putting San Francisco's communities at risk by directly threatening infrastructure, natural resources, and public health. While the City is proud of its record on local climate action, more needs to be done. The changes brought on by the global COVID-19 pandemic, growing economic inequality, and powerful calls for racial and social justice require a renewed vision for the city and a plan that responds to the scale of the crises we face, while leaving no one behind.

VISION AND VALUES

Time is running out. Climate change is accelerating as global emissions increase, causing havoc and destruction to every part of the globe. Transformational change is needed to rapidly cut emissions and limit further damage. San Francisco's future will be shaped by its response to climate change, as well as to other global crises such as the COVID-19 pandemic, systemic racism, and increasing income inequality. These interconnected challenges demand focused, flexible, and bold responses.

At the same time, scientific understanding of the climate crisis has deepened. In August 2021, the United Nations Intergovernmental Panel on Climate Change (IPCC) published the [first part of its sixth assessment report](#) which updates policymakers on our baseline understanding of

climate change. This sobering report unequivocally states human action is warming the planet, finds that many changes are already irreversible, and concludes that to stabilize the climate we must reach net-zero emissions to limit further warming. Now, more than ever, it is urgent that San Francisco take aggressive and equitable action to mitigate the catastrophic impacts of climate change.

Driven by these scientific and moral imperatives, San Francisco has embarked on a path to turn its climate challenges into opportunities and ensure that solutions work for everyone.

This need for a holistic approach is at the heart of San Francisco's response to climate change. The 2021 Climate Action Plan (CAP) charts a path to eliminate emissions while simultaneously committing to racial equity, social justice, health, resilience, and a just economy.

The CAP identifies actions to address inequities across sectors, including in housing and transportation. It supports communities that have been most impacted by climate change yet have not historically benefited from climate solutions. By centering racial equity and focusing on what matters most to San Francisco's diverse communities, implementing the CAP will create good jobs that are tied to meaningful work. The CAP also prioritizes sustainable economic recovery so that San Francisco can withstand crisis-level shocks while creating resilient, healthy, and equitable communities.

The CAP will shape San Francisco's response to the climate crisis for decades to come. Achieving this goal is not just up to scientists or the government; it will require active participation from everyone and therefore focuses on empowering communities to take action.

CHALLENGES IN UNPRECEDENTED TIMES

San Francisco's commitment to climate solutions must create opportunities that achieve sustainable and broad-based economic growth. The pandemic's impact on the economy has been severe, particularly harming the city's service and hospitality sector, commercial real estate, and public transit. COVID-19 also exposed significant racial and economic inequities, compounding existing income disparities.

While the COVID-19 pandemic is not expected to have a long-term direct effect on emissions, indirect effects will linger for years. In the transportation sector, these impacts might include less air travel and commuting as businesses rely more on telework, but such changes can also lead to less use of public transportation. In the commercial building sector, there are increased vacancies for office space, shops, and restaurants. This may result in less tax revenue, which could hinder the level of investment cities are willing to commit to climate action. At the same time, this may provide an inflection point for reimagining how we use these spaces for residents, communities, and other businesses.

Throughout the pandemic, San Francisco had to adapt quickly to circumstances and quickly implemented innovative new programs to protect public health and spur economic recovery. For instance, many streets were transformed into pedestrian-friendly, car-free recreational areas for people to safely exercise while keeping their distance. Neighborhood restaurants and cafes were allowed to create outside dining areas, an accommodation that will extend beyond the pandemic with the Shared Spaces program. While presenting challenges, these unprecedented times have also required a new way of thinking and shown that we need collective action to create a healthier and more sustainable future.

Implementation of pandemic solutions occurred quickly because of the urgency at hand. Similar urgency can apply to climate action, and inclusive implementation planning is also needed. As the prevalence and severity of climate changes grows, so does the need for awareness, diversity and inclusion.

CLIMATE ACTION: PAST, PRESENT, AND FUTURE

San Francisco is synonymous with environmental action. Its first Sustainability Plan in 1994 was prescient. That plan grappled with climate change and identified the need to assess the true costs of relying on fossil fuels. San Francisco was also one of the first cities to truly embrace the power of municipalities to effect change. In the face of decades of federal inaction on climate, it has bolstered its reputation as a leader in national and

international sustainability efforts such as the [Urban Sustainability Directors Network](#) and [C40](#), which bring cities from around the nation and the world together to share best practices and drive advancements in climate action.

In the more than two decades since its first environmental plan, the City has adopted progressively more ambitious policies to reduce emissions while simultaneously decoupling emissions from economic growth. Since 1990, San Francisco has reduced

emissions by 41%, while its population has grown by 22% and gross domestic product (GDP) has increased 199% (Figure 3), showing that environmental action can coincide with and even drive economic growth. While San Francisco's economy has grown, it has also seen some of the widest income disparities in the United States,³ exacerbating race and class divides that are evident in both the pandemic and environmental injustices.

1990-2019 San Francisco trends

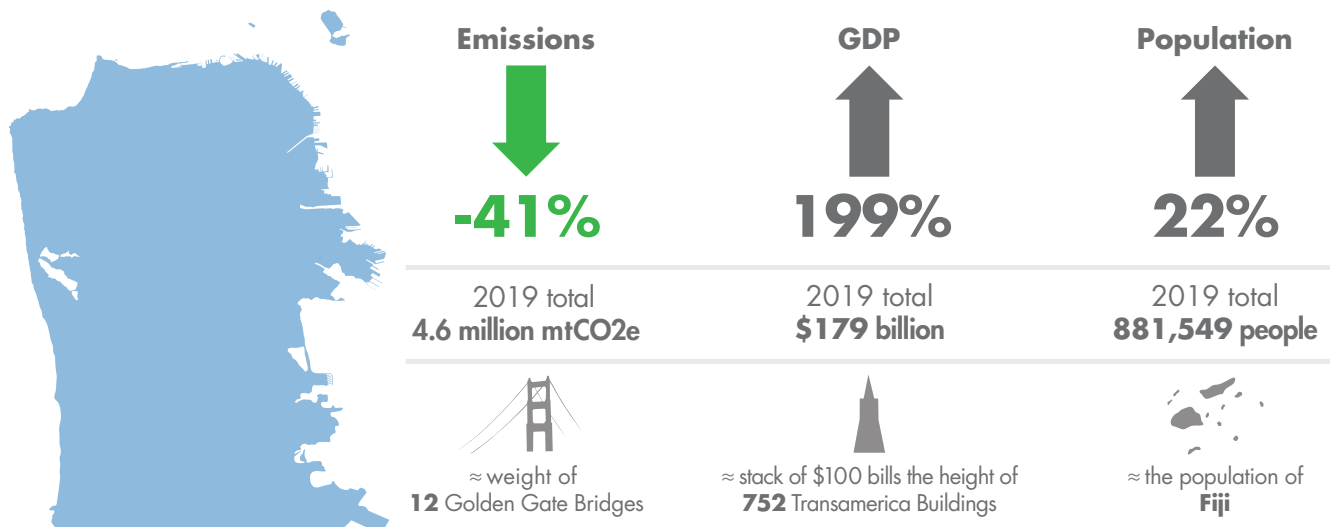


FIGURE 3: 1990-2019 SAN FRANCISCO GHG EMISSIONS AND GROWTH TRENDS

TABLE 2: SAN FRANCISCO'S KEY CLIMATE MILESTONES

| YEAR | MILESTONE |
|------|---|
| 2004 | San Francisco's First Climate Action Plan |
| 2013 | San Francisco's updated Climate Action Plan |
| 2015 | 0-50-100 Roots Climate Action Framework Launched |
| 2016 | Emissions Reduced by 30% Below 1990 Levels |
| 2017 | 50% Low Carbon Trips Achieved - New Goals Set to 80% |
| 2018 | Mayor Breed Commits to Net-Zero Emissions by 2050 |
| 2019 | San Francisco Board of Supervisors Declares a Climate Emergency |
| 2019 | 100% Renewable Electricity Requirement for Large Commercial Buildings |
| 2019 | Emissions Reduced by 41% Below 1990 Levels (6 years ahead of schedule) |
| 2020 | Natural Gas Banned in New Construction |
| 2021 | Mayor Breed Advances Updates to Climate Action Goals in Chapter 9 of the Environment Code, Commits to Net-Zero Emissions by 2040, San Francisco Board of Supervisors Approves |

Today, the country has a federal administration and Congress that are prioritizing climate action, but cities must continue to lead the way. For decades, San Francisco has created plans, implemented policies, and crafted engaging frameworks to address climate change and mitigate the impacts of air pollution and other environmental stressors. Table 2 shows some of key milestones that the City has assumed to meet its climate goals.

MAJOR CLIMATE IMPACTS

Burning fossil fuels has caused global temperatures to rise and weather to become more extreme. Today, global climate change is directly affecting San Francisco, including higher temperatures, more extreme heat days, more extreme storms with heavier rainfall and flooding, sea level rise, severe droughts, and poorer air quality. These conditions have left California susceptible to catastrophic wildfires, directly threatening homes, businesses, and protected areas,

and blanketing the city, state, many other parts of the nation with hazardous smoke.





Climate change has both direct and indirect consequences. Direct consequences lead to health and economic challenges such as heat stroke, injuries from extreme storms, and respiratory illness from poor air quality. Indirect downstream consequences include food insecurity caused by poor agricultural output; income and property loss; housing and job insecurity due to drought, flooding and wildfires; and increased rates of anxiety and depression because of these disruptive consequences of climate change.

Table 3 summarizes historic and future direct climate impacts out to the late century.⁴ It is difficult to predict the exact increase in future emissions and the climate's response to specific emissions levels. This table highlights projected climate impacts from three scenarios.

Climate Impact Spotlight: Droughts

Climate change projections indicate that droughts will intensify in many areas of the United States in the 21st century. Already, historic drought conditions in California are necessitating mandatory water restrictions for residents, businesses, and farms. Several consecutive years with little precipitation and low snowpack have left all of California's reservoirs significantly under capacity, and vegetation dry and highly combustible. Drought conditions such as low precipitation and high temperatures impact air quality by extending the blooming season for ragweed and other allergens, increasing exposure to ground-level ozone and fine particulates, and greatly increasing the likelihood of catastrophic wildfires that spread extremely unhealthy smoke to adjacent communities. These impacts exacerbate respiratory illness, allergies, and asthma and will be worse for children whose developing lungs and rapid breathing increases exposure to respiratory triggers. San Francisco must invest significant resources to prepare for the multiple threats posed by droughts and their harmful effects.

TABLE 3: MAJOR CLIMATE IMPACTS

| HAZARD | HISTORICAL PATTERN | LATE CENTURY (2070 - 2099) | |
|--|-----------------------------------|---|---|
| | Observed 30yr Average (1961-1990) | Medium Emissions Scenario (RCP4.5) ⁵ | Very High Emissions Scenario (RCP8.5) ⁶ |
|  Extreme Heat⁷ Days | 4 days | 30-year average: 6 days / year 30-year range: 4-11 days / year | 30-year average: 12 days / year 30-year range: 6-28 days / year |
|  Maximum Length of Dry Spell⁸ | 111 days | 30-year average: 118 days 30-year range: 95-136 days | 30-year average: 123 days 30-year range: 96-153 days |
|  Maximum 1-Day Precipitation | 1.695 inches | 30-year average: 1.741 inches 30-year range: 1.440-2.094 inches | 30-year average: 1.814 inches 30-year range: 1.408-2.335 inches |
|  Sea Level Rise⁹ | BASELINE YEAR | END OF CENTURY (2100) | |
| | 2000 | Low Emissions Scenario (RCP2.6)¹⁰ | Very High Emissions Scenario (RCP8.5) |
| | | 66% probability sea-level rise is between 1.0-2.4 ft 5% probability sea-level rise meets or exceeds 3.2 ft | 66% probability sea-level rise is between 1.6-3.4 ft 5% probability sea-level rise meets or exceeds 4.4 ft |

SAN FRANCISCO'S APPROACH

Communicating About Climate Change

Climate change encompasses major sectors of the economy, draws heavily on scientific research and data, merges private and public interests, and has outsized equity implications. Effective communication will be key to achieving the City's climate action goals and ensuring that all San Franciscans can participate and benefit.

Climate action must therefore be multi-dimensional: it must be bold and science-based; it must be explicitly anti-racist and move society toward a more just and equitable world; it must embody shared values of mutual aid, support and protection; it must speak to diverse communities in languages that are their own, and amplify the voices of communities that have been historically disenfranchised; and it must lift up communities on the front lines of climate harm, many of which are among the least responsible for climate emissions and least resourced to respond.

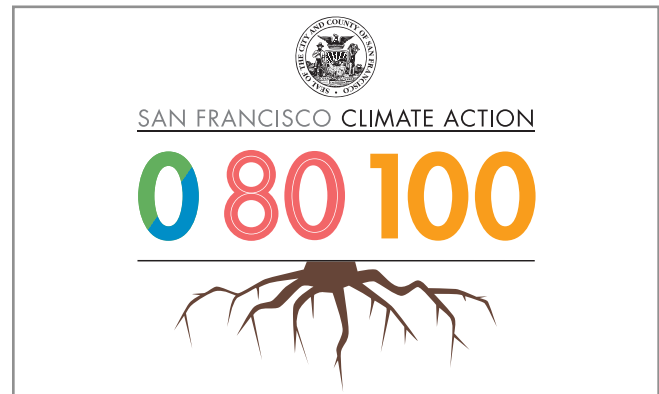
Since its first CAP in 2004, San Francisco has been leading the way on local climate action, environmental justice, and developing and implementing innovative community-facing programs and outreach campaigns to engage with community stakeholders from all walks of life. Transparent [annual reporting](#) of community-wide emissions shows that the City has stayed ahead of targets set by the State of California and included in international climate protocols.

The 2013 CAP summarized the city's progress and shared examples of successful policies and programs and outlined an initial set of actions to be taken by citizens, businesses, and government to strive toward emission reductions. Several years later, San Francisco introduced the "0-80-100-Roots" climate action framework, where:

- 0 stands for zero waste to landfills and incineration, and zero toxics
- 80 stands for 80% of trips taken by low-carbon modes such as walking, biking, and transit
- 100 stands for 100% renewable energy and a complete phase out of fossil fuels, and

- Roots means using natural systems to sequester carbon from the atmosphere

As the dangerous consequences of climate change continue to harm people, it is important for San Francisco to deploy new communication tools and approaches that will increase community resilience in the face of challenges that lie ahead. An educated and



committed public will be vital to participating directly in solutions as well as building and maintaining the political will to enact climate policies.

CAP Development Process

Given the urgency of the climate crisis, any CAP must prioritize actions that will have the greatest potential to reduce emissions and a strong likelihood of realization. In April 2019, the Board of Supervisors passed the [Climate Emergency Resolution](#) which called on SF Environment to issue a technical feasibility analysis, the [Focus 2030 report](#), released three months later. Afterward, SF Environment outlined a process for updating the 2021 CAP. Early activities included: identifying partners, developing governance structures, identifying future technical tasks such as emissions impact analyses, conducting targeted stakeholder engagement, and preparing for general coordination for the many aspects of the CAP. This was initiated as the COVID-19 pandemic unfolded.

From there, the CAP update process followed the steps outlined below:

1. **Follow the Data** – The annual emissions inventory and supporting data serve as the foundation for identifying key focus areas for emissions reduction. Additionally, the city's Consumption-Based Emissions Inventory (CBEI), which expands

the inventory process to address other sources of emissions, was also analyzed and used to inform the development of “Responsible Production and Consumption” strategies.

2. **Build on Experience** –With a history of administering credible and effective sustainability and climate programs over the past 20 years, San Francisco enjoys a high level of expertise for implementing climate strategies. Leveraging and growing from this experience will accelerate emissions reductions. However, given more ambitious goals driven by the unfolding climate emergency and the need to center equity in planning and implementation, new approaches will be needed and they must be responsive to today’s challenges and opportunities.
3. **Center Equity** –In addition to eliminating emissions, equity is a co-equal priority for the CAP. To support transparency and rigor, SF Environment created the Racial and Social Equity Assessment Tool (R-SEAT) especially for the CAP, which is discussed in depth in **Section 4: Planning for People**, as well as in **Appendix D: R-SEAT Summary Findings**. SF Environment also launched the Community Climate Council, composed of leaders from key community organizations including the American Indian Cultural Center, Business Council on Climate Change, Chinatown Community Development Center, Community Youth Center, El Centro Bayview, Emerald Cities, Interfaith Power and Light, Livable City, PODER, Sutro Stewards, and SPUR. Members were convened and compensated to advise on the CAP and the best methods for reaching the city’s diverse population. SF Environment also outlined various methods to ensure a range of voices could contribute to the CAP.
4. **Leverage Complementary Efforts** –The extent of the climate emergency means all complementary efforts must be leveraged to their fullest extent. The CAP leverages many other plans and policy initiatives. Examples include the growth of CleanPowerSF; building electrification codes; [ConnectSF](#), San Francisco’s long range transportation plan and pricing studies;



Anchor Partner Network Meeting on Equitable Decarbonization of Affordable Housing, Fall 2019

the [Electric Vehicle Roadmap](#); [Housing and Transportation](#) element updates of the General Plan; [urban forest](#) and [biodiversity plans](#); and ongoing [zero waste](#) efforts.

5. **Convene and Engage** -SF Environment convened Technical Working Groups (TWGs) composed of staff from key City departments who contributed significant time, creativity, and knowledge to the process. The department and partner agencies also implemented various forms of targeted stakeholder engagement. This engagement included the Transportation and Land Use sector focus groups, recurring updates to policy bodies such as the Urban Forest Council, and convening the Zero Emissions Buildings Task Force, which included the Anchor Partner Network, a focused process to identify equity priorities for residential building decarbonization.
6. **Draft Initial Strategies and Analyze Impacts** – TWGs and key stakeholders identified high-impact opportunities to reduce emissions, informed by a mix of existing department goals and opportunistic leverage points. Based on early drafts, preliminary emissions reductions for buildings and transportation, comprising approximately 90% of total emissions, were calculated. Throughout the process the R-SEAT was applied to surface and sharpen equity priorities. Other data, such as high-

FREE ONLINE WORKSHOPS

| | |
|--------------------|--|
| WED, JAN 27 | CLIMATE & ECONOMY |
| 5:30-7:00 pm | with Alvaro Sanchez The Greenlining Institute |
| TUE, FEB 2 | CLIMATE & EQUITY |
| 6:00-7:30 pm | with Jacqui Patterson NAACP |
| TUE, FEB 9 | CLIMATE & HEALTH |
| 5:30-7:00 pm | with Linda Rudolph Public Health Institute |
| THU, FEB 18 | CLIMATE & RESILIENCE |
| 5:30-7:00 pm | with Brian Strong City and County of San Francisco |

FEB 23 & 25
SAVE THE DATES
 for Spanish and Chinese
 in-language workshops!

SAN FRANCISCO CLIMATE ACTION | **0 80 100**ROOTS | SFEnvironment.org/climateplan

CAP Community Engagement Outreach Flier, January 2020

level costs, feasibility, and capacity to implement, were also documented.

Following this phase, a broad-based community engagement process was implemented.

Community Engagement

After developing draft strategies, the public engagement process was initiated to 1) inform residents about the proposed strategies, including how equity was incorporated; and 2) consult residents to identify missing elements and get ideas for implementation. Detailed information about the community engagement process can be found in **Appendix B**.

To ensure the CAP serves the needs, goals, and preferences of its constituents, SF Environment sought the participation of a diverse cross-section of the public, including communities of color, neighborhood and tenant groups, youth, workers, and seniors. Multilingual staff supported a specialized consultant team to engage with non-English-speaking residents. Further, the Department relied on members of the Community Climate Council to provide additional culturally competent outreach and engagement.

This process was conducted from mid-December 2020 to the end of March 2021, during the height of the pandemic. New approaches were needed, and innovative uses of digital technology were deployed to reach as many San Franciscans as possible, with a strong commitment to connect with traditionally underrepresented populations and fostering an open and engaging atmosphere for all attendees. In February 2021, workshops started offering American Sign Language interpretation and specific outreach was conducted to the Mayor’s Disability Council and The California Aging and Disability Alliance.

Overall, the engagement process reached 238,845 people, including those who saw social media posts or visited the website. Ultimately 5,777 people took at least one of the following actions: filled out the online survey, attended a virtual workshop or presentation, provided comments on the online open house platform, or interacted with social media content. Additionally, SF Environment hosted a kick-off webinar with Mayor Breed, followed with 11 public workshops (including one in Spanish and one in Chinese), and 11 community presentations. More than 1,400 comments were posted



to the online open house platform, and nine emailed comment letters were received from stakeholder groups. City staff addressed major themes of the comments and feedback received and integrated the changes into the final CAP.

A summary of major themes and community priorities captured from the engagement process include:

- **Evidence-based Efforts** –Provide rigorous, transparent, and consistent analyses to show potential effectiveness of actions, and ensure implementation does not inadvertently increase emissions or exacerbate inequities.
- **Cost Burdens** –Community members expressed concerns about the affordability of climate action and who will have to pay costs. Lack of affordable alternatives to a fossil fuel-based economy is a major potential barrier to success.
- **Balance of Agency** –There is desire for more education and outreach to empower communities. The onus for climate action should be on major institutions, including the government and corporations, not individuals.

- **Alignment** –The City should prioritize existing relevant projects or clarify how the CAP would interact with these policies and programs for a more holistic approach.
- **Workforce** –There is desire to see the City further supporting workforce development within local, low-income, and BIPOC communities.

The CAP must be viewed as a living document that will be revisited and updated regularly moving forward based on external factors, with a formal update every five years, all in acknowledgement of rapidly changing times. Progress on CAP strategies will be tracked through climate and equity metrics. Draft metrics are proposed in **Section 5: Solutions: A Path Forward.** Outreach and engagement will be imperative to success and will continue throughout implementation (see **Section 6: Next Steps for Implementing the CAP**, for more on this).

SECTION 3:

TOWARDS A NET-ZERO FUTURE



The science is clear: the planet is warming, primarily due to burning fossil fuels and destroying tropical forests. Emissions inventories provide a quantifiable means for measuring progress toward reducing emissions over time. This section includes: **(1) Current emissions profiles** - San Francisco's current emissions inventory, baseline, and historical data; **(2) Emission reduction pathways** - a forecast business-as-usual (BAU) inventory and inventory projections; and **(3) Emission targets and climate goals** - specific targets and goals for emission reductions.

CURRENT EMISSIONS PROFILE

The City of San Francisco's most recent sector-based emissions inventory is for the year 2019. The major sources of emissions are those generated by energy consumption from buildings, transportation, and water/wastewater management. Energy-related emissions are those generated by electricity use and burning natural gas. These emissions are primarily from consumption that occurs within residential and commercial buildings as well as municipal activities. Transportation emissions include burning gasoline or diesel fuel for vehicle travel and equipment use. Emissions from landfills come from decomposition of organic materials that produce methane, a powerful heat-trapping gas. Emissions from agriculture are allocated to the city proportionally from the Bay Area Air Quality Management District's regional inventory.

San Francisco's emissions are categorized into five sectors in the 2019 inventory (Figure 4): Transportation, Buildings (Residential and Commercial), Landfilled Organics, Municipal, and Agriculture and Wastewater. San Francisco's baseline inventory is set to 1990 levels and serves as a reference against which progress in reducing emissions over time may be measured. The 1990 level baseline inventory year is consistent with the State of California.

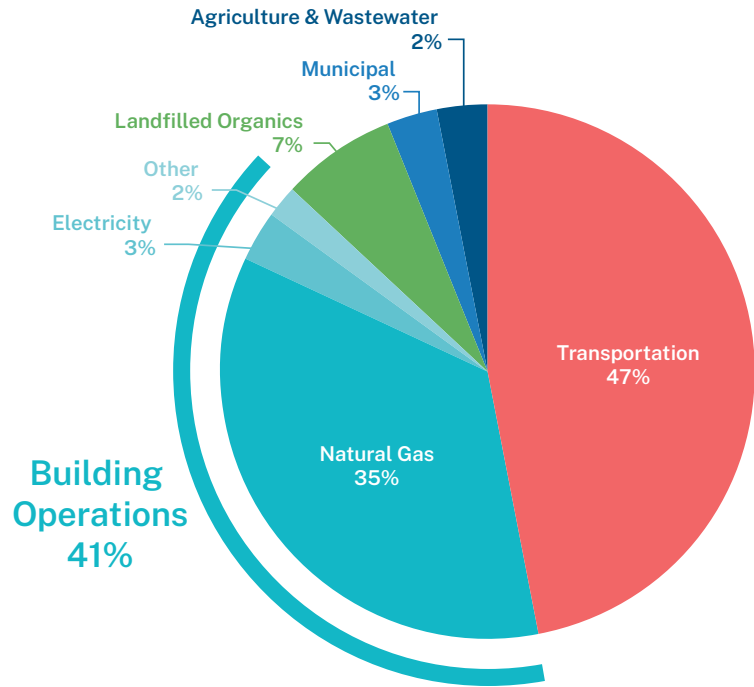


FIGURE 4: SAN FRANCISCO'S 2019 GHG INVENTORY

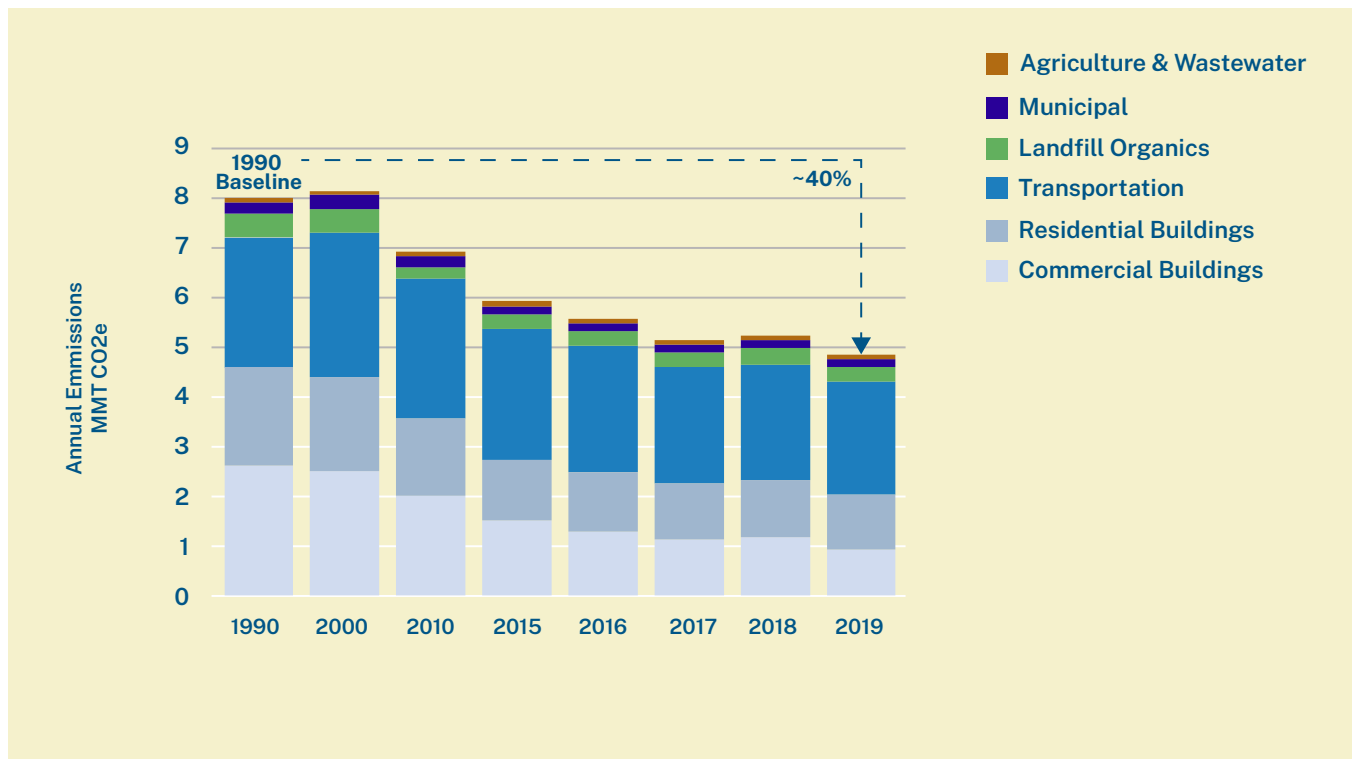


FIGURE 5: EMISSIONS: BASELINE (1990) TO CURRENT DAY (2019)

TABLE 4: 2019 EMISSIONS COMPARED TO 1990 LEVELS

| SECTOR | PERCENT CHANGE FROM 1990 |
|-----------------------|--------------------------|
| Residential Buildings | 47% decline |
| Commercial Buildings | 67% decline |
| Transportation | 16% decline |
| Landfilled Organics | 35% decline |
| Municipal | 32% decline |
| Agriculture | 9% increase |
| Wastewater | 26% increase |

San Francisco's emissions declined by 41% between 1990 and 2019, from 7.9 to 4.6 million metric tons of carbon dioxide (mtCO₂e¹¹) (Figure 5). San Francisco has consistently seen decreases in almost every sector (Table 4).

Transportation: In 2019, emissions in the Transportation sector totaled 2.20 million mtCO₂e, accounting for 47% of San Francisco's emissions. Emissions from the Transportation sector have declined 16% below 1990 levels, mainly due to lower vehicle pollution and cleaner vehicle fuels mandated by the State of California. Emissions from public transportation, such as Muni and commuter ferries, have fallen as fossil-fuel diesel has been replaced by renewable diesel starting around 2016. Gasoline used by the Transportation sector was responsible for the largest share of emissions (72%), followed by diesel (21%), other fuels (6%), electricity (1%), and renewable diesel (<1%). Broken down by vehicle type, privately-owned passenger vehicles generated 72% of emissions, at 1.59 million mtCO₂e. Maritime ships and boats accounted for 19% of emissions and off-road equipment produced 6% of emissions. The remaining 3% of sector emissions were from public transportation.

Buildings: In 2019, emissions from the Building sector totaled 2.02 million mtCO₂e, accounting for 41% of San Francisco's emissions. Of these, emissions from Residential buildings totaled 1.05 million mtCO₂e, comprising 23% of San Francisco's emissions.

Emissions from Residential buildings have declined 47% since 1990 — driven primarily by cleaner electricity supply, improved energy codes, and city-wide energy efficiency programs. Residential sector emissions are

generated from fossil fuels used to heat households, provide hot water, dry clothes, and cook. They result primarily from burning natural gas (96%), followed by electricity use (2%), and other fuel consumption (2%).

In 2019, emissions from the Commercial buildings sector totaled 831,000 mtCO₂e, accounting for 18% of San Francisco's emissions. This includes commercial and industrial, direct access, district, and steam loop customers. Emissions from the Commercial sector have declined 67% since 1990. Like Residential buildings, this decrease was mainly due to a combination of cleaner electricity supply, improved energy codes, and city-wide energy efficiency programs. Commercial natural gas use was responsible for the largest share of emissions (85%), followed by steam (8%), and electricity (7%).

Landfilled Organics: In 2019, emissions from Landfilled Organics totaled 308,000 mtCO₂e, accounting for 7% of San Francisco's emissions. Organic materials sent to landfills decompose and release methane emissions. Emissions from Landfilled Organics have declined 45% below 1990 levels due to improved resource recovery.

Municipal: In 2019, emissions from the Municipal sector totaled 156,000 mtCO₂e, accounting for 3% of San Francisco's total emissions. In the Municipal sector, 86% of emissions were generated from City-owned buildings and 14% from the City's fleet of non-revenue vehicles. Municipal sector emissions declined 31% below 1990 levels. The steepest decline occurred between 2010 and 2012 when all City-owned buildings began to fully source 100% emission-free electricity generated by San Francisco Public Utilities Commission's Hetch Hetchy Power system.

Agriculture: In 2019, emissions from the Agriculture sector totaled 84,000 mtCO₂e, accounting for 2% of San Francisco's emissions. These emissions have increased 9% from 1990 levels and are generated mostly from animal waste, with the remainder from managing urban soils.

Wastewater: In 2019, emissions in the Wastewater sector totaled 5,400 mtCO₂e, accounting for just one tenth of a percent of San Francisco's emissions. Wastewater sector emissions have increased 26% from 1990 levels, mainly due to a 22% increase in population, which increases the volume of wastewater treated at

the City's water pollution control plants. Wastewater sector emissions occur mainly from fugitive emissions, or emissions that are released as effluent is discharged into a body of water.

EMISSIONS REDUCTIONS PATHWAYS

Global

In 2016, the IPCC estimated that to remain under a 1.5°C increase in average global temperature CO2 emissions would need to fall by 45-75% from 2010 levels and cumulative global emissions after the end of 2017 must be less than 420 GtCO2. In 2018, scientists prepared a subsequent report to document progress towards long-term goals of the Paris Agreement and inform preparation of nationally determined contributions. The report found that limiting global temperature increase to 1.5° C would require rapid transitions in energy, transportation and land use, industry, and buildings. It notes that global net human-caused emissions must reach net-zero around 2050, which means remaining emissions will need to be balanced through carbon sequestration. Global organizations such as [C40](#) and One Planet City Challenge (OPCC) provided specific guidance for cities based on these IPCC reports, and recommended a 57%-68% reduction from baseline emissions inventories to meet a global 2030 target.

In August 2021, IPCC released its latest report, documenting the most up-to-date and comprehensive review on the science and expected impacts of climate change. The report states that humans are unequivocally responsible for global warming and that human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Unless there are immediate, large-scale emissions reductions, it will be impossible to limit warming to close to 1.5°C. While the IPCC's synthesis of regional information will not be published until September 2022, it has released a [fact sheet](#) highlighting findings for urban areas. Cities, especially coastal cities, will be hotspots of global warming.

State of California

In 2018, Governor Jerry Brown signed a non-binding executive order (B-55-18) which ordered, "A New Statewide Goal to be established to achieve carbon neutrality as soon as possible, and no later than 2045." At the same time, Senate Bill (SB)100 was signed into law requiring 100% of the state's electricity to be produced by zero-carbon resources by 2045. The law addresses the electricity portion of the State's emissions but does not address vehicle fuels and natural gas.

Currently, the California Global Warming Solutions Act of 2016: Emissions Limit, or SB 32, is a state law that codifies statewide emissions reduction targets to 40% below 1990 levels by 2030. SB 32 expanded upon Assembly Bill 32, which was passed in 2006 and established statewide goals to reduce emissions to 1990 levels by 2020.

The State of California has concurred that limiting global warming will require a 45% reduction in global emissions from 2010 levels by 2030 which is proportionate to the State's goal of a 40% reduction from 1990 levels by 2030 and reaching net-zero emissions by mid-century. The State is currently evaluating a pathway to achieve net-zero emissions by 2045.

In October of 2020, the California Air Resources Board (CARB) consulted with Energy + Environmental Economics to develop [Achieving Carbon Neutrality in California – PATHWAYS Scenarios Developed for the California Air Resources Board](#). This study evaluated three scenarios that could potentially achieve carbon neutrality in California by 2045 and was designed to align with California's Executive Order B-55-18. Analysts examined carbon neutrality differently in each scenario, ranging from 80-92% reduction in emissions by 2045, with remaining emissions being removed from the atmosphere using a combination of carbon sequestration strategies.



San Francisco, CA

It is clear that San Francisco's response to the climate crisis must be swift and acknowledge the imperative of accelerating emissions reductions. In February 2019, San Francisco's Board of Supervisors approved a resolution declaring a climate emergency and directed SF Environment to issue a report detailing the steps San Francisco can take to reduce its carbon emissions. In July 2019, SF Environment released *Focus 2030: A Pathway to Net-Zero Emissions*, which was a foundational step in San Francisco's progress toward addressing the climate crisis. This technical report quantified potential emissions reductions consistent with reaching a net-zero goal.

Building upon the *Focus 2030* report to meet reduction targets, additional analysis was conducted to develop comprehensive understanding of the emissions reduction potential of various strategies and actions to achieve those targets.

A business-as-usual (BAU) baseline scenario was created to project the effect of emissions reduction strategies. The BAU assumptions, in which demographic and economic changes — namely population and job growth — serve as the primary drivers of changes in emissions, resulted in a scenario that showed emissions steadily increasing over time, rising 21% above 2017 levels. Continuing with business-as-usual is not an option if San Francisco is serious about meeting its climate commitments and avoiding the worst consequences of climate change.

From this baseline, a variety of emissions-reducing strategies and actions are applied to San Francisco's emissions forecast. These are described in **Section 5**. Details about the methods used for the Transportation and Land Use and Building Operations sectors are in **Appendix C**. Emissions reduction approaches vary in the targeted sectors. Local city data and applicable sector decarbonization rates were used to provide tailored analyses to understand emission reduction potential.



Photo Credit: C Matt Jalbert

San Francisco's emissions reduction target:

Net-zero sector-based emissions by 2040

Based on prior commitments, the CAP development process originally contemplated net-zero emissions by 2045 as the overall target. More recently, legislation sponsored by Mayor London Breed that updated Chapter 9 of the Environment Code accelerated the net-zero goal to 2040 and it also specifies net-zero as a 90% reduction below San Francisco's baseline year of 1990.

Current projections show that if all the strategies in the CAP were implemented based on the specified timelines, San Francisco would see an 80% reduction from 1990 levels by 2040, an 87% reduction by 2045, and a 94% reduction by 2050.

Peer review by external technical experts concluded the CAP puts forth an exhaustive set of strategies, and indicated that the main way to achieve the 2040 net-zero goal would be to accelerate implementation. Staff-led technical working groups concluded that the proposed strategies had considered aggressive implementation timelines, and any further acceleration would be possible only with significant assistance and support from external entities. Initial solutions to the projected 2040 shortfall include: receiving large amounts of heavily subsidized capital from non-city sources, aligned transformative policies from the state and federal government, and tapping into new science and tools to quantify the carbon sequestration effects of Healthy Ecosystems strategies, which are currently not accounted for within the emissions reduction projections. These are discussed in more detail in **Section 6: Next Steps for Implementing the CAP.**

If San Francisco successfully implemented all CAP strategies and actions, the City would achieve a 61% reduction in emissions by 2030 and an 87% reduction by 2045. More aggressive reductions by 2030 are challenged by the need for legislation and differing regulatory, financial, social, and equity considerations that must be developed in partnership with stakeholders. Major shifts are beginning to happen, as innovation and capital investment in climate technologies are on the rise, while securing new long-term funding and vigilantly prioritizing climate justice are also needed for success. Based on this data, analysis, and consideration of external factors, San Francisco has proposed the bold and aggressive goal of equitably reaching net-zero sector emissions by 2040, with a 61% reduction by 2030 (Figure 6).

To expand San Francisco's view of emissions, a Consumption-Based Emissions Inventory (CBEI) was conducted for the years spanning 1990–2015 by SF Environment in partnership with Lawrence Berkeley Lab's CoolClimate Network in April 2019. The results were released in October 2020. One recommendation from that study was that San Francisco should establish consumption-based emission reduction targets to accompany the existing sector-based emission-reduction targets for 2030 and 2050.

A CBEI measures emissions that occur throughout the supply chain. It includes goods, such as materials, consumer goods, and food as well as services, including healthcare, education, and entertainment (Figure 7). The methodology then ascribes the final emissions demand to consumers, defined as households and government in San Francisco. A CBEI differs from a sector-based inventory because it includes emissions generated outside city borders to produce goods and services for consumption by residents. Thus, a CBEI provides insights about where local consumption gives rise to emissions outside a city, leading to additional opportunities for reducing emissions and avoiding inequities associated with outsourcing high-emissions activities to other communities, locally, regionally, and internationally.

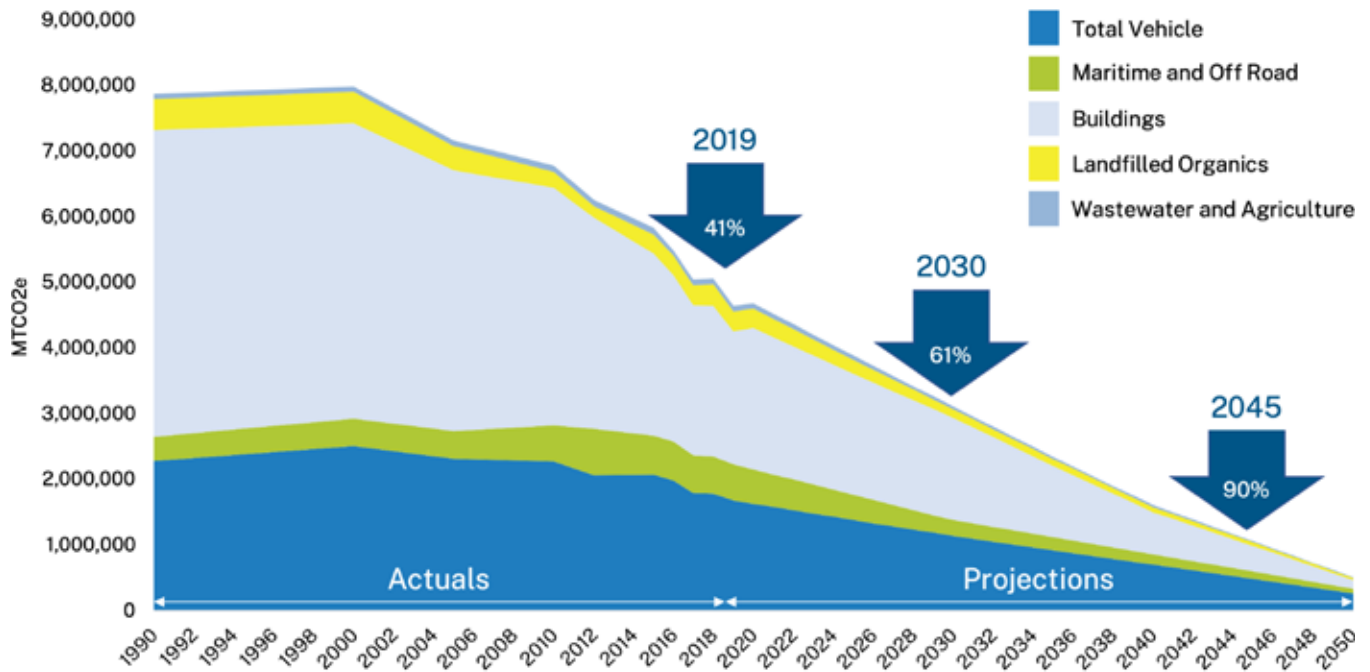


FIGURE 6: SECTOR-BASED GHG PROJECTIONS

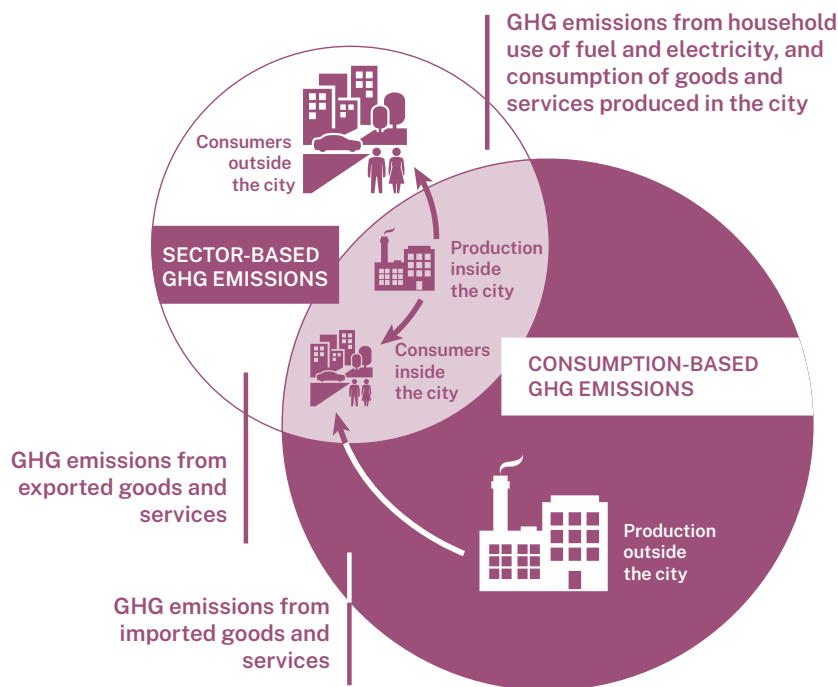


FIGURE 7: THE RELATIONSHIP BETWEEN SECTOR-BASED AND CONSUMPTION-BASED GHG INVENTORIES

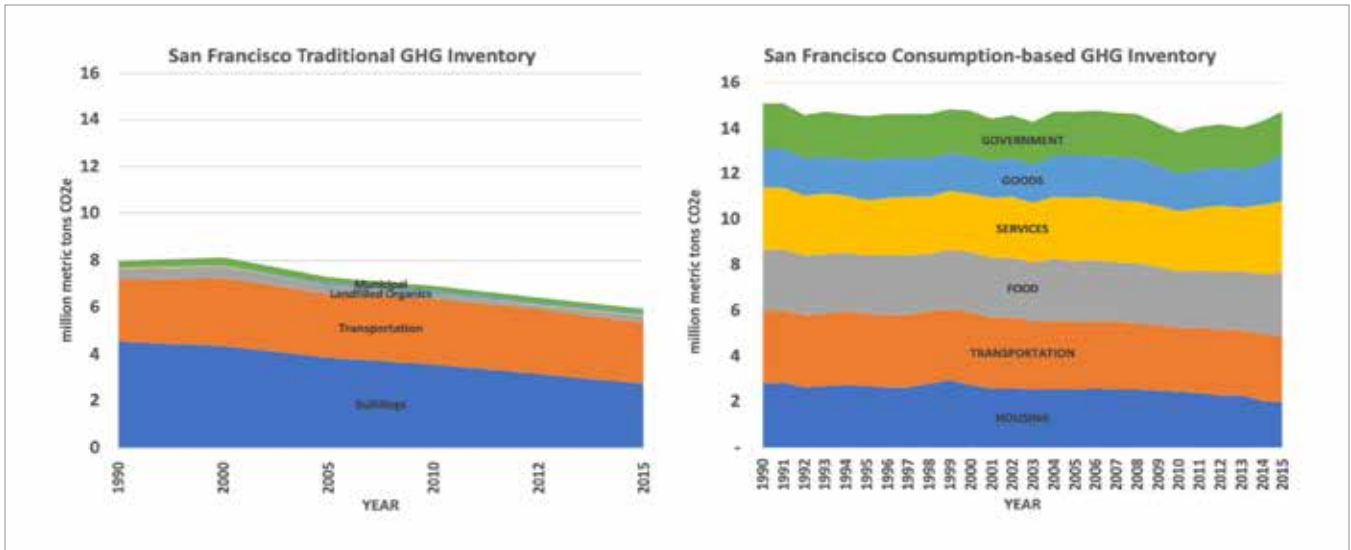


FIGURE 8: SAN FRANCISCO'S SECTOR-BASED AND CONSUMPTION-BASED GHG INVENTORY, 1990-2015

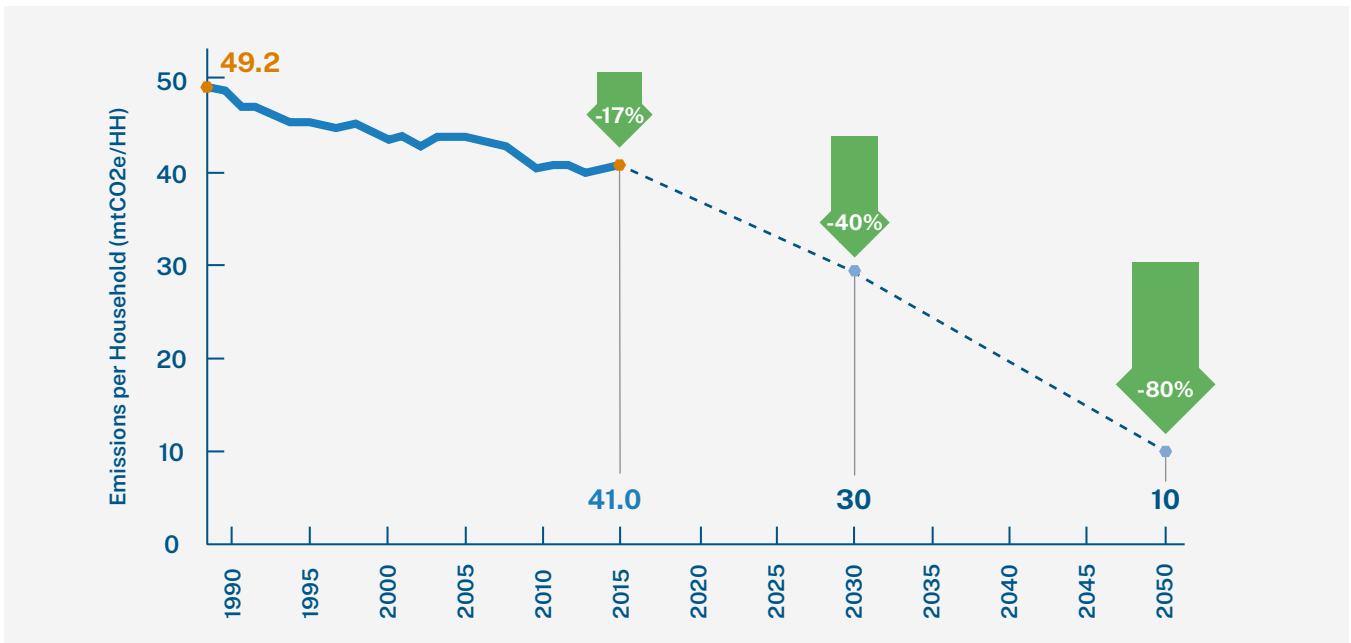


FIGURE 9: HISTORICAL (1990-2015) AND PROJECTED 2030 AND 2050 CONSUMPTION-BASED EMISSION REDUCTION TARGETS

According to the CBEI, San Francisco emitted 14.72 mtCO₂e, which is 2.5 times higher than the 5.93 million metric tons in the sector-based emissions inventory (Figure 8). Total city-wide Consumption-Based Emissions (CBEs) decreased 2% between 1990 and 2015 even as the city's population increased.

Between 1990 and 2015 CBEs were reduced 17%, from 49.2 to 41.0 mtCO₂e as measured on a per household basis (Figure 9). Policy-based CBE targets for San Francisco that align with SB 32 and recommendations from the CoolClimate Network suggest reducing emissions 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050. These targets were adopted in by San Francisco in the updated version of Chapter 9 of the Environment Code. With aggressive state and local action between 2015 and 2030, San Francisco can reduce CBEs from 41 to 30 mtCO₂e per household, an ambitious yet appropriate goal.

EMISSIONS TARGETS AND CLIMATE GOALS

City staff, with community input, developed goals to reduce San Francisco’s emissions to achieve its sector-based and consumption-based targets (Table 5). Goals (Table 6) are consistent with international protocols from science-based targets, statewide reductions required under SB 32, and regional and global emissions goals.

TABLE 5: 2021 CLIMATE ACTION TARGETS

| SECTOR-BASED EMISSION REDUCTION TARGETS | CONSUMPTION-BASED EMISSION REDUCTION TARGETS |
|--|---|
| By 2030, reduce emissions by at least 61% compared to 1990 levels | By 2030, reduce consumption-based emissions to less than 30 mtCO ₂ e per household, equivalent to a 40% reduction compared to 1990 levels |
| By 2040, achieve net-zero emissions by reducing emissions at least 90% compared to 1990 levels and sequester any residual emissions through nature-based solutions | By 2050, reduce consumption-based emissions to less than 10 mtCO ₂ e per household, equivalent to an 80% reduction compared to 1990 levels |

TABLE 6: 2021 CLIMATE ACTION GOALS

| | |
|-----------------------|---|
| ENERGY | By 2025, supplying 100% renewable electricity, and by 2040, supplying 100% renewable energy (no more fossil fuels). |
| BUILDINGS | By 2021, requiring zero onsite fossil fuel emissions from all new buildings, and by 2035, requiring zero onsite fossil fuel emissions from all large existing commercial buildings. |
| TRANSPORTATION | By 2030, an increase in low-carbon trips to at least 80% of all trips measured and an increase in the level of electrification of vehicles to at least 25% of all private vehicles registered, and by 2040, an increase in the level of electrification of vehicles to 100% of all private vehicles registered. |
| HOUSING | Building at least 5,000 new housing units per year with maximum affordability, including not less than 30% affordable units, and with an emphasis on retaining and rehabilitating existing housing. |
| ZERO WASTE | By 2030, a reduction in the generation of solid waste of at least 15% below 2015 levels and a reduction in the amount of solid waste disposed of by incineration or deposited in landfill of at least 50% below 2015 levels. |
| ROOTS | Sequestering carbon through ecosystem restoration, including increased urban tree canopy, green infrastructure, and compost application. |

SECTION 4:

PLANNING FOR PEOPLE



Photo Credit: ShawnClover, Flickr

In addition to reducing emissions to zero over the next 20 years, the CAP strives to ensure all San Franciscans have the skills, knowledge, and resources to meet interconnected challenges that lie ahead, including climate change. To do so, the proposed strategies leverage community strengths, advance racial and social equity, and provide critical benefits to the entire community.

City climate action embodies the popular motto to “think globally but act locally.” By identifying and implementing policies, programs, and projects that will lead to meaningful reduction in emissions, San Francisco can help lead the international fight against climate change and pave the way for other jurisdictions to act on climate.

At the same time, reducing emissions offers a unique opportunity to advance other key City priorities: protecting public health; strengthening resilience to natural and industrial hazards and shocks; creating a more fair and inclusive economy; and importantly, directly addressing racial inequities and the marginalization of whole groups of people. Climate action is a vehicle to catalyze positive, transformative change across society that will protect all San Franciscans and support their ability to thrive.



Earth Day Volunteers 2012

CENTERING RACIAL EQUITY

The rapidly unfolding climate emergency requires that strategies go beyond reducing emissions and include actions that advance racial and social equity. Black, Indigenous, and People of Color (BIPOC) and low-income residents are among the least responsible for causing climate change, yet the most vulnerable to its harms, including heat stress, flooding in low-lying neighborhoods, and housing and food insecurity. When data is analyzed by race, the results of discriminatory policies are evident across every social indicator, including unemployment, health, household income, education, housing, displacement, criminal justice, and police violence.¹² Climate change will only exacerbate these disparities, so strategies to reduce emissions must be intentionally designed for equity to mitigate and reverse these outcomes.

Concurrent to the CAP update, San Francisco is also developing an [Environmental Justice Framework](#) as part of its update to the General Plan. The Environmental Justice Communities Map (Figure 9) will be used as a primary tool for tracking progress on CAP equity goals.

Interventions to reduce disparities and advance equity vary in scope. They can take the form of targeted benefits, specialized programs and policies, or they may take on fundamental drivers of inequity. Equity can be advanced by ensuring inclusive access to benefits, for example by providing subsidies for green technologies such as solar panels, electric vehicles or energy-efficiency upgrades to those who cannot afford them. In this example, strategies deliver benefits to populations who may lack access to them while also promoting new technologies. Strategies can also address the root causes of the inequity. For example, expanding affordable housing options by building new housing stock and eliminating discrimination in home loan applications can help people with lower incomes reduce emissions associated with commuting and less energy efficient older housing.

The commitment to a CAP grounded in equity and justice requires that policymakers go beyond examining how the benefits of green technology can become available to those who cannot afford them. Instead, policymakers should also examine root causes; for example, why some people cannot afford green technologies in the first place, and how to address these underlying causes, such as disparities in income and wealth accumulation.

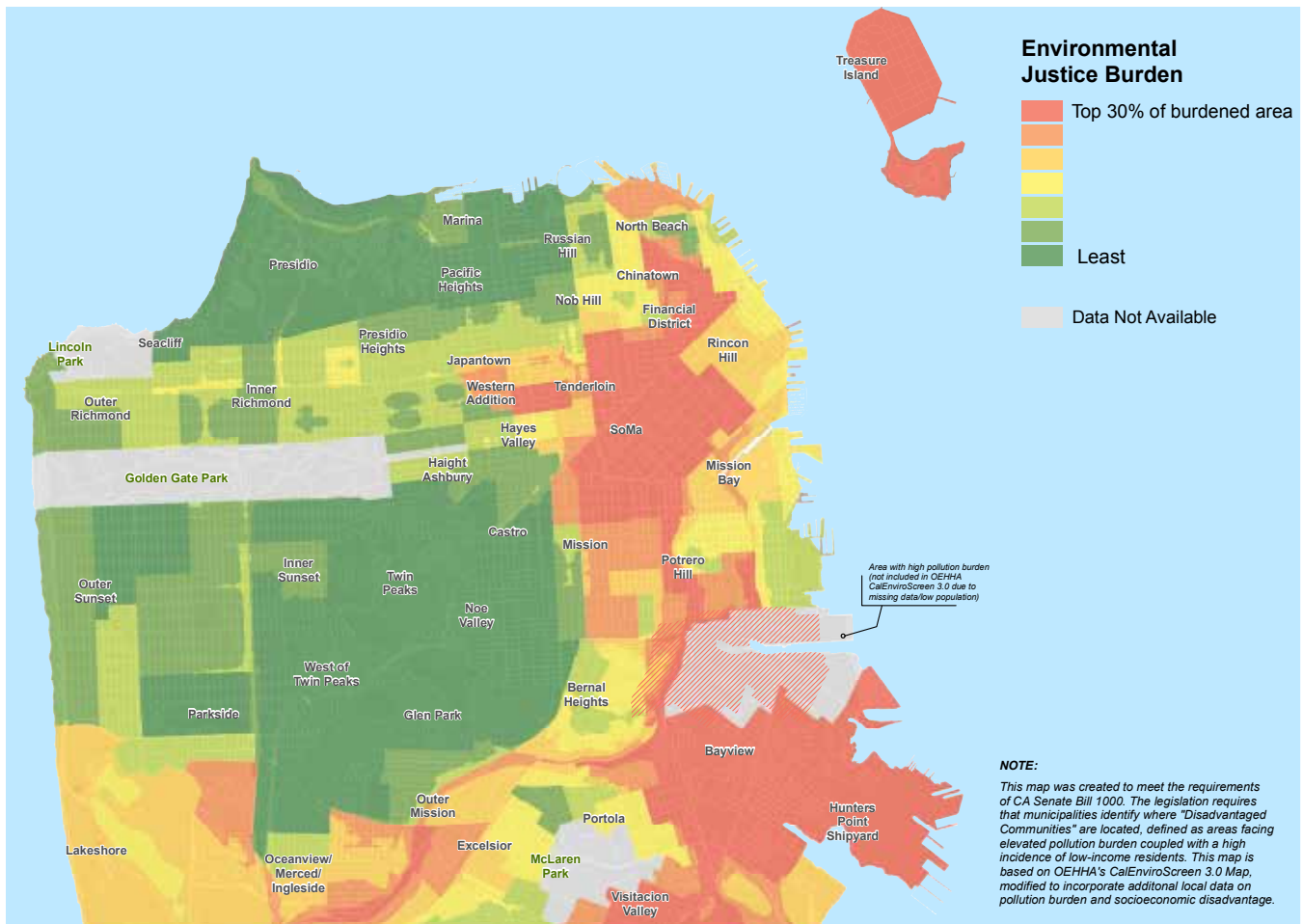


FIGURE 10: DRAFT ENVIRONMENTAL JUSTICE COMMUNITIES MAP¹³

CLIMATE ACTION PLAN “LENSES”

San Francisco views climate action through four complementary focus areas, or “lenses”, which have identified critical issues and shaped proposed strategies for future implementation. These considerations must be advanced to the extent possible to maximize benefits for the entire community, and with a special eye toward reducing burdens on marginalized communities.

Lens 1: Racial and Social Equity

Disparities by race and ethnicity in San Francisco and the Bay Area include median earnings (Figure 11), displacement (Figure 12) and home ownership and rent burden (described in **Section 5: Housing**).

Displacement, gentrification, and deep cultural losses have affected some of San Francisco’s most iconic neighborhoods, even as the city has experienced one of the longest periods of economic growth in its history. Poverty and racial and ethnic inequality have been identified as two foundational issues contributing to the disparities in San Francisco’s public health outcomes.¹⁴ The stark inequality must be vigorously addressed. Climate solutions that fail to address racial inequity are less likely to be successful while those that advance multiple goals and provide sustainable solutions for many years. To advance equitable climate action, a Racial and Social Equity Assessment Tool (R-SEAT, **Appendix D**) was created to assess CAP strategies for their potential to address fundamental drivers of inequity. The R-SEAT leads with race because

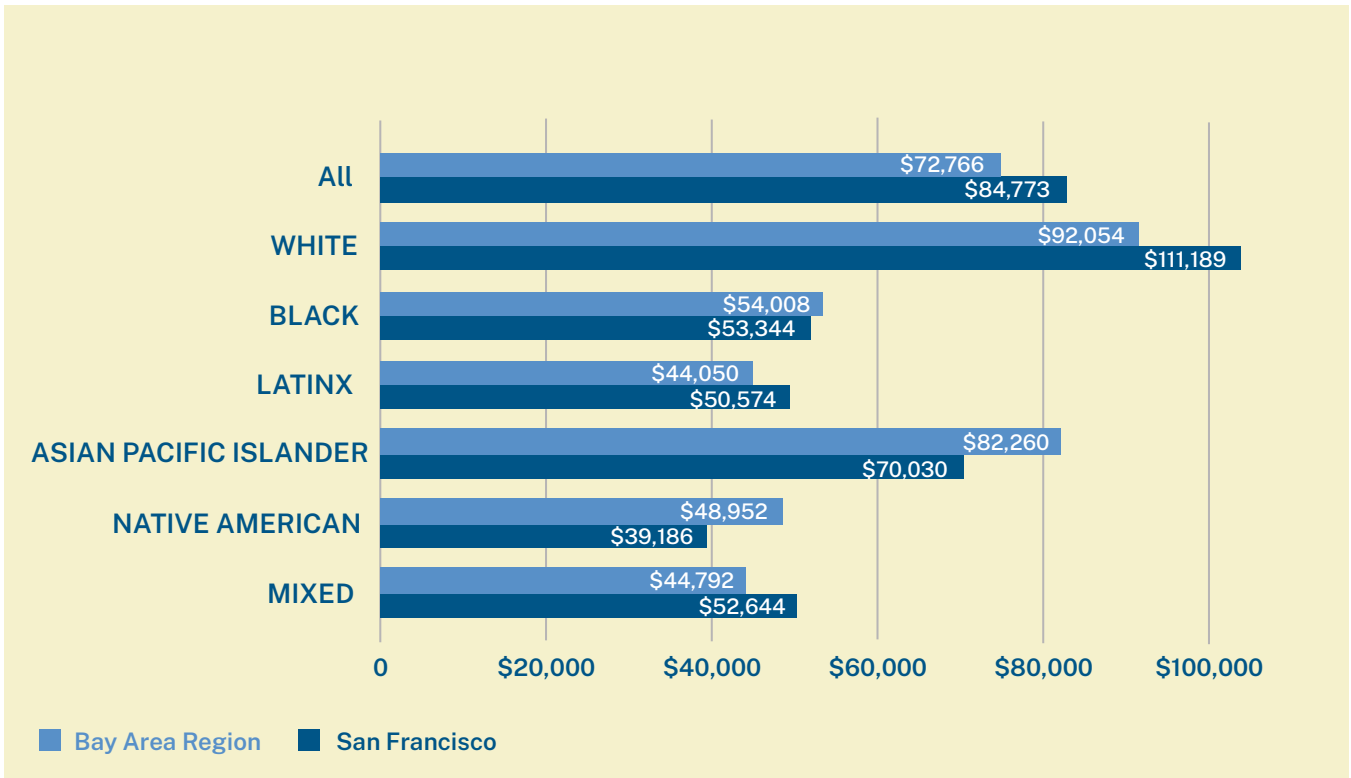


FIGURE 11: MEDIAN EARNINGS BY RACE AND ETHNICITY, 2019¹⁵

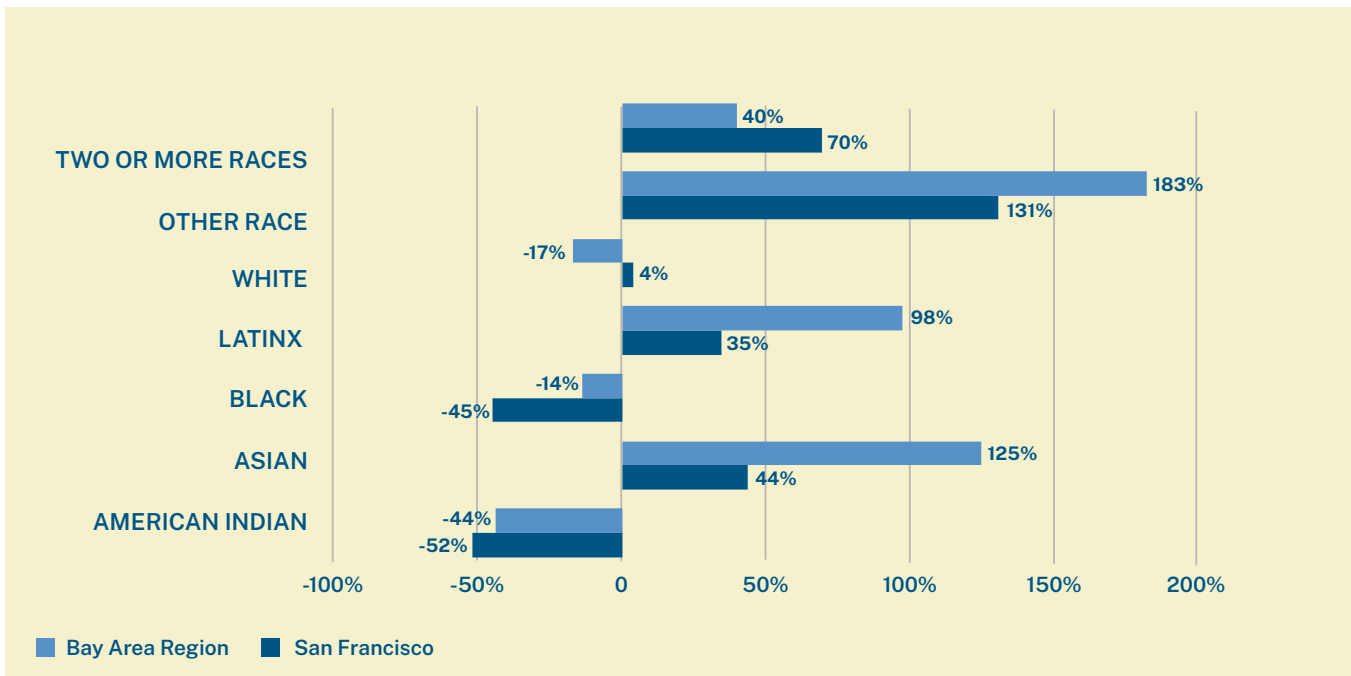


FIGURE 12: PERCENT CHANGE IN POPULATION BY RACE AND ETHNICITY, 1990 TO 2018¹⁶



racial discrimination intersects with other forms of marginalization. An intersectional approach accounts for how social categorizations such as race, class, gender, and sexual orientation create compounding discrimination or disadvantage.

Lens 2: Economic Recovery and Just Transition

Through ambition and effort, San Francisco has demonstrated it can significantly reduce emissions while having a prosperous local economy. However, many residents and families have not benefited from the city's prosperity. There is a real possibility that whole communities could be left behind and penalized in the shift to decarbonization, unless policies are advanced to protect against that harm. A new imperative — referred to as a just transition — is integral to achieving local, national, and international climate goals. A just transition calls for a strategic, people-focused approach to phasing out polluting industries while creating employment pathways for workers in those industries, plus a new generation of workers, to transition to quality jobs that support economic and climate justice.

COVID-19 impacted many people and communities financially, but those most at risk were predominantly people of color and individuals with lower incomes: the communities that will also be harmed most by climate change. Economic recovery driven by climate action must provide opportunities to eliminate racial disparities and economic inequality.

For this CAP, and the policy initiatives that feed into it,

the City engaged labor leaders, frontline communities, environmental justice advocates, and other key stakeholders to ensure strategies support all workers, including those in fossil-fuel based industries that must decarbonize. Launching the CAP while recovering from COVID-19's economic disruptions provides opportunities to help impacted community members find meaningful work while building on community strengths and advancing common goals, including improving public health.

Lens 3: Protecting Public Health

Climate change is one of the greatest public health threats of the 21st century. Both its causes — primarily burning fossil fuels and destroying tropical forests — and its effects have acute consequences for health. Climate-related events such as extreme temperatures, severe storms, and wildfires directly harm people and exacerbate pre-existing challenges such as poverty, food and housing insecurity, and displacement.

While everyone's health may be harmed by climate change, adverse health outcomes are not evenly distributed. Social Determinants of Health are defined as upstream conditions such as social and institutional inequities, as well as disparities in living conditions that impact people's health, including disease, injury, and mortality.

Social determinants are significant drivers of climate-related health inequities. Like other social determinants of health, climate change creates poor health outcomes, increased health care costs and disproportionately



FIGURE 13: INTERCONNECTEDNESS OF CLIMATE CHANGE AND HEALTH

harms vulnerable populations such as seniors, children, people with disabilities, and people with pre-existing medical conditions. Research has concluded that the impacts from a changing climate are inextricably linked to poorer health.

Climate change impacts may be intensified by external factors such as location, proximity to infrastructure, and housing quality. For example, communities in flood plains and low-lying areas are more vulnerable to flooding from extreme storms, and families that live in homes without air conditioning or insulation are more vulnerable to extreme temperatures. Physiological characteristics may also make a person more vulnerable to climate stressors: those with pre-existing health conditions, such as asthma, are more vulnerable to dirty air from wildfire smoke; older adults are more vulnerable to extreme heat; and populations that rely on electronic medical equipment are more vulnerable to power shut-off's required for wildfire mitigation.

Climate change threatens human health in many ways, such as increases in rates of cardiovascular and

respiratory diseases; increases in water and foodborne illnesses; greater incidence of vector-borne diseases such as West Nile Virus; preventable injuries due to extreme weather events; increases in incidence of heat-related illnesses such as heat stroke, heat exhaustion, or even death. These stressors can also lead to impaired mental health. Figure 13 displays the most salient health impacts caused by climate change.

Addressing climate change can protect people's health. For example, walking and biking reduces traffic congestion and improves physical health, greenspaces and urban trees sequester emissions and improve air quality and mental health, and eliminating fossil fuels in buildings protects against chronic health conditions such as asthma.

Lens 4: Resilience

San Francisco has a long-standing relationship with natural disasters and hazards, coping with multiple risks since the Great Earthquake of 1906. Planning to mitigate future earthquake risks has been underway



FIGURE 14: CLIMATE ADAPTATION AND MITIGATION CREATE RESILIENCE

for decades. More recently, the City and region have started to face specific climate change impacts such as extreme heat and poor air quality caused by wildfires. These hazards, as well as other threats such as coastal flooding and drought, are projected to increase in severity and frequency as emissions continue to build up in the atmosphere. Because of the overlap between climate resiliency and other preparedness efforts, such as pandemic and earthquake preparedness, fire safety, and other endeavors, the City can take a multi-hazard approach to addressing community resilience (Figure 14).

The [Hazards and Climate Resilience Plan \(HCR\)](#) developed by City agencies and adopted by the San Francisco Board of Supervisors in 2020, identifies hazards and their associated vulnerabilities and consequences and presents strategies to reduce risks and adapt to unavoidable climate impacts. This approved plan is required for San Francisco to receive federal pre-and post-disaster hazard mitigation funding. The HCR also meets State adaptation planning requirements and will be linked to the Safety and

Resilience Element in San Francisco’s General Plan.

As San Francisco contributes to ambitious efforts to keep global temperatures below 1.5°C, it must also prepare for unavoidable climate impacts and other hazards that will hit home. All CAP strategies and actions were assessed for their potential to increase resilience. Two specific impact areas were assessed:

- Community adaptation and resilience — the information and services available to prepare for, respond to, and recover from a hazard event
- Physical environment resilience — the changes to buildings and infrastructure, including nature-based infrastructure, which reduce risks from hazards and pollution.

The strategies and actions detailed later in this plan are meant to not only support mitigation, but also adaptation and resilience. The ability to anticipate, prepare for, and respond to hazards of all types will improve climate resilience and help San Francisco communities better cope with impacts.



SECTION 5:

SOLUTIONS: A PATH FORWARD

ENERGY SUPPLY

BUILDING OPERATIONS

TRANSPORTATION AND LAND USE

HOUSING

RESPONSIBLE PRODUCTION AND CONSUMPTION

HEALTHY ECOSYSTEMS





Energy Supply

To become a zero emissions city, San Francisco must use only 100% renewable electricity for all energy needs and strategically phase out fossil fuels in all sectors.

Over the past two decades, San Francisco has made significant progress in reducing emissions in its electricity supply. It must continue this trend to not only support building and transportation decarbonization efforts, but to ensure all San Franciscans have access to reliable and affordable clean energy.

SECTOR GOALS:

100% renewable electricity by 2025

100% renewable energy (no fossil fuels) by 2040

CONTEXT

Eliminating fossil fuels as a source of power generation is key to achieving the City's emission reduction goals, and San Francisco has made great progress in this area. As shown in Figure 15, in 2019, 83% of electricity supplied to San Franciscans came from greenhouse gas-free resources, with 69% from renewable sources that include wind, solar, and existing large hydropower.¹⁷ Moving forward, San Francisco is well on its way to achieving 100% renewable electricity by 2025.¹⁸

Efforts to eliminate emissions from other key sectors such as Building Operations and Transportation & Land Use rely heavily on replacing dirty, fossil-fuel based energy sources such as natural gas, gasoline, and diesel with a plentiful and affordable stream of renewable electricity. The demand for electricity will increase as transportation electrification and building decarbonization efforts grow, and as the local population increases.

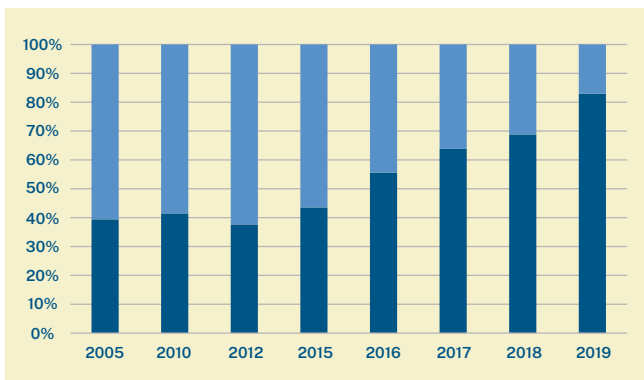
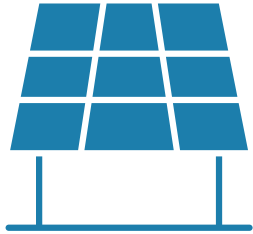


FIGURE 15: PERCENTAGE OF SAN FRANCISCO'S ELECTRICITY SUPPLIED BY RENEWABLE OR EMISSIONS-FREE SOURCES¹⁹

Accomplishments



Constructed

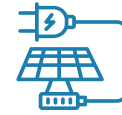
3

new solar installations
on city property.

Announced major milestone of providing

100%

renewable energy to all CleanPowerSF
customers by 2025.



Completed our first
solar plus battery storage
project in Diamond Heights.

Committed to **468 MW** of new and solar projects in California,
enough to power over

430,000

San Francisco homes.

“Sourcing cleaner electricity is one of the most powerful local tools we have to combat the climate crisis. Through our Hetch Hetchy Power and CleanPowerSF programs, we’re now serving more than 70% of the electricity consumed in San Francisco with energy that is clean, affordable, and reliable.”

–Barbara Hale,
Assistant General Manager, Power Enterprise,
San Francisco Public Utilities Commission

Clean Electricity and San Francisco’s Utility Landscape

The San Francisco Public Utilities Commission (SFPUC) provides more than 70% of the electricity consumed in San Francisco through two programs: Hetch Hetchy Power and CleanPowerSF. Hetch Hetchy Power is San Francisco’s publicly owned utility that has been generating hydroelectric power for more than a century. It energizes municipal services such as Muni, public schools, and the San Francisco International Airport, and an increasing number of residents and

businesses, including numerous affordable housing developments as well as tenants of Salesforce Transit Center. Launched in 2016, CleanPowerSF is the City’s Community Choice Aggregation (CCA)²⁰ program serving more than 380,000 customer accounts in San Francisco, providing renewable energy to residents and businesses at competitive rates.

As detailed in Figure 16, the remaining electricity customers are served by PG&E, an investor-owned utility, or Direct Access companies, independently contracted, for-profit energy service providers who work with large commercial and industrial customers.

Fully transitioning all San Franciscans to renewable electricity is challenging given this complex landscape. Hetch Hetchy Power already provides 100% renewable electricity, while CleanPowerSF will provide 100% renewable electricity to all its customers by 2025. However, PG&E and Direct Access providers are on track to meet the state’s goal of 100% renewable electricity by 2040. Accelerating this timeline will require customers to choose 100% renewable electricity programs offered by their utility or switch providers. San Francisco could also more expeditiously meet local clean energy goals by successfully acquiring PG&E grid assets located in the city.

Energy Supply

As climate change continues to impact San Francisco, it is critical that the electrical grid withstand the threats of extreme weather and continue to reliably provide power to City residents and businesses.

The SFPUC continues to ensure it can provide clean, safe, and affordable energy to its customers despite challenging external conditions through vegetation management, proactive maintenance, and safety and reliability checks. The SFPUC is also investing in local solar-plus-battery-storage projects and building out new, modern grid infrastructure.

In the past few years, the risk of wildfires has led PG&E to turn off power lines during high winds or dry conditions. Fortunately, San Francisco is less likely to suffer blackouts during these Public Safety Power Shutoff (PSPS) events due to the lower likelihood of wind-induced fire events within the city and its location on the transmission grid. However, San Francisco will continue to advocate for increased grid resiliency at the state level as appropriate.

Equity and Grid Decarbonization

As the city strives to create a zero-emission future and a more equitable society, all San Franciscans should be able to participate in the clean energy economy. Electric

rates must be affordable and based on cost-of-service, while clean energy must be available to all.

Low-income residents can currently qualify for bill assistance programs that can reduce their electric bills by up to 35%. Moreover, the SFPUC continues to design and develop programs to ensure low-income residents and marginalized communities can help drive the transition to clean energy. The GoSolarSF Program provides incentives to install rooftop solar in low-income communities, and the Disadvantaged Communities Green Tariff and Community Solar Green Tariff programs are being developed to increase the adoption and development of affordable renewable energy within Disadvantaged Communities, as defined by the state through CalEnviroScreen.²²

The City believes that access to information to make the best decisions about energy choices is key to advancing equity in the energy sector. To that end, the SFPUC creates culturally competent translations of program materials, and ensures that customers without access to the internet can receive program information by phone and through written materials.

Developing clean energy resources also presents an economic opportunity for San Franciscans. Building local distributed energy resources, such as solar and storage, can create jobs and increase capacity to meet growing electricity demand.

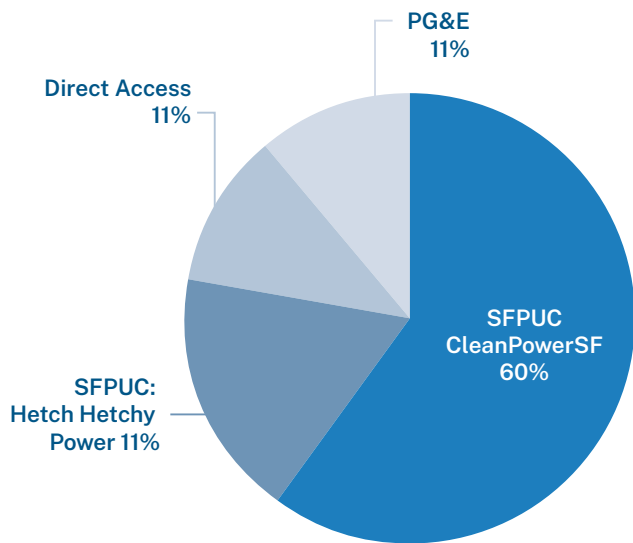


FIGURE 16: SAN FRANCISCO ELECTRICITY SUPPLY BY PROVIDER, 2020²¹

Eliminating Natural Gas Infrastructure

Retail natural gas costs are largely determined by fixed costs to build and maintain utility distribution infrastructure, particularly gas piping. Failing to manage costs for maintaining and upgrading existing gas piping while demand and sales decline from decarbonization would lead to rate increases that will disproportionately impact low-income customers. Building electrification accompanied by strategic decommissioning of gas infrastructure will directly eliminate emissions from gas usage and reduce methane leakage from the distribution network.²³ This planning effort will help shield low-income ratepayers from unfair cost burdens while also reducing risks from pressurized gas piping, such as poisonous methane leaks, explosions, and fires.

In 2020, the California Public Utilities Commission (CPUC) initiated a process to plan for the long-term disposition of gas utilities in California. San Francisco can support these efforts by engaging with businesses, residents, state regulators and PG&E, to develop a

local approach for decommissioning gas infrastructure informed by constraints and opportunities for workers, families, and neighborhoods to ensure equitable outcomes.

Strategies Overview

To eliminate GHG emissions in the energy sector, San Francisco must reach 100% renewable electricity and strategically phase out the use of fossil fuels, namely natural gas from buildings and gasoline and diesel from cars and trucks. The strategies listed below focus on an equitable transition to clean energy and require community input to ensure all San Franciscans have access to reliable and affordable clean energy.

Top Climate Solution:

Use 100% renewable electricity and phase-out all fossil fuels



Did you know?

Co-Benefits of Climate Action:²⁴ Installing solar PV and battery backup systems at critical facilities²⁵ can result in:

REDUCED EMERGENCY RESPONSE COSTS

\$6.2 M

Disaster services workers reduced by **37,000**, 2021–2050

HEALTH CARE SAVING

\$452, 000

Non-emergency injuries treated at shelters, over 7-day post disaster period

REDUCED UTILITY COSTS

\$43 M

Ongoing savings from on-site solar and battery backup, 2021–2050

All figures above in net present value



Did you know?

Job Potential of Climate Action:²⁶ Continuing to develop 2-3 solar projects annually on municipal buildings through 2050 can provide:

43,200 – 84,600 WORK HOURS

For local construction workers, not including ongoing maintenance and manufacturing

ES.1

STRATEGY

Supply 100% greenhouse gas-free electricity to residents and businesses.



WHAT WOULD SUCCESS LOOK LIKE?

100% of SF residents and businesses use affordable, renewable electricity by 2025



GHG REDUCTION POTENTIAL BY 2030

Less than 100,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$\$\$: 500 million+



CLIMATE METRIC

% of renewable electricity used in SF



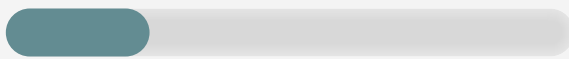
EQUITY METRIC

% eligible SFPUC customers on low-income rates

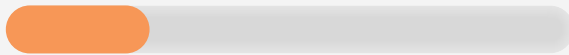
Supporting Actions

- ES.1-1 Provide 100% renewable electricity at affordable rates.
- ES.1-2 Promote early adoption of 100% renewable electricity products to all San Franciscans, with a preference for City programs.
- ES.1-3 Ensure 100% renewable electricity is the only option for San Francisco residents and businesses by 2025, by supporting state or local regulatory requirements and/or acquiring PG&E's grid assets serving San Francisco.
- ES.1-4 Continue to expand programs and rates that provide low-income customers with renewable electricity and ensure community and stakeholder engagement in program development and rate-setting.

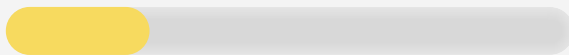
COMMUNITY BENEFITS



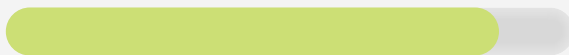
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Invest in local renewable energy and energy resilience projects.

ES.2



WHAT WOULD SUCCESS LOOK LIKE?

Local renewable electricity is developed where safe and affordable



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

% of MW of local renewable energy (solar, storage, etc.) deployed



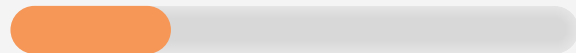
EQUITY METRIC

low-income customers enrolled in SFPUC customer programs

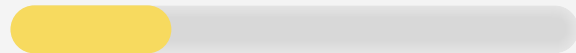
COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- ES.2-1 Assist affordable housing developments with installing on-site solar and battery storage and meeting City energy efficiency and solar energy requirements.
- ES.2-2 Continue to develop onsite solar on City-owned buildings and reservoirs based on emerging opportunities and SFPUC feasibility analysis.
- ES.2-3 Explore developing grid-independent solar and storage at critical municipal facilities and other critical or vulnerable community sites.
- ES.2-4 Support the development of local renewable electricity production by scaling up programs such as net metering, community solar, feed-in tariffs, and battery storage.
- ES.2-5 Ensure SFPUC customer programs center equity in their design and metrics.
- ES.2-6 Continue to encourage private sector investment in local renewable energy solutions by engaging in public advocacy, educating consumers about their options (such as financing), and serving as a strategic partner.

ES.3

STRATEGY

Design and develop the reliable and flexible grid of the future.



WHAT WOULD SUCCESS LOOK LIKE?

100% of the growth in electricity demand is met with renewable electricity



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$\$\$\$: 500 million+



CLIMATE METRIC

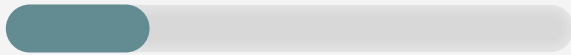
% of growth in electricity demand met with renewable electricity



EQUITY METRIC

Electrical rates are affordable and reflect cost of service

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- ES.3-1 Plan for the change in electricity demand and usage due to electrification of transportation and buildings through efforts such as the SFPUC's Integrated Resource Plans and ensure community engagement in these efforts.
- ES.3-2 By 2023, evaluate the rate and program options to facilitate an affordable transition to all-electric buildings.
- ES.3-3 Invest in distribution infrastructure (including acquisition of PG&E assets) and smart-grid technologies, such as advanced metering infrastructure, demand response, and distribution automation.



STRATEGY

Develop workforce capacity to deliver clean energy resources.

ES.4



WHAT WOULD SUCCESS LOOK LIKE?

Clean energy workforce reflects the diversity of our community



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

N/A



EQUITY METRIC

% of CleanPowerSF products and services procured from women, minority, disabled veteran, or LGBT-owned businesses.

Supporting Actions

- ES.4-1 Continue to champion clean energy installers participating in City-funded incentive programs that engage in workforce development.
- ES.4-2 Utilize workforce development programs, such as Project Pull Internship and CityBuild, and education programs, such as Project Learning Grants and the Teacher Externship Program, to expose youth to clean energy related jobs and careers and diversify the workforce.
- ES.4-3 Include community benefits criteria for renewable energy and other contracts of \$5 million or more, giving preference to contracts that demonstrate a commitment to community benefits and environmental justice.
- ES.4-4 Engage in analysis to identify opportunities to meet diversity and workforce goals in the procurement of clean energy resources

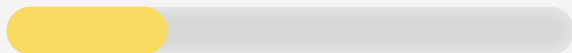
COMMUNITY BENEFITS



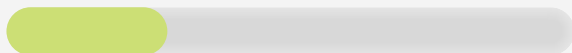
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

ES.5

STRATEGY

Plan for the equitable decommissioning of the city’s natural gas system.



WHAT WOULD SUCCESS LOOK LIKE?

Data collection, interagency collaboration, and community engagement informs an equitable plan and actionable steps.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

% of gas distribution piping located in neighborhoods with a plan for coordinated electrification.



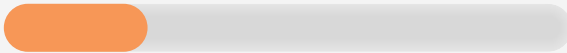
EQUITY METRIC

% community-endorsed plans in neighborhoods and business districts in communities with environmental justice burden as identified in [EJ Communities Map*](#)

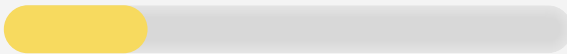
COMMUNITY BENEFITS



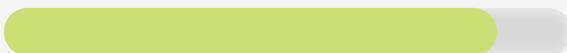
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- ES.5-1 By 2023, assemble data to inform strategic and equitable planning for geographically focused electrification and gas decommissioning plans. Develop metrics to inform prioritization and implementation, including cost, equity, safety, climate and just transition.
- ES.5-2 By 2025, report annually on the status of gas decommissioning, including reduction of methane leakage in San Francisco attributable to decommissioning or removal of gas distribution, along with cost, equity, safety, and just transition.
- ES.5-3 By 2025, publish a Decarbonization Masterplan documenting the systematic approach to decommissioning natural gas distribution and transmission in San Francisco. Specify difficult-to-address loads/uses that are likely to remain “residual” in 2040. Provide neighborhood groups and business districts with interactive planning mechanisms to empower coordination of electrification, and to set localized goals and priorities.
- ES.5-4 By 2026, establish memorandum of understanding between the City, state regulators, and utilities stating mutual intent to de-commission natural gas transmission and distribution in San Francisco.
- ES.5-5 By 2030, transition the district system steam loop serving downtown and Civic Center to renewable energy.





Building Operations

Transitioning buildings from natural gas to clean electricity is critical to reach the City’s climate, health, and resiliency goals. Strategies must protect low-and-middle-income renters and owners, support affordable housing, ensure new jobs, and provide training for local workers.

In 2019, buildings were responsible for 41% of citywide emissions, evenly split between residential and commercial buildings. Of that total, the overwhelming majority (87%) was from natural gas burned to operate heating systems, boilers, water heaters, clothes dryers, and cooking appliances while 13% was from electricity. While emissions from buildings have successfully been cut in half since 1990 – thanks to aggressive energy efficiency investments, stringent green building codes, and a cleaner electricity supply – achieving net-zero emissions by 2040 will require a strategic shift from natural gas to 100% renewable electricity. Implementation mechanisms, such as legislation, incentives, training, and public education must be designed with ongoing and open engagement with all stakeholders, and focus on creating opportunities and protections for BIPOC, low-and-moderate income residents, and other marginalized populations, while prioritizing a just transition for all workers.

Accomplishments



Effective June 2021

San Francisco adopted an ordinance that bans natural gas in all new construction

San Francisco's 2020 SF Energy Fair attracted

450+ participants

and featured 27 exhibitors and 20 speakers



Home to 9 all-electric 100% affordable housing projects avoiding indoor and outdoor air pollution in hundreds of units.

San Francisco's energy benchmarking law motivates

3,114

large commercial and multifamily buildings to improve energy efficiency performance; reducing commercial energy use **10%** from **2013 to 2017**.

SECTOR GOALS:

Zero emissions new construction by 2021

All large commercial buildings are zero emissions by 2035

All buildings are zero emissions by 2040

CONTEXT

Past successes and business-as-usual approaches will not be sufficient for buildings to achieve full decarbonization by 2040. The energy, policy, and technology landscape for buildings in 2021 is very different from what it was in 1990, 2000, or even 2010. Meaningful partnerships between all building stakeholders will be needed to chart a path to the healthy, equitable, and prosperous future.

Harnessing the power of renewable electricity

Clean, reliable, and affordable electricity is the key to eliminating building emissions. Emissions from electricity supplied to San Francisco are declining and in the coming years will approach zero as all of the city's

electricity providers increase renewable electricity supply. As noted in section 5.1, Hetch Hetchy and CleanPowerSF supply more than 380,000 city residents and businesses with electricity and are on track to meet San Francisco's goal of supplying 100% renewable electricity citywide by 2025.

By contrast, emissions from fossil fuel used in buildings – primarily natural gas – are not declining and now account for almost 90% of building-sector emissions; this share will continue to grow over time as the electricity supply gets cleaner. At this time, options to provide gas from renewable sources are too limited to meet the task at hand, so achieving sector goals will require transitioning all buildings to renewable electricity.

Efficient and all-electric buildings

In 2020, San Francisco passed legislation requiring all new building construction to be efficient and all-electric, meaning highly energy efficient and no new natural gas for buildings. This policy, which went into effect in June 2021, will all but eliminate operational emissions from new buildings – nearly 10 years ahead of the City's commitment – and prevents natural gas emissions that otherwise could have been locked in for decades to come.

ZERO EMISSION BUILDINGS TASK FORCE

For the scale of change required to meet goals for buildings, all stakeholders will need to be involved in developing and implementing fair and effective solutions. SF Environment partnered with PODER and Emerald Cities to form the Anchor Partner Network (APN) which designed and delivered targeted engagement with a diverse set of community stakeholders to identify equity priorities and approaches for residential building decarbonization. Mayor London Breed convened the “Zero Emissions Buildings Task Force” which met between 2018 and 2020 and brought together building sector leaders, advocacy, non-profit, community, and financing partners to identify equitable and effective pathways for building decarbonization. The APN was complemented by the “Existing Commercial Buildings” working group which focused on the largest properties with the largest carbon footprints; an “Existing Municipal Buildings” working group which addressed project selection and capital planning in city-owned facilities; and a “New Construction” working group which informed the All-Electric New Construction Ordinance in Dec. 2020.

The transition for existing buildings will be much more challenging and will require inclusive engagement with a broad spectrum of stakeholders to co-create and deliver the necessary suite of policies, education, and funding support for an equitable transition. These solutions must consider the city’s diverse building stock, deferred maintenance, and substandard electrical connections, while also acknowledging that approximately two thirds of residents are renters who will need protections against rent increases, disruption, and displacement. Continuing to pursue and implement cost-effective energy efficiency is also crucial to realize important benefits while making electrification more affordable.

In retrofitting existing buildings, key barriers include the cost of new appliances, workforce readiness, and electrical panel upgrades and capacity. Yet, every existing building will experience advantageous moments for decarbonization over the coming years—and success will require foresight to act on opportunities as they arise. For instance, roughly 5%²⁷ of energy-using equipment is replaced each year as boilers, heaters and other equipment age. Key opportunities for upgrading to efficient and all-electric equipment include during renovation or seismic retrofit, when a property is sold, or replacing equipment at the end of its useful life. Decarbonizing at these moments will minimize costs and present natural inflection points for incentives and other policy interventions. These principles are at the center of Building Operations strategies and supporting actions, which as modeled, are projected to eliminate nearly all sector emissions by 2045 (Figure 17).

An equitable transition

An equitable transition to efficient and all-electric buildings will deliver important benefits to the whole community. Electrification reduces exposure to pollutants from burning natural gas, which contribute to respiratory illnesses, including asthma. Heat pumps can provide both heating and cooling, which can protect residents from extreme temperatures, which is especially important for older adults and populations with pre-existing health conditions.

Robust tenant protection policies and leasing strategies must be in place to prevent displacement for residents and businesses. Funding support and financial incentives must grow rapidly to fuel increased demand for retrofits. New education resources will be critical to inform owners and tenants about the many benefits of zero-emission buildings.

Building decarbonization can create well-paid jobs for installers trained to build and maintain efficient and all-electric buildings. Just Transition principles, which prioritize opportunities for those leaving carbon-intensive industries and for disadvantaged workers seeking employment in the low-carbon economy, must guide workforce policies, programs, and investments.

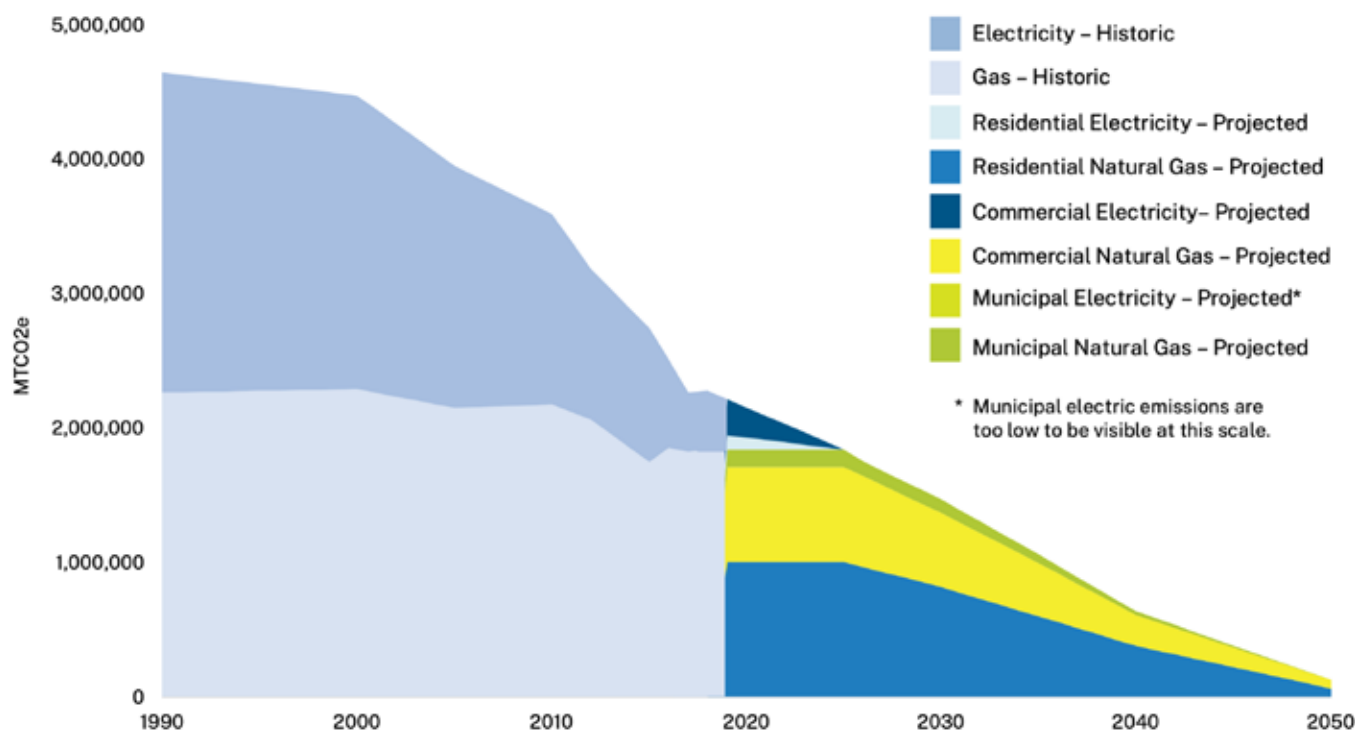


FIGURE 17: PROJECTED EMISSIONS FROM BUILDINGS

Other necessary actions include: advocacy for accessible interfaces on electric home appliances to ensure there are affordable options which can be used by someone who is blind or low-vision, maintaining affordable electricity rates that include low-income customer discounts, optimizing renewable electricity resources on the grid, and engaging with manufacturers to reduce costs and guarantee good performance.

Beyond operational emissions

Refrigerants

Air conditioners, refrigeration systems, and heat pumps all use chemicals called refrigerants to move heat and thus provide heating and cooling. Today's most common refrigerants are hydrofluorocarbons (HFCs), potent heat-trapping emissions that are many times more powerful than carbon dioxide produced when burning fossil fuels. These emission sources are not included in the standard sector-based inventory methodology, but are critical to address.

While heat pumps directly eliminate natural gas emissions, HFC leakage would reduce these gains. The California Air Resources Board's (CARB) regulations

require transitioning to new refrigerants that trap less heat; HFCs have been banned from large new refrigeration installations starting in 2022 and will begin requiring even lower-emissions alternatives by 2025. Local efforts will focus on ensuring building owners comply with CARB's regulations, supporting maintenance to reduce leakage, and advocating for stricter state and federal standards.

Embodied Emissions

Globally, buildings account for 39% of emissions. While 28% of all emissions come from operations, such as electricity use and heating and cooling, 11% come from materials and construction services, a category called "embodied emissions."²⁸ Globally, embodied carbon is responsible for 11% of annual emissions and 28% of total building sector emissions.

As operational emissions decline, embodied emissions will account for a larger share of total emissions. Strategies for reducing emissions from materials and construction activities are addressed in the Responsible Production & Consumption sector under RPC Strategy 1: "Achieve total carbon balance across the buildings and infrastructure sectors."

Strategies Overview

Today, nearly half (41%) of San Francisco’s emissions come from buildings. Fully transitioning buildings away from relying on natural gas to efficient technologies such as heat pumps that run on clean electricity will be critical to reaching the City’s climate goals. Strategies to get there will include protections for low-and-middle-income owners and renters, support for affordable housing developers, and ensure new job and training opportunities for local workers.

Top Climate Solution:
Electrify existing buildings



Did you know?

Co-Benefits of Climate Action:²⁹ Eliminating fossil fuel use in existing buildings can result in:

| | | |
|--|---|---|
| <p>REDUCED SOCIAL COSTS³⁰</p> <p>\$38 M</p> <p>From reduced outdoor air pollutant quantity from decarbonization of multi-family and office buildings, 2026 – 2050</p> | <p>REDUCED UTILITY COSTS</p> <p>\$232 M</p> <p>For multi-family and office buildings improving efficiency and fuel switching, accruing until and including 2050</p> | <p>JOB POTENTIAL³¹</p> <p>2,080 – 2,900 full time 30-yr careers</p> <p>Across a range of occupations, through 2050</p> |
|--|---|---|

All figures in net present value

STRATEGY

Eliminate fossil fuel use in new construction.



Building Operations

BO.1



WHAT WOULD SUCCESS LOOK LIKE?

All new buildings generate no emissions in their operation.



GHG REDUCTION POTENTIAL BY 2030

<100,000 mtCO₂e



ESTIMATED COST BY 2030

Cost neutral, potential savings



CLIMATE METRIC

TBD



EQUITY METRIC

new affordable housing developments which receive financial assistance for electrification

Supporting Actions

BO.1-1 By 2021, require newly constructed buildings to be efficient and all-electric with no on-site carbon emissions.

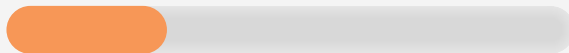


Casa Adelante (2060 Folsom): all-electric affordable housing with 127 affordable apartments, and 29 units for formerly homeless transitional-age youth. Developed by MEDA and Chinatown CDC. Photo credit: James E. Roberts-Obayashi Corp. (general contractor)

COMMUNITY BENEFITS



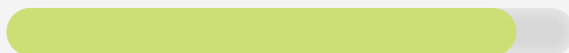
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE



Building Operations

BO.2

STRATEGY

Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types.



WHAT WOULD SUCCESS LOOK LIKE?

New policies, financial incentives, and an expanded workforce align to make efficient, all-electric building upgrades the norm.



GHG REDUCTION POTENTIAL BY 2030

100,000 - 250,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$\$\$: 500 million+



CLIMATE METRIC

Electrification rate (%/year of total)



EQUITY METRIC

% electrification projects in communities with environmental justice burden as identified in [EJ Communities Map](#)*

% financial assistance for electrification retrofits distributed in communities with environmental justice burden as identified in [EJ Communities Map](#)*

Supporting Actions

- BO.2-1 By 2023, develop a system to monitor the replacement rate of existing private sector natural gas-fueled equipment with all-electric. Annually report to BOS whether fossil-fuel using equipment is being switched at a rate sufficient to meet climate goals, including access to electrification by BIPOC and low-income communities.
- BO.2-2 By 2023, develop a time-of-replacement policy that phases in requirements that all newly installed residential and other small building equipment be efficient and all-electric. The policy should customize requirements for simple equipment replacements to full renovations.
- BO.2-3 By 2024, begin recording decarbonization status for each property at time of sale and permit review to ensure compliance with time of replacement policy.
- BO.2-4 By 2023, perform an inventory of natural gas-fueled equipment in municipal buildings.
- BO.2-5 By 2024, ensure the City's Capital Plan is updated to reflect the need to replace gas-fueled equipment, in alignment with the City's 2040 net-zero goal.
- BO.2-6 SFO will a) evaluate an efficient, all-electric Terminal Central Utility Plant that would reduce total direct (Scope 1) airport emissions by approximately 80% by 2030, and b) prioritize all-electric equipment replacements throughout campus buildings, including terminal and non-terminal spaces that are occupied by tenants and the Airport Commission.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

BO.2-7 Adopt a building performance policy requiring large commercial buildings to:

- a) completely transition to efficient and all-electric equipment no later than 2035
- b) in 2025, begin regular disclosure of progress toward goal
- c) allow payment of annual fees in lieu of electrification, which must be invested into decarbonization of low-income and affordable housing.

BO.2-8 By 2023, develop and adopt tenant protection and anti-displacement policies for renters in buildings transitioning to efficient and all-electric systems.

BO.2-9 By 2023, begin offering targeted technical assistance for BIPOC and low-income owners and tenants including information about incentives, rebates, and public and private financing options.

BO.2-10 By 2024, pass a residential time-of-sale policy that requires an electrification plan, prioritizing water and space heating, indoor air quality, electric safety, how to access emergency response information, and recording of the presence or absence of gas service for each property.

BO.2-11 By 2024, develop and implement prescriptive criteria and permit & inspection processes for residential heat pump water heaters to be installed with a single integrated permit.

BO.2-12 Explore the creation of a revolving decarbonization fund by developing a virtual power plant (VPP) or other district scale solutions that monetizes the benefits derived from energy efficiency, demand response, and energy storage systems.





Building Operations

BO.3

STRATEGY

Expand the building decarbonization workforce, with targeted support for disadvantaged workers.



WHAT WOULD SUCCESS LOOK LIKE?

As demand for efficient and all-electric buildings increases, there is a racially diverse, well-trained and well-paid workforce to deliver building decarbonization services.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

N/A



EQUITY METRIC

TBD

Supporting Actions

- BO.3-1 Partner with workforce development entities, labor unions, and apprenticeship programs to align with and disseminate regional and statewide building electrification training, funding and project financing opportunities, prioritizing those transitioning from fossil-fuel dependent trades.
- BO.3-2 Partner with affordable housing providers, equipment vendors, subject matter experts, utilities and CleanPowerSF, CBO's and others to create a Climate Equity Hub to connect building owners and other customers with high-road service providers and installers, rebates and financing, and case studies.
- BO.3-3 By 2023, define goals and create policies for professional and workforce development building upon CityBuild Pro to ensure equitable access to building decarbonization jobs for BIPOC and low-income communities, from design to installation to business operations.
- BO.3-4 By 2025, create a Public-Private facilities managers and building operators roundtable to support peer-to-peer learning on fuel switching.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Transition to low-global warming potential refrigerants.



Building Operations

BO.4



WHAT WOULD SUCCESS LOOK LIKE?

State and federal requirements significantly decrease GWP of refrigerants while equipment manufacturers offer more affordable low-GWP equipment options.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

of building owners who receive information and/or technical assistance to transition to low-GWP refrigerants.



EQUITY METRIC

% small businesses in communities with environmental justice burden as identified in [EJ Communities Map](#)* which receive information and technical support.

Supporting Actions

- BO.4-1 By 2023, publish guidelines for refrigerant management best practices for selection of lowest-GWP refrigerants in new and replacement equipment, and collection and recovery of refrigerants from existing equipment to enhance compliance with state regulations.
- BO.4-2 Support the adoption of more stringent state and federal regulations to reduce refrigerant GWP.
- BO.4-3 By 2023, support City departments' transition away from high-GWP refrigerants, by providing guidelines and specifications for future purchases of products containing refrigerants.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE



Transportation and Land Use

Addressing climate change means addressing San Francisco's transportation and land use issues head on. At nearly 50% of total city emissions, the transportation system must be transformed to reduce overall reliance on cars and equitably and efficiently connect people to where they want to go by transit, walking, and biking. All remaining vehicles must steadily transition to zero emissions.

SECTOR GOALS:

By 2030, 80% of trips taken by low-carbon modes such as walking, biking, transit, and shared EVs.

By 2030, increase vehicle electrification to at least 25% of all registered private vehicles, and to 100% of all vehicles by 2040.

CONTEXT

Transportation and land use policies are an essential part of San Francisco's plan to reach net-zero emissions by 2040. Getting the city on a path to a healthier, cleaner and more equitable future will require significant investments in reducing emissions from transportation. Climate action through transportation and land use means reversing the deliberate failures of past policies that heavily prioritized automobiles over modes that are safer, healthier, less carbon intensive, and more efficient. Ensuring that these low-carbon modes are less costly and more convenient to use than higher-carbon modes is key to achieving our climate goals and creating a socially equitable and environmentally sustainable future.

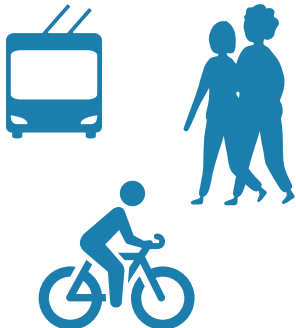
San Francisco has a goal that by 2030, 80% of trips are taken by low-carbon modes such as walking, biking, and transit.³² Strategies to help people make more trips without a car and reduce emissions include: improving transit service, expanding bicycle lanes and safe places for people to walk, increasing housing production density and development that puts people closer to destinations, and implementing pricing policies and parking management programs that better align with climate goals. While these investments will create many quality-of-life benefits for the city, they will not be enough to adequately cut emissions, so shifting remaining cars to electric vehicles that run on renewable electricity, will be necessary to meet the City's climate goals. San Francisco has set a goal that by 2030, vehicle electrification will increase to at least 25% of all registered private vehicles, and to 100% of all by 2040. Expanding access to affordable and convenient charging options will be primary way the City supports these goals.

Eliminating emissions from transportation will require a fundamental change in how people move around and how transportation and land use efforts are prioritized, funded, and implemented. Major adjustments will be required at all levels: citywide, neighborhood, and

Accomplishments

Market Street

significantly reduced traffic to enable safer use of low-carbon modes by banning private vehicles in 2019



Completed

42 total miles

of protected bike lanes in 2019, with 49 targeted by 2022

50%

low-carbon mode share goal reached, new target set for **80% by 2030**

Slow Streets

program dedicated more than

20 corridors

to active transportation, with four being made permanent so far

individual. Continuing down the same path of over-using single-occupancy private vehicles is the wrong direction, and will only exacerbate existing climate, health, equity, and transportation problems.

To meet San Francisco's climate action goals, policymakers and the public will need to evaluate significant trade-offs and then agree on and implement actions that go beyond the status quo. For example, acknowledging the total societal costs—on health, congestion, and climate—of planning cities around automobiles, and then taking strong action to prioritize people over cars. Such trade-offs may mean changing expectations about time devoted to commuting and running errands, adjusting subsidized parking and residential permits fees to create funding for new public spaces, more housing, and improved transit services.

Transportation Impacts

San Francisco faces many transportation challenges: safely and efficiently moving people around the city and region; serving the mobility needs of individuals with disabilities; managing, repairing, and expanding aging infrastructure; and responding to new mobility technologies and related regulatory issues. At the same time, people of color and low-income communities

have been underserved by existing transportation infrastructure, which has prioritized costly private cars over lower emissions alternatives such as public transit.

The transportation sector currently creates 47% of San Francisco's emissions. That share is rising due to meaningful advancements in the building and energy sectors and a comparative lack of progress in confronting automobile dependency and fossil fuels used for transport. As San Francisco prepares for rapid changes to reach net-zero emissions, it must ensure that costs and other burdens do not disproportionately fall on low-income people, people of color, and other populations that have faced a history of marginalization.

The transportation policies of the 1950s-1980s negatively impacted the wealth of BIPOC families and individuals and isolated entire communities from opportunity. Highway and transit investments scored better for federal funding when they removed "blight," defined as areas with more BIPOC communities. Policies of the time then began to promote automobile dependency and petroleum consumption, resulting in streets that made walking, biking, and taking transit more difficult. Even though these overtly racist policies have been rescinded, lower-income and BIPOC populations continue to face disproportionate harm.

Examples of these inequitable outcomes include:

- Lower income households have been forced into long commutes from auto-dependent places, greatly increasing time spent commuting.³³
- While Muni is the top carrier of low-income riders in the region and key to providing access to jobs and livelihoods for San Franciscans, bus speeds and reliability continue to be hindered by congestion from private vehicles.³⁴
- Residents living in proximity to freeways suffer disproportionately higher rates of cancer and respiratory diseases with larger racial and ethnic disparities.³⁵
- People of color are more likely to die of traffic-related crashes because streets in formerly redlined neighborhoods were built to accommodate faster car traffic, resulting in less safe conditions for non-motorists.

Past efforts to manage the City's limited street space and achieve better outcomes for travelers have led to stalemates, inaction, and the maintenance of the status-quo. Meanwhile, the costs of driving and car-dependence — including air pollution, traffic collisions, decreased mobility for low-income and communities of color, wasted time stuck in traffic — have gone unaddressed and in many instances have worsened. In most cases, these external costs are drastically underrepresented in the actual cost of owning a car, especially when compared to less harmful methods of transportation. For example, a monthly transit pass costs almost as much as what a residential parking permit costs for an entire year in San Francisco.

The City's efforts to decarbonize the transportation system must not repeat the mistakes of the past, but rather correct for past injustices and create a future that is safer, healthier, and more equitable. Transportation and land use investments that create the greatest benefits for historically marginalized people need to be prioritized, including:

- Reducing noise and air pollution in lower-income neighborhoods.
- Improving safety outcomes, especially for vulnerable populations, including travelers with disabilities.

- Expanding access to jobs, services, and education by increasing reliability of low-carbon transportation modes and reducing their financial and time cost.

The COVID-19 pandemic has exacerbated existing challenges with our transportation system and highlighted the major class and race divides in how we commute and work. It also forced agencies to quickly adapt. The City added new bike and pedestrian networks, modified transit service, added new transit-only lanes, and did more to meet the needs of essential workers and individuals who rely on transit. Many of these emergency efforts have been successful.

Even before the pandemic, San Francisco began to transform some of its streets. For instance, the downtown section of Market Street prohibits private vehicle use and speed limits were lowered in the Tenderloin to improve safety. Additionally, newly implemented transit-only lanes on Geary Boulevard, one of the busiest transit corridors in San Francisco, improved bus travel time with minimal traffic impacts to that corridor and surrounding streets.³⁶ As the City recovers from the pandemic, there is an opportunity to build on these successes to improve our non-driving travel options and enable transportation choices that address long-standing challenges, reduce emissions, and advance equity.

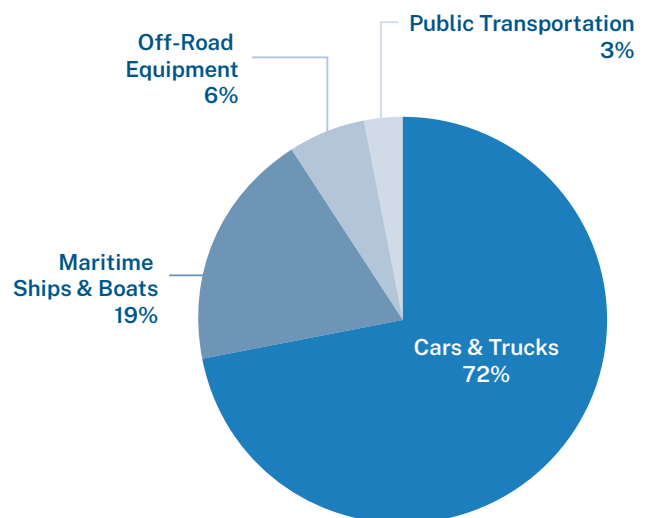


FIGURE 18: 2019 SAN FRANCISCO'S GHG INVENTORY - TRANSPORTATION SECTOR EMISSIONS³⁸

Increasing transit, biking, and walking

San Francisco has set a target of 80% of trips to, from, and within San Francisco to be made by low-carbon modes by 2030. In 2019, approximately 45% of all trips in, to and from San Francisco were made by driving.³⁷ Achieving San Francisco's climate goals for transportation will require a dramatic and sustained shift away from driving as the main travel choice. Of the 47% of total city emissions attributed to transportation in 2019, cars and trucks were responsible for the supermajority of emissions (72%), while local and regional public transportation contributed just 3% (Figure 18).

Often, people travel by car because it is their only practical option or is simply more predictable and time-efficient than the alternatives. Despite investments by the City, some transit routes can be slow and unreliable, and biking and walking are more dangerous on streets designed for motor vehicles. Successfully shifting trips to transit, walking, and biking means making these choices safe, convenient, reliable — and even fun. This can be done by redesigning streets to prioritize efficient movement of transit vehicles and reimagining streets as places for people of all ages and abilities. Examples of this include transit-only lanes, protected bikeways, HOV/carpool lanes, shared spaces, car-free roads in parks, and slow streets.

Integrating Transportation and Land Use

Land use refers to the location and intensity of “uses” such as housing, retail, open space, and commerce. Land use decisions directly affect people's travel choices, since how people get around depends on where and how far they need to go, and the effectiveness of available travel options. Cities like San Francisco that were originally built before the popularization of the automobile often have denser development patterns that are well suited to travel by foot or transit. As automobiles gained prominence, streets and buildings were increasingly redesigned to serve cars over pedestrians. In recent years, San Francisco has reversed that trend by removing parking requirements and revising density controls to enable the denser housing more reflective of older San Francisco construction. Still, much more can be done in San Francisco to further coordinate transportation and land use.

Through comprehensive area plans, improved street designs, and enhanced transit service, San Francisco is starting to shift back towards people-centered neighborhoods, with recent examples found in the Mission, Hayes Valley, and South of Market districts. There are many opportunities to create more of these amenity-filled areas and to enhance existing ones in a manner that benefits current residents and welcomes new neighbors. Neighborhoods that are further from the city core with less transit access end up experiencing higher driving rates; it is critical that new housing in the outer neighborhoods has access to additional transit service to support the use of non-driving modes.

Neighborhoods built with a mix of housing, services, and amenities close together, especially those with reduced or priced parking, encourage and allow people to walk, bike or use other zero-emissions means of travel for everyday needs. On the other hand, car-dependent neighborhoods take space from people and give it to roads and parking spaces. Suburban-style land use is hard to serve by transit, which leads to an increase in driving and climate pollution. Therefore, regional collaboration, creating new housing, and investing in regional transit continue to be major strategies for the CAP and Plan Bay Area 2050.

Housing, and where it is located, also plays a critical role in determining transit choices. As discussed in Section 5.4: Housing, substantially increasing housing near services, jobs, and other activities helps with shifting people's decisions to walk, bike, or take transit, rather than to drive.

While the San Francisco has made progress in developing more affordable housing, the production of new affordable units is not equitably distributed across neighborhoods. Affordable units tend to be concentrated in areas of the city with higher levels of environmental pollution and greater rates of poverty. Land use policies that encourage more transit use could include engaging with communities to strategically rezone high-opportunity areas to accommodate new multi-family housing, specifically in places that currently have strong economic, environmental, and educational outcomes including more parks, better air quality, and higher performing schools.^{39 40}

PURSuing SHARED GOALS

San Francisco's Transit First policy, which was added to the city charter in 1973, prioritizes land uses and street space for transit, walking, and explicitly discourages inefficient cars and parking. A vigorous, renewed commitment to implementing the Transit First policy directly supports climate action.

Vision Zero (adopted in 2014) commits resources to eliminate traffic fatalities, the vast majority of which occur due to interactions between large motorized vehicles and pedestrians and cyclists. Reducing car travel and car speeds will greatly reduce injuries and deaths on our roads.

Transit, walking and biking improve local air quality for everyone, especially people who suffer from respiratory illnesses like asthma. Similarly, low-carbon modes increase physical activity which can reduce the likelihood of health problems like diabetes and depression.

Car ownership, including loan payments, insurance, and fuel costs, creates significant financial burdens. Allowing people to meet their daily needs without having to own a personal vehicle lessens this financial burden and can give time back to families by shortening commute times and reducing car congestion.

Switching from Fossil Fuels to Renewable Electricity

Investing in transit system improvements and making land use changes will have long lead times before impacts are felt and measurable. Even with significant investments in transit and policies that encourage people to get out of their cars, reaching zero emissions by 2040 will also require an accelerated transition away from gasoline and diesel-fueled cars and trucks to zero-emission vehicles (ZEVs), primarily electric vehicles (EVs) that run on renewable electricity. By 2030, 25% of all registered private vehicles in San Francisco need to be zero emission, and by 2040, 100% of vehicles need to be zero emission.

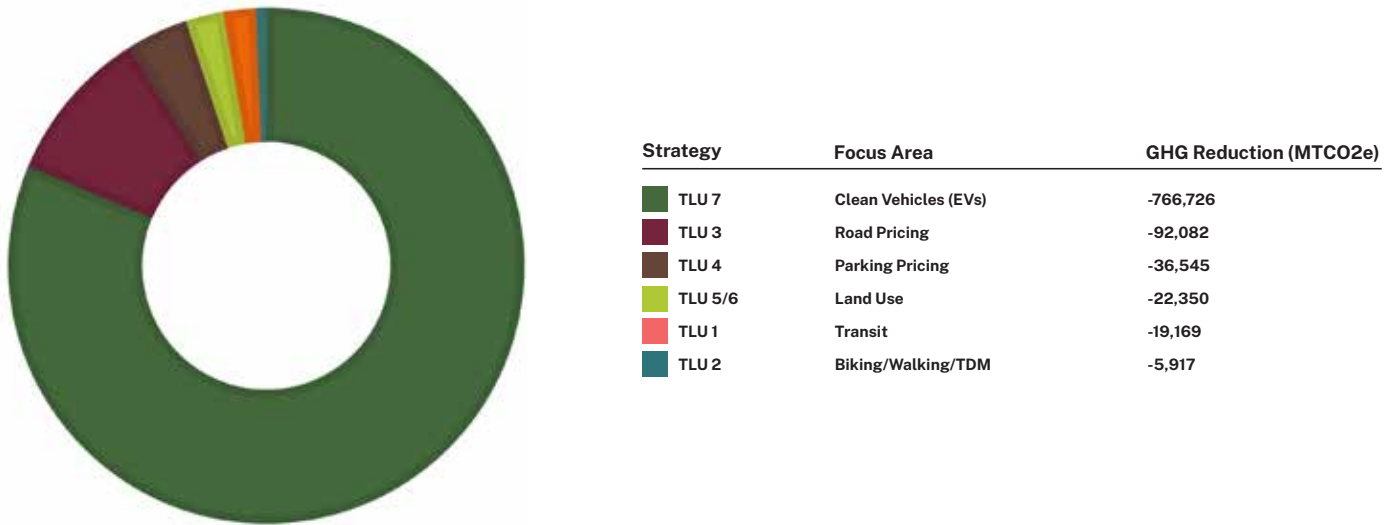
As is the case today, cars and trucks will still be needed in the future. With our current transportation infrastructure, private vehicles are often the best option for people with limited mobility such as youth or seniors, or people with disabilities. Support for transitioning to EVs should focus on these types of trips and drivers. As in any dense city, there are challenges to broad adoption of EVs in San Francisco. These include currently limited charging infrastructure, the unique challenges of multi-unit residential buildings such as limited parking, common garage meters, landlord-tenant "split incentives", as well as a general lack of off-street parking where charging is easier to install and access. These issues must be addressed for people to feel comfortable switching to EVs. San Francisco will continue to invest in expanding the network of public charging infrastructure, promote the adoption of zero emission vehicles, and make progress transitioning the City's non-revenue fleet to zero emission vehicles, among other policies.

While expanding vehicle electrification is essential to reducing emissions, there are uncertainties around the travel behavior associated with their use. For example, if EV adoption is led by those with higher incomes, it will worsen existing socio-economic disparities in the transportation sector. If not well managed and mitigated, these impacts could move San Francisco away from its long-range transportation and equity goals and result in increased congestion, unsafe roadways, and more inequity. Another specific challenge to address is that there are currently no wheelchair-accessible electric vans, which calls on San Francisco to develop solutions to this problem. Policies such as "Transit First" and principles such as "equitable access" in the "Electric Vehicle Roadmap for San Francisco" are aimed to safeguard against the potential unintended consequences of rapid electrification.

GHG Pathways for Emission Reductions and Co-Benefits

The pathways for projected emissions reductions from ground transportation are shown in Figure 19. Major changes to emissions result from actions affecting vehicle miles travel (VMT), and from the further adoption of EVs. See **Appendix C-3** for a technical

FIGURE 19: 2050 GHG REDUCTION POTENTIAL PATHWAYS (MTCO2E) BY FOCUS AREA FOR THE TRANSPORTATION AND LAND USE SECTOR⁴¹



overview. Figure 19 shows the projected emissions impact of each individual TLU strategy compared to the 2050 baseline scenario. When all strategies are implemented simultaneously, each strategy’s individual effectiveness is impacted by others, therefore the total reduction does not equal the exact sum of all strategies. Furthermore, the City will play a major role in integrating the shift to low-carbon modes with major transit improvements and land use strategies that can create significant regional emission reductions not included in the analysis.

With cars and trucks contributing such a large portion of sector emissions, electrifying private vehicles is projected to have a significant impact on emissions reductions. However, this focus does not reflect the full range of potential benefits that could come from transforming the transportation sector. To have a holistic approach to transportation policy, a co-benefit framework is critical to understand the synergies between current local impacts along with emissions reductions. This approach encourages decision making to account for multiple benefits and may assist with

funding efforts and garnering public support. Table 7 depicts six transportation co-benefits (emissions, congestion, equity, public health, safety, and economic vitality) and the alignment with each transportation action. This co-benefits framework acknowledges the multiple indirect climate change benefits that are clearly important as additional or primary motivations for adopting or implementing many of the transportation strategies and actions. It is essential to examine Figure 18 along with Table 7 to understand the total impact of each transportation action. For example, the actions in strategy TLU 2 that support walking, biking, and transportation demand management have lower emission reduction potential, but substantially align with important co-benefits and should still be considered an important climate mitigation strategy.

TABLE 7: CO-BENEFITS OF LOW CARBON TRANSPORTATION⁴²

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|---|-----------|------------|----------|---------------|--------|-------------------|
| TLU 1: Build a fast and reliable transit system that will be everyone’s preferred way to get around. | | | | | | |
| TLU 1.1 | * | * | * | * | * | * |
| TLU 1.2 | * | * | * | * | * | * |
| TLU 1.3 | * | * | * | * | * | * |
| TLU 1.4 | | | * | * | * | |
| TLU 1.5 | * | | * | * | * | * |
| TLU 1.6 | * | * | * | * | * | * |
| TLU 1.7 | | | * | | | |
| TLU 1.8 | * | * | * | * | * | * |

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|---|-----------|------------|----------|---------------|--------|-------------------|
| TLU 2: Create a complete and connected active transportation network that shifts trips from automobiles to walking, biking, and other active transportation modes. | | | | | | |
| TLU 2.1 | * | * | * | * | * | * |
| TLU 2.2 | * | * | * | * | * | * |
| TLU 2.3 | * | * | * | * | * | * |
| TLU 2.4 | * | * | * | * | * | * |
| TLU 2.5 | * | * | * | * | * | * |
| TLU 2.6 | * | * | * | * | * | * |
| TLU 2.7 | * | * | | * | * | |

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|---|-----------|------------|----------|---------------|--------|-------------------|
| TLU 3: Develop pricing and financing of mobility that reflects the carbon cost and efficiency of different modes and projects and correct for inequities of past investments and priorities. | | | | | | |
| TLU 3.1 | * | * | * | * | * | * |
| TLU 3.2 | * | * | * | * | * | * |
| TLU 3.3 | * | * | | | * | * |
| TLU 3.4 | * | * | * | * | * | * |
| TLU 3.5 | * | * | * | * | * | * |
| TLU 3.6 | * | * | * | | | |

 = Alignment with co-benefit

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|---|-----------|------------|----------|---------------|--------|-------------------|
| TLU 4: Manage parking resources more efficiently. | | | | | | |
| TLU 4.1 | * | * | * | * | * | * |
| TLU 4.2 | * | * | * | * | * | * |
| TLU 4.3 | * | * | * | * | * | * |
| TLU 4.4 | * | * | * | * | * | * |
| TLU 4.5 | * | * | * | * | * | * |
| TLU 4.6 | | | * | * | * | |

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|--|-----------|------------|----------|---------------|--------|-------------------|
| TLU 5: Promote job growth, housing, and other development along transit corridors. | | | | | | |
| TLU 5.1 | * | * | * | * | * | * |
| TLU 5.2 | * | * | * | * | * | * |
| TLU 5.3 | * | * | * | * | * | * |

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|---|-----------|------------|----------|---------------|--------|-------------------|
| TLU 6: Strengthen and reconnect communities by increasing density, diversity of land uses, and location efficiency. | | | | | | |
| TLU 6.1 | * | * | * | * | * | * |
| TLU 6.2 | * | * | * | * | * | * |
| TLU 6.3 | * | * | * | | | * |
| TLU 6.4 | * | * | * | * | * | * |
| TLU 6.5 | * | * | * | * | * | * |
| TLU 6.6 | * | * | * | * | * | * |
| TLU 6.7 | | | * | * | * | |

| CO-BENEFIT | EMISSIONS | CONGESTION | EQUITY** | PUBLIC HEALTH | SAFETY | ECONOMIC VITALITY |
|---|-----------|------------|----------|---------------|--------|-------------------|
| TLU 7: Where motor vehicle uses or travel is necessary, accelerate the adoption of zero-emissions vehicles (ZEV's) and other electric mobility options. | | | | | | |
| TLU 7.1 | * | | * | | | |
| TLU 7.2 | * | | * | * | | * |
| TLU 7.3 | * | | | * | | * |
| TLU 7.4 | * | | | * | | |
| TLU 7.5 | * | * | | * | * | * |
| TLU 7.6 | * | | | * | | * |
| TLU 7.7 | * | * | * | * | | * |

Strategies Overview

The seven Transportation and Land Use strategies, and their supporting actions, must be implemented together to advance San Francisco's vision for a transformed, low carbon, healthy, and equitable city. Implementation will require public engagement and support, significant funding, and in the case of some policies, formal adoption. New concepts will require technical studies, planning, and extensive outreach.

To produce equitable outcomes, public engagement must include robust multilingual public outreach and education campaigns that help communities understand, contribute to, and navigate the transition to a low carbon system. Implementation of actions must consider and proactively strive to prevent displacement. Integral to building a robust, efficient, and safe transportation system means building one that is accessible and useful to everyone, including people with disabilities, low-income households, and marginalized communities.

Top Climate Solutions:

- Invest in public and active transportation projects
- Increase density and mixed land use near transit
- Accelerate adoption of zero emission vehicles and expansion of public charging infrastructure
- Utilize pricing levers to reduce private vehicle use and minimize congestion
- Implement and reform parking management programs



Did you know?

Co-Benefits of Climate Action:⁴³ Creating an active transportation network to shift trips from driving to walking, biking, and other low-carbon modes could result in:

VALUE OF A LIFE YEAR (VOLY) FROM INCREASED ACTIVITY

\$258 M
2030 – 2050

The mode shift toward active transport leads to significant positive health outcomes for new cyclists

REDUCED SOCIAL COSTS DUE TO REDUCED EMISSIONS

\$143,000
2030 – 2050

Fewer cars on the road means reduced air pollution and improved health outcomes.



TLU.1

STRATEGY

Build a fast and reliable transit system that will be everyone's preferred way to get around.



WHAT WOULD SUCCESS LOOK LIKE?

San Francisco has a transportation system that is reliable and affordable and makes it easy to choose public transit.



GHG REDUCTION POTENTIAL BY 2030

100,000 - 250,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$\$\$: 500 million+



CLIMATE METRIC

Increase in transit mode share



EQUITY METRIC

TBD

COMMUNITY BENEFITS



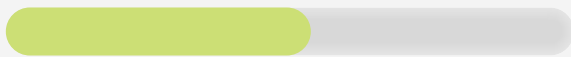
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

TLU.1-1 Fund and implement the recommendations of the ConnectSF Transit Corridors Study and Muni Forward Plan, including taking steps to:

- a) Identify and implement key transit corridors for service every 5 minutes or better all day long.
- b) Ensure transit on frequent corridors is not delayed by recurring congestion by investing in transit-only lanes, signal management, queue-jump lanes and other transit priority treatments.
- c) Retime traffic lights to minimize signal delay for frequent lines.
- d) Optimize stop spacing on frequent lines to maximize transit ridership.
- e) Advance major transit capital projects, including a new Westside Subway along 19th Avenue and Geary, the Caltrain Downtown Extension, Central Subway extension, and the Link21 new transbay tube.

TLU.1-2 Improve transit reliability by bringing infrastructure into a state of good repair. Adequately fund State of Good Repair with at least \$300 million annually.

TLU.1-3 Greatly improve rider comfort, safety, and experience on transit across age, gender, race, and ability to encourage more people to ride transit. Example activities include data collection, reporting, sensitivity training of fare inspectors, and expanding the Muni Transit Assistance Program.



TLU.1-4 Implement Phase One of SFMTA’s Racial Equity Action Plan to improve working conditions and initiate the development of Phase Two in 2021 and then implement Phase Two in 2022 to improve safety, access, and opportunities for the public.

TLU.1-5 While meeting transit ridership goals, prioritize services and reduce obstacles for more vulnerable populations, neighborhoods with fewest mobility options, and populations that have faced historic disinvestment.

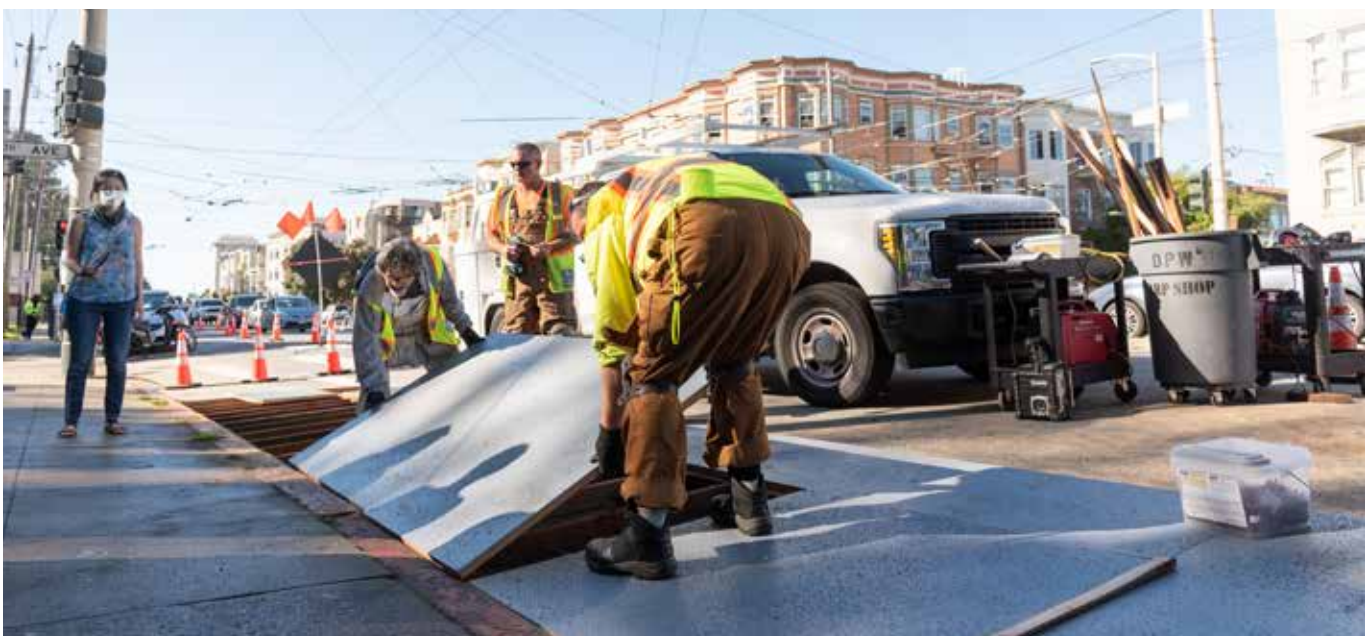
TLU.1-6 By 2025, implement 50 miles of Muni Forward transit priority improvements, including 30 miles of new transit-only lanes. to increase reliability, frequency and safety for riders.

TLU.1-7 By 2022, study the role of Muni fare programs on equity, climate, and mobility goals and adopt recommendations.

TLU.1-8 Improve connectivity between regional and local transit service by:

a) Funding targeted projects that improve physical connections and make transfers seamless between local and regional transit systems

b) Collaborating with regional partners to improve coordination between regional operators and secure funding for projects, including Caltrain Downtown Rail Extension, Caltrain Service Vision, Second Transbay Crossing, California’s State Rail Plan, and ferry projects.



Fulton Bus Bulb installation. Photo Credit: SFMTA

STRATEGY

Create a complete and connected active transportation network that shifts trips from automobiles to walking, biking, and other active transportation modes.



WHAT WOULD SUCCESS LOOK LIKE?

San Francisco has a transportation system that is reliable and affordable and makes it easy to choose active modes like walking and biking.



GHG REDUCTION POTENTIAL BY 2030

Less than 100,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

Increase in walk and bike mode share



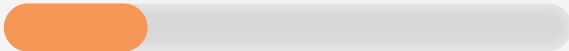
EQUITY METRIC

TBD

COMMUNITY BENEFITS



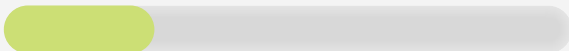
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- TLU.2-1 Continue to expand programs that provide corridors that are attractive to all demographics for walking, biking, and using scooters, wheelchairs, and other small mobility devices. Connect the Slow Streets network, car-free roads in parks, and the protected bikeway network to neighborhoods in San Francisco.
- TLU.2-2 Expand community programs and partnerships to make biking more accessible, via safety and maintenance classes, community parking, and subsidies for electric bikes for low-income residents.
- TLU.2-3 By 2022, establish a modal planning framework, placing transit and active modes at the forefront, that will guide decisions about design and utilization of the City's rights-of-way.
- TLU.2-4 Expand the protected bikeway network by at least 20 miles by 2025.
- TLU.2-5 Establish and utilize design guidelines to improve connectivity and access to active transportation options at major transit stops.
- TLU.2-6 Update San Francisco's Bike Plan by 2023 to improve and expand the active transportation network with robust community input.



TLU.2-7 Encourage employers to further reduce auto commutes through incentives such as transit benefits and universal passes, e-bike incentives, active transportation support, telework policies, and carpool programs.

- a) Continue promoting Transit First initiatives and incentives for all City employees
- b) Integrate existing SFO Employee and Airline Employee BART Discount Programs



Photo Credit: SFMTA

STRATEGY

Develop pricing and financing of mobility that reflect the carbon cost and efficiency of different modes and projects and correct for inequities of past investments and priorities.



WHAT WOULD SUCCESS LOOK LIKE?

Less congested streets and a more equitable transportation system through targeted re-investment of fees, discounts, and/or incentives to help disadvantaged travelers and advance the use of low carbon modes.



GHG REDUCTION POTENTIAL BY 2030

250,000 - 400,000 mtCO₂e



ESTIMATED COST BY 2030

\$: 0-1 million



CLIMATE METRIC

Reduced vehicle miles traveled (VMT)



EQUITY METRIC

TBD

COMMUNITY BENEFITS



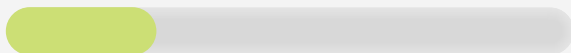
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- TLU.3-1 By 2022, develop recommendations for programs and policies that will advance equity (e.g., provide discounts and exemptions for low-income individuals), reduce vehicle traffic, and increase transit service to downtown. For example, complete the Downtown San Francisco Congestion Pricing Study recommendations, and by 2026, study and implement the appropriate pricing policies.
- TLU.3-2 Advance local, regional, state, and federal opportunities to transition away from fossil fuels by increasing fees to drive.
 - a) By 2022, identify and consider pricing mechanisms that can be implemented locally (e.g. vehicle license fee).
 - b) By 2022, establish priorities to advocate for regional, state and federal legislation (e.g. increase gas tax, application of road user charges).
- TLU.3-3 By 2023, introduce new tools to manage short-term curb uses, such as flexible regulations and pricing.
- TLU.3-4 Develop and take all necessary steps to implement an integrated system of tolling for bridges and freeways and on Treasure Island to prioritize transit and higher occupancy vehicles.
- TLU.3-5 Implement the Treasure Island Mobility Management Program including new ferry service, East Bay bus service, and island tolling.
- TLU.3-6 Apply policy tools to reduce impacts on low-income and historically marginalized communities and ensure that money generated from pricing programs is invested in transportation improvements, especially for those communities.





STRATEGY

Manage parking resources more efficiently.



WHAT WOULD SUCCESS LOOK LIKE?

Parking resources in San Francisco are managed in a more efficient way that better reflects our climate and transit-first priorities.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$. 0-1 million



CLIMATE METRIC

of parking spaces and amount of curbside that is actively managed
of vehicles registered in San Francisco



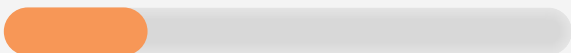
EQUITY METRIC

TBD

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- TLU.4-1 Prioritize enforcement of parking and curb regulations that impact street safety and efficiency
- TLU.4-2 Expand paid parking citywide, where appropriate Set prices at a level that reduces demand for parking so that drivers can always find a parking space near their destination.
 - a) Reinvent and expand the Residential Parking Permit program.
 - b) Expand paid hourly parking to Sundays and evenings, where appropriate.
 - c) Expand demand-responsive parking meter and garage pricing.
- TLU.4-3 Steadily reduce the City's overall parking supply in keeping with traffic reduction and emissions reduction goals, and convert underutilized public and private parking lots, parking spaces, and garages to more productive uses, such as housing and car-free roads in parks.
- TLU.4-4 Reinvent and expand the parking tax on private parking to reduce congestion, air pollution and emissions.
- TLU.4-5 While using pricing to balance parking supply and demand, develop programs to reduce impact on low-income, auto-dependent people and ensure net benefit to low-income individuals.
- TLU.4-6 Implement a program to prioritize access and parking for people-with-disability parking placards.

STRATEGY

Promote job growth, housing, and other development along transit corridors.

Transportation & Land-Use

TLU.5



WHAT WOULD SUCCESS LOOK LIKE?

San Franciscans have access to good jobs, housing, services within a transit-accessible corridor.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

Reduced vehicle miles traveled (VMT)



EQUITY METRIC

TBD

Supporting Actions

- TLU.5-1 Expand housing capacity (for example, by increasing heights and removing restrictions on density) in areas where existing or new high-capacity transit is planned.
- TLU.5-2 Locate jobs close to existing or new high-capacity transit corridors.
- TLU.5-3 Use streamlined approval processes, such as Housing Sustainability Districts, in the 1/4-mile areas around major transit stations to build housing and mixed-use developments more quickly.

COMMUNITY BENEFITS



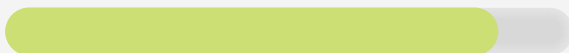
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Strengthen and reconnect communities by increasing density, diversity of land uses, and location efficiency.



WHAT WOULD SUCCESS LOOK LIKE?

San Francisco neighborhoods are compact and have a variety of uses (stores, services, amenities) that residents can easily access



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

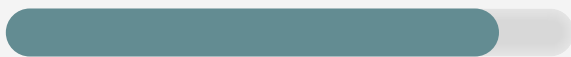
Reduced vehicles miles traveled (VMT)



EQUITY METRIC

TBD

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- TLU.6-1 Facilitate the development of neighborhoods where people live within an easy walk or roll of their daily needs. Create a working group of City agencies and residents to plan and design for such neighborhoods.
- TLU.6-2 Examine rezoning to allow for multi-family housing throughout San Francisco.
- TLU.6-3 By 2023, increase the types of home-based businesses allowed in residential districts.
- TLU.6-4 Identify and reimagine under-utilized publicly owned land and roadways that could be transformed or repurposed.
- TLU.6-5 Design public space and the transportation system (including roadways) to advance racial and social equity by co-developing plans and projects with BIPOC community members and understanding their needs before designing the space.
- TLU.6-6 Update the Transportation Element of the City's General Plan.
- TLU.6-7 Design public space and the transportation system to advance disability justice by co-developing plans and projects with diverse elements of the disability community and understanding their needs before designs are complete.



Photo Credit: SFMTA

TLU.7

STRATEGY

Where motor vehicle use or travel is necessary, accelerate the adoption of zero-emissions vehicles (ZEVs) and other electric mobility options.



WHAT WOULD SUCCESS LOOK LIKE?

100% car sales by 2030 are EV's without increasing number of vehicles in SF



GHG REDUCTION POTENTIAL BY 2030

Greater than 400,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

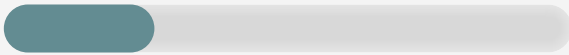
% of electric vehicles in new vehicle sales



EQUITY METRIC

community-endorsed charging infrastructure projects in communities with environmental justice burden as identified in [EJ Communities Map](#)*

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- TLU.7-1 By 2023, launch a public awareness campaign, including messaging tailored to specific communities, with the goal of educating residents about the health, economic, and environmental benefits of transit, active transportation, and electric vehicles.
- TLU.7-2 Expand publicly available EV charging across the city that is financially and geographically accessible to low-income households and renters.
 - a) By 2022, complete an evaluation framework to develop curbside charging pilots
 - b) By 2023, expand charging to 10% of spaces in municipally owned parking lots
 - c) By 2023, expand charging to 10% of spaces within privately owned large commercial garages
 - d) By 2023, create three “fast-charging hubs” with one serving a disadvantaged community within San Francisco.
 - e) By 2025, install charging to 10% of SFO-owned parking stalls supported by load management software.
- TLU.7-3 By 2024, develop a plan to help the City’s non-revenue fleet and small and locally owned businesses build infrastructure that allows for zero emission delivery, drayage, and longer haul trucks.
- TLU.7-4 By 2023, establish a pathway to incentivize ZEVs for passenger service vehicles operating at the airport.



TLU.7-5 By 2024, launch a pilot to advance the use of ZEVs, e-bikes, and other low-carbon modes for door-to-door goods and meal delivery services.

TLU.7-6 By 2030, create incentives for the use of renewable diesel and emerging zero-emission technologies to reduce emissions from construction equipment at least 50% from 2020 levels.

TLU.7-7 Design by 2023 and launch by 2024 a pilot project to test the use of accessible bicycles, e-bicycles and e-scooters for commuting, as well as recreation.



Photo Credit: SFMTA



Housing

One of the most effective ways to reduce emissions is to ensure San Francisco has the quantity and types of affordable, accessible housing that support its diverse residents.

Dense urban environments like San Francisco offer many housing-related opportunities to reduce emissions. Providing housing to people of all incomes near services, jobs, and activities helps replace private vehicle trips with low-carbon modes such as walking, biking, and transit. Providing more housing in San Francisco makes it easier for people to live close to where they work, instead of community long distances by car.

SECTOR GOAL:

Build at least 5,000 new housing units per year with maximum affordability, including not less than 30% affordable units, and with an emphasis on retaining and rehabilitating existing housing.

To successfully reduce emissions while supporting a prosperous, inclusive, and resilient city for everyone, San Francisco must substantially increase the amount of housing available and prioritize affordability and housing options for those most at risk: BIPOC communities, people with disabilities and other vulnerable populations, as well as working-class families who have faced gentrification and economic dislocation. The CAP is coordinated with the Housing Element in the City's General Plan and other housing policy and implementation efforts developed by City agencies, in collaboration with elected officials and community members. Together, they support San Francisco's goal to build at least 5,000 housing units per year, with at least 30% of those units being affordable.⁴⁴ These goals underpin Housing strategies to implement appropriate zoning changes, streamline

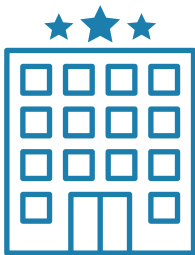
approvals, lower construction costs, and expand and sustain funding to build and preserve affordable housing.

Housing is foundational to the physical, social, and emotional health of individuals and their communities. As the world faces increasing climate, health, and economic threats, healthy and stable housing is essential for our communities to recover from shocks, build resiliency, and thrive.

CONTEXT

San Francisco's diverse job opportunities and quality-of-life amenities have attracted people and businesses for decades. Cycles of robust economic growth have created wealth and helped fund public improvements but also exacerbated inequality by putting extraordinary pressure on the city's housing stock and existing residents and communities. From 2010 to 2019, San Francisco added eight new jobs for every new home built. This disparity is due to regulatory barriers, high land and construction costs, labor shortages, and neighborhood opposition, which have constrained the financial feasibility and development of both subsidized affordable and market-rate housing.

Accomplishments



The city sheltered over **3,800 people** in Shelter in Place (SIP) hotels or trailers during COVID-19.

The city increased the number of new affordable units to

908 per year

up nearly **50%** from the prior **10** years.



The city funded 52 small and large site buildings to preserve affordability and support local businesses

From 2015 to 2019, the city increased the number of units for construction to

4,563 per year

up **61%** from the previous **10** years

“**The most important thing we can do is recognize that density isn’t a dirty word. We know that people who live in cities have a significantly lower carbon footprint than people who do not.**”

—Mayor London Breed, San Francisco

Mayor Breed has set an ambitious goal to build 5,000 new units of housing per year to make up for years of underbuilding. In the last 40 years, the City produced 5,000 units in a year just once. The last five years have seen an average of 4,200 new housing units built annually and the 30 prior years each produced fewer than 1,900 units annually. Housing availability, affordability, and accessibility disproportionately affects low- and moderate-income San Franciscans who experience higher than average housing cost burdens, over-crowding, and housing instability. Many have been displaced or forced to find cheaper housing outside the city, which can lead to long, costly, high-emissions commutes and community isolation. As with health and climate stressors, housing challenges disproportionately impact BIPOC communities, including rent burden (Figure 20). BIPOC communities

also grapple with income and housing discrimination and face resulting disparities.⁴⁵

Although many cities have seen population decline from COVID-19, including San Francisco, this may be a temporary decline. The State-mandated Regional Housing Needs Allocation is expected to increase San Francisco’s 8-year housing production target from nearly 29,000 units currently to 82,000 for the years 2023 through 2031 to address current unmet needs as well as future growth. To meet housing production targets in a manner that also supports equity and climate goals, it is also critical that new housing includes types, locations, accessibility, and affordability levels to meet the diverse needs of different households including families with children, couples, roommates, seniors, people with disabilities, and people seeking individual and group housing.⁴⁶

Thoughtfully crafted housing policies can protect existing residents, rehabilitate, and preserve existing housing, maintain affordability, increase housing production, and produce new affordable and accessible housing options for low-to-moderate income residents. Adopting such policies is essential to meeting San Francisco’s housing goals and advancing racial and social equity.

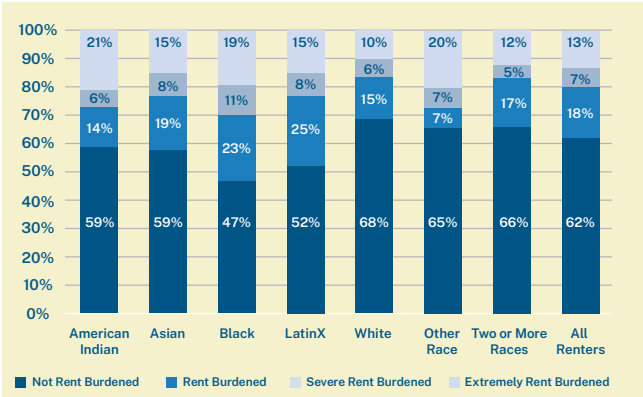


FIGURE 20: RENT BURDEN BY RACE AND ETHNICITY, 2018⁴⁷

Vulnerable and Underserved Populations

Strategies to increase housing production and affordability must prioritize and support the needs of at-risk residents, along with low-income and communities of color. In San Francisco, vulnerable populations include seniors, people with disabilities and chronic physical or mental health conditions, formerly incarcerated individuals, young adults exiting foster care or other transitional situations, people experiencing domestic violence, and people experiencing homelessness. Areas with high concentrations of people in these groups are being considered in the 2022 Housing Element currently under development. Often, these same communities are harmed by environmental injustices that exacerbate health problems, such as exposure to polluted air and water from industrial, solid waste, and congested roadways as well as insufficient access to healthy food, health services, and nature.

Furthermore, vulnerable and underserved people often experience disproportionate impacts from climate and other hazards. As the COVID-19 pandemic has shown, it is essential to connect these residents not only with services and resources, but also adequate and safe housing to ensure a resilient city. Investments in building new housing and retrofitting existing housing should be focused on underserved communities and vulnerable residents in every neighborhood.

Repairing historic injustices and improving outcomes for communities of color and low- and middle-income residents requires investing in neighborhoods with lower average incomes, including preserving

and building affordable and accessible housing, strengthening local businesses and organizations, ensuring supportive infrastructure, and creating affordable housing in higher-resource neighborhoods throughout San Francisco.

Housing Production and Affordability

To meet increased housing targets, requirements of State law,⁴⁸ and local needs and equity concerns, the City’s Housing Element Update seeks to increase affordable housing in higher opportunity neighborhoods⁴⁹ to help expand choices that can enhance resident health and financial outcomes (Figure 21). Two significant challenges include securing public funding and finding available sites. Although the City has recently increased annual housing funding by hundreds of millions of dollars, local funding is variable in nature, development costs remain high, and additional State and federal affordable housing dollars are needed.⁵⁰ To increase the number of sites for housing, it is critical for the City to engage in community strategies to strategically rezone higher-resource areas of San Francisco to accommodate new multi-family housing that can serve low- and middle-income individuals and families.

Investing in existing housing, which is often more economical and can be done with lower emissions than new construction, is an important tool to complement building new housing. Importantly, retrofits also support affordable housing preservation and community stabilization for people with limited incomes. As the majority of San Francisco housing was built before 1950, structural and weatherization upgrades such as windows and insulation also help protect people from earthquakes and climate hazards such as heat waves and wildfire smoke. Retrofits also create a predictable inflection point for switching out natural gas appliances for electric ones and integrating more efficient, lower-emissions systems into existing housing stock. In addition to cutting emissions, upgrades can also improve indoor air quality to support resident health and comfort.

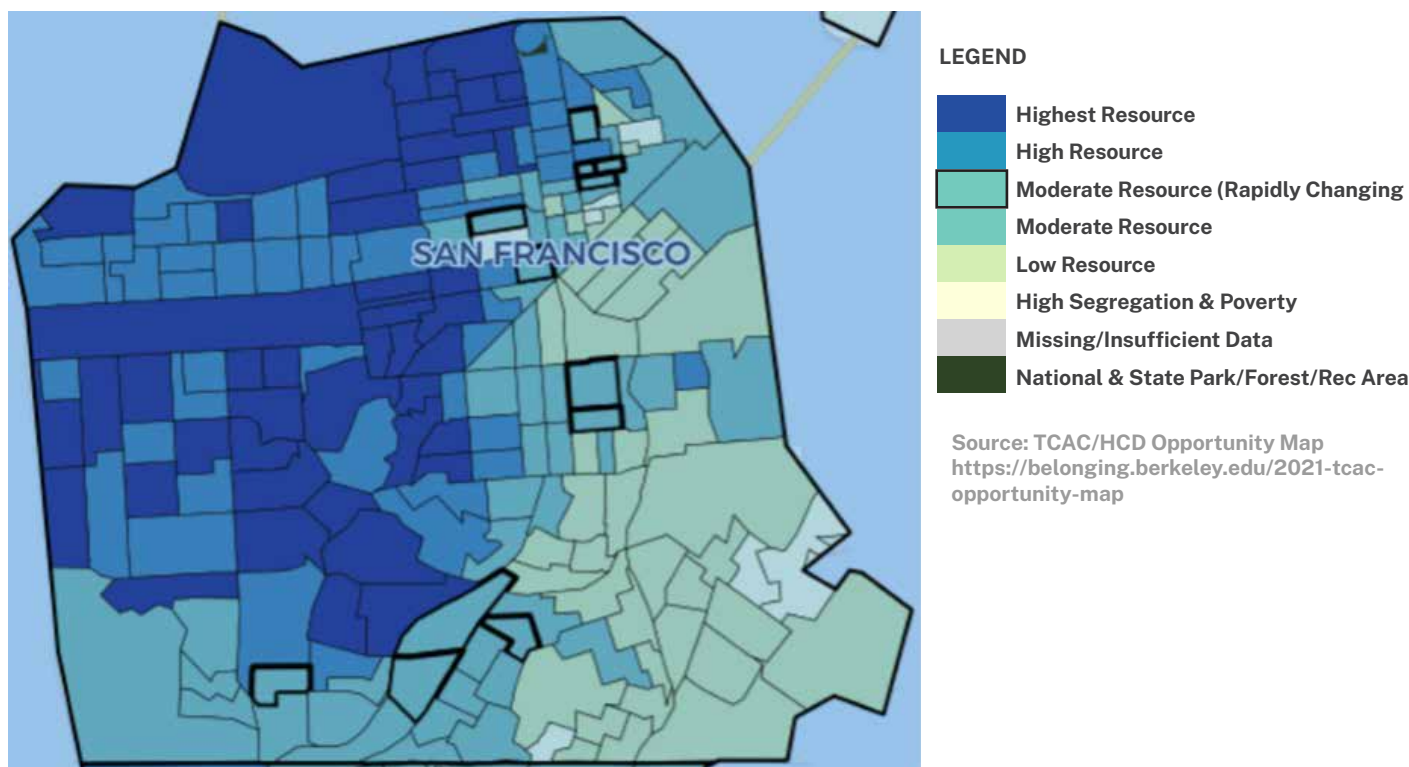


FIGURE 21: STATE OPPORTUNITY MAP BY CENSUS TRACT

Strategies Overview

The housing strategies and actions included in the Climate Action Plan are aligned with the Housing Element of the City's General Plan, and numerous other housing policy and implementation efforts. These plans support the needed retention of existing affordable housing to ensure community stability and increase in new housing production in San Francisco, particularly affordable and accessible housing, across all neighborhoods. The City's commitment to advancing racial and social equity, and prioritizing its vulnerable residents, is also inextricably linked to its housing policies and implementation. By both focusing resources and services in historically underserved areas and opening up affordable housing opportunities in higher-resource neighborhoods, San Francisco can leverage housing investments to build a more equitable and climate-resilient city.

Top Climate Solution:

Increase affordable compact infill housing production near transit.

H.1

STRATEGY

Anchor BIPOC families and advance their return to San Francisco through robust housing and stabilization programs.



WHAT WOULD SUCCESS LOOK LIKE?

Communities are stabilized throughout the city to the maximum extent possible, especially BIPOC and other low-and-moderate income households who have been disproportionately displaced in recent years.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating
(no direct reduction)



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

of incoming residents and # of displaced residents, annually



EQUITY METRIC

% BIPOC residents living in San Francisco

% of annual incoming residents that are BIPOC

% of displaced residents that are BIPOC annually

Supporting Actions

- H.1-1 Leverage every housing action and investment to help reverse historic dispossession based on race, ethnicity, disability, or socio-economic status, and enable housing security for affected communities.
- H.1-2 Prioritize affordable housing in cultural districts and areas with historically marginalized racial or ethnic communities to encourage their stabilization and return.
- H.1-3 Expand tenant services including education, outreach, counseling, and legal and rent assistance to keep local residents and workers housed in San Francisco.
- H.1-4 Initiate steps to increase housing production, particularly affordable and accessible housing, in higher opportunity neighborhoods that historically have been racially and economically exclusive.

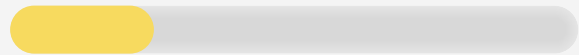
COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Support vulnerable populations and underserved communities through both the preservation and rehabilitation of existing housing and new housing development that serves their needs.

H.2



WHAT WOULD SUCCESS LOOK LIKE?

New housing development is built in high resource areas, and existing affordable and rent-controlled housing is rehabilitated without causing displacement. Vulnerable and underserved populations have access to both types of housing.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating
(no direct reduction)



ESTIMATED COST BY 2030

\$\$\$\$: 100 million-500 million



CLIMATE METRIC

of existing residential units retrofit annually



EQUITY METRIC

% and # of new residential units serving vulnerable and underserved populations,
% and # of existing residential units rehabilitated for vulnerable and underserved populations

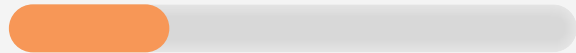
Supporting Actions

- H.2-1 Provide funding and resources to help people who are unhoused or without stable housing become and stay safely housed.
- H.2-2 Subsidize and develop incentives for building housing targeted towards vulnerable populations in high resource areas, especially along transit-rich, commercial, and social service corridors.
- H.2-3 Initiate steps to fund the acquisition and preservation of existing, affordable, multi-family housing, with a goal of at least 400 units annually.
- H.2-4 Secure federal, state, and local resources for accessibility, energy efficiency, decarbonization, and resilience upgrades in existing and new housing.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

H.3

STRATEGY

Advance zoning and implementation improvements that support new housing production sufficient to meet goals, especially sustainable, small, mid-sized, family and workforce housing in lower density neighborhoods.



WHAT WOULD SUCCESS LOOK LIKE?

Increased percentage of San Francisco's housing production overall and affordable housing production specifically is in higher opportunity neighborhoods.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$. 0-1 million



CLIMATE METRIC

of new housing units built proximate to transit each year, # of multi-unit projects approved in formerly R-1 and R-2 zoning



EQUITY METRIC

% BIPOC, low-, and moderate-income in higher resource neighborhoods

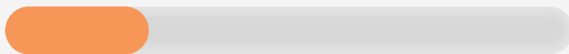
Supporting Actions

- H.3-1 Study changes to increase multi-family housing in higher-resource neighborhoods and near transit, jobs, services, parks, high quality schools, and other amenities.
- H.3-2 Develop additional approval and permit streamlining for new housing that exceeds inclusionary and sustainability requirements.
- H.3-3 Address financial and educational barriers for lower income small property owners to add housing (such as Accessory Dwelling Units) and rehabilitate existing units that are healthy and resource efficient.
- H.3-4 By 2025 establish codes and regulations that facilitate use of new materials (e.g. cross-laminated-timber) and new technology (e.g. modular housing) to lower costs and increase resource efficiency of construction.
- H.3-5 Expand green construction training and apprenticeship programs to grow the local pool of skilled labor and reduce construction costs.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Expand subsidized housing production and availability for low-, moderate-, and middle-income households.

H.4



WHAT WOULD SUCCESS LOOK LIKE?

The number of affordable housing units produced and preserved annually is increased compared to recent and historic averages and San Francisco achieves a higher share of its RHNA affordable housing targets than in the past.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$\$\$: 100 million-500 million



CLIMATE METRIC

of new affordable housing units built proximate to transit each year, # of affordable multi-unit projects approved in formerly R-1 and R-2 zoning



EQUITY METRIC

% new affordable housing units occupied by BIPOC

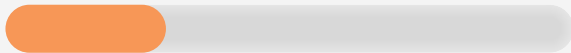
Supporting Actions

- H.4-1 Meet Regional Housing Needs Allocation (RHNA) targets and requirements to affirmatively further fair housing by increasing production of affordable housing, especially for families with children, in both higher resource neighborhoods and Priority Geographies that have historically been home to lower income communities of color.
- H.4-2 By 2025 renew and increase public and private funding for affordable housing as one-time bond funds and ERAF allocations are depleted.
- H.4-3 Advocate for increased regional, state, and federal funding for affordable and green housing.
- H.4-4 Identify cost cutting measures to make affordable housing developments in San Francisco more competitive for regional, state, and federal funding.
- H.4-5 Continue to prioritize surplus City, enterprise agency, and other public land for affordable housing based on timing and financial feasibility.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE



Responsible Production & Consumption

Climate change is driven by the global production of the goods and services that people and organizations consume. Responsible production calls for companies to rethink how they produce goods, to cut down on waste and toxics, and support consumers in making purchasing decisions that reduce emissions.

San Francisco is a leader in pursuing zero waste and reducing exposure to harmful chemicals. While continuing to advance waste reduction, reuse, recycling, composting and community health, the City must also begin to address the lifecycle impacts of the products – including both goods and services – that flow in and out of San Francisco. Purchases made in San Francisco have global ramifications, including the production and release of harmful chemicals and pollutants that impacts communities.

SECTOR GOAL:

Reduce solid waste generation 15% by 2030

Reduce disposal to landfill by 50% compared to 2015 levels

Historically, San Francisco has used a sector-based inventory to track citywide emissions. Included in this inventory are emissions from fossil fuels used in the building and transportation sectors, and methane emitted from landfills. Sector-based inventories account for downstream emissions that take place in a

given geographic area, but not the emissions generated by the creation and distribution of consumer products that go into that area. Known as upstream emissions, these can also be thought of as emissions that San Francisco outsources to other communities. In keeping with its commitment to equity and consideration of those who will be impacted the most by climate change, this plan integrates actions to reduce emissions from production and consumption, recognizing the effect local and regional purchasing decisions have all over the world. A Consumption Based Emissions Inventory (CBEI) provides San Francisco with an expanded framework to assess and act to cut emissions, while aligning other activities with climate actions goals.

Accomplishments



Mandatory Recycling and Composting Ordinance

has resulted in 99% of all properties now being compliant for recycling and composting service

The city has kept more than **2.5 million tons** of food scraps and other organics out of the landfill for over 25 years



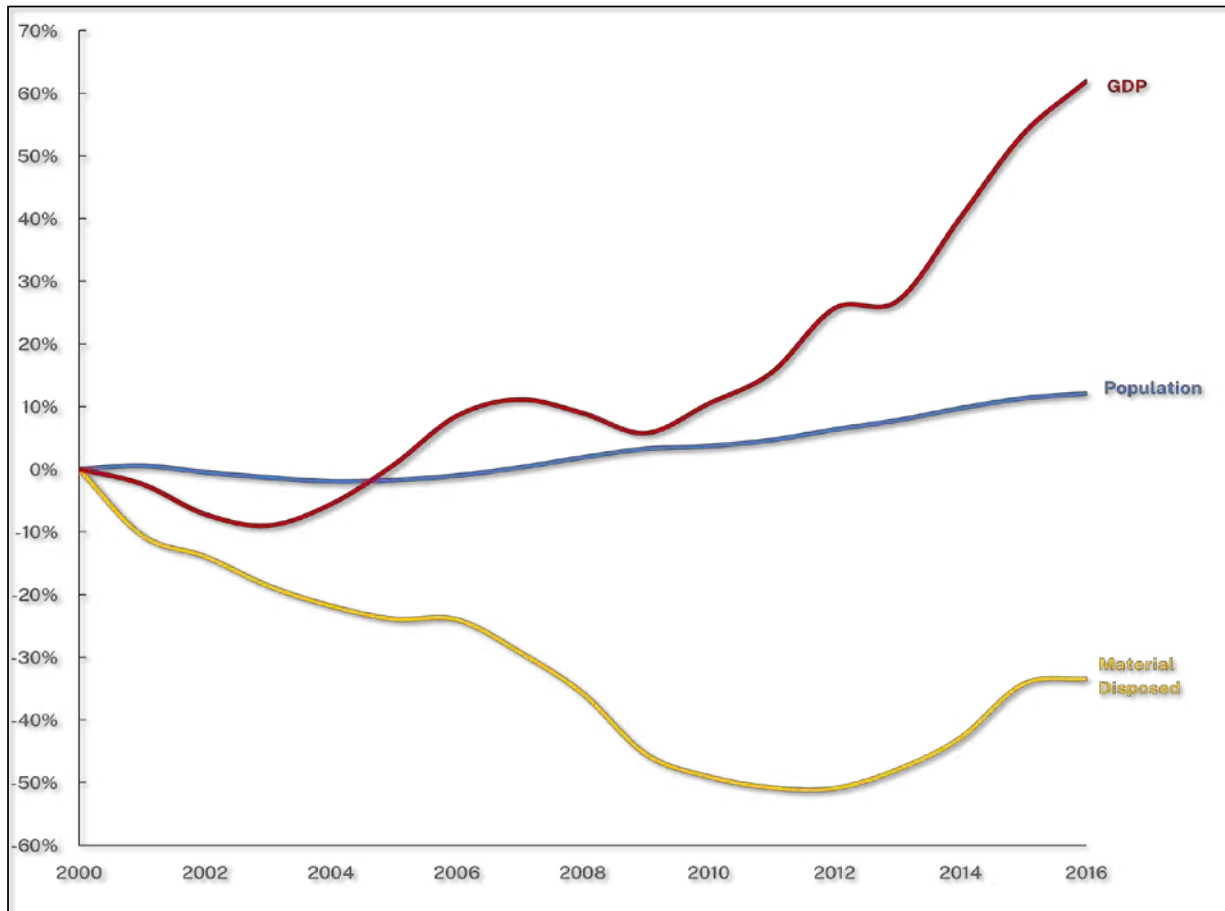
The city has kept more **3 million tons**

of recyclables out of the landfill reducing virgin resource extraction and emissions



The city keeps more than **1 million tons** per year of construction and demolition debris out of landfills recycled into products that reduces virgin resource extraction and emissions.

FIGURE 22: MATERIALS DISPOSED IN SAN FRANCISCO



Climate and the Material Lifecycle

San Francisco's ambitious zero waste goal of sending nothing to landfill or incineration has led to an increase of reuse, recycling, and composting of discarded materials. While this has decreased emissions in the waste sector, it has missed accounting for emissions from consumption, specifically the purchase of new goods and services.

While San Francisco cut the amount of disposed materials in half after 2000, a growing population, changing consumption patterns, and a building boom began to reverse that trend in 2013, when the amount of disposed materials began to increase, substantially increasing upstream emissions. Setting Responsible Production and Consumption goals can decrease these upstream emissions and negative effects on the communities impacted by them, while transforming how goods and services are produced, delivered, and used, as well as how they are then reused, recycled, composted, and disposed.

The Roles of Producers and Consumers

Reframing San Francisco's zero waste success within a climate context requires holding producers responsible for the emissions of their goods and services. In this framework, producers can be incentivized to redesign their operations to reduce emissions across their supply chain. Further, they can help consumers prioritize lower-emissions decisions. Local, state, and federal policies, along with market forces, will continue to push producers to increase efficiency and innovate sustainable materials that have lower emissions.

This framework also helps consumers — including government and households — exercise agency in their purchasing decisions and behaviors. For instance, the City can reduce consumption impacts through its own procurement policies, and can create policies, programs, and educational initiatives to support consumers. Additionally, individual households can contribute by shifting their consumption patterns and expressing demand for better, local, and low-carbon goods and services that do not outsource emissions to other communities.



Fix-It and Repair Opportunities Can Catalyze a Materials Reuse and Repair Economy

A New Call to Action

Moving forward, the City will work on reducing climate impacts of the top goods and services categories identified through the CBEI. San Francisco has long promoted climate action through behavior change: zero waste policies, programs, and educational efforts have reduced the amount of materials generated, including recyclables, compostable, as well as products that go to landfills (Figure 22). It is possible to meet these commitments and tackle a broader scope of global emissions through the production and consumption framework.

Supporting Equity and Expanding Access

Implementing responsible production and consumption strategies reduces lifecycle emissions while providing direct community benefits to San Franciscans and people from across the region and world who produce and ship goods to the city. For example, the recovery, reuse, and repurposing of resources that might go to waste, including food, used furniture, construction materials, and clothing, can be redistributed to communities in need. Further, industries that create materials and reuse and repair existing materials provide opportunities to create meaningful local jobs.

Strategies that support sourcing local and regional foods and goods can reduce emissions and air pollution related to transport. Local production also strengthens resilience. Due to the COVID-19 pandemic, some goods have become scarce as global supply chains continue to be strained. Local production can improve San Francisco's ability to adapt and respond to future pandemics and natural disasters.

Strategies Overview

Responsible Production and Consumption strategies address key product categories identified by the CBEI and seek to engage the wider community on implementation:

Building materials and construction activities

- Many building products use virgin material, which have tremendous climate impacts from extraction, production and shipping.
- Strategies aim to reduce the climate impacts of construction products and materials by promoting reusing and extending the useful life of existing buildings and their components. This also reduces waste.

Food

- Producing, shipping and wasting food generates significant global emissions.
- Strategies aim to shrink the climate impacts of the food system by reducing waste, promoting climate friendly diets, and getting excess food to those in need.

Everyday goods and consumer products

- Clothing, textiles, electronics, foodware, paper, and plastic can all drain resources and generate huge amounts of waste. They are also relatively energy intensive and therefore generate significant emissions.
- Strategies focus on promoting the reduction, reuse, repair, and recovery of a range of goods and materials.

Air travel

- Aviation and associated emissions are not included in the traditional sector-based emissions inventory. SFO International Airport plans to implement policies and programs to reduce emissions from airport fuels and operations.

Top Climate Solution:

Reduce food waste and embrace plant-rich diets.



Did you know?

Co-Benefits of Climate Action: Reducing the carbon footprint of the food system by reducing waste, promoting climate-friendly diets, and getting excess food to communities in need could result in:

REDUCED HEALTH COSTS

\$1.87M

Due to reduced food waste-related transportation emissions



Responsible Productions & Consumption

RPC.1

STRATEGY

Achieve total carbon balance across the buildings and infrastructure sectors.



WHAT WOULD SUCCESS LOOK LIKE?

By 2030 buildings constructed will have a 40% reduction in embodied carbon.



GHG REDUCTION POTENTIAL BY 2030

Not Available



ESTIMATED COST BY 2030

Not Available



CLIMATE METRIC

TBD



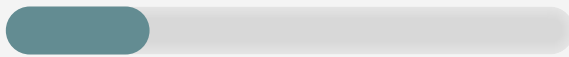
EQUITY METRIC

Tons of rescued building materials received by non-profits and small businesses in communities with environmental justice burden as identified in [EJ Communities Map](#)*

Supporting Actions

- RPC.1-1 Between 2024-2026, phase in policies to reduce embodied carbon more than 10% per project by addressing at least three product categories or building assembly types.
- RPC.1-2 By 2025, develop a suite of incentives, policies, and/or guidelines for adaptive reuse of existing buildings, as well as the design and procurement of low-carbon structural materials for new construction.
- RPC.1-3 By 2025, establish a maximum allowance for embodied carbon of buildings, to be adjusted at regular intervals.
- RPC.1-4 By 2025, amend existing policies to require deconstruction of buildings and increase the source separation of specific materials.
- RPC.1-5 By 2025, engage with designers, landlords, and lessees to develop guidelines for tenant improvement projects that reduce excess material purchases and support reuse distribution channels.
- RPC.1-6 By 2025, create a policy framework to expand and cultivate regional building material reuse markets that support workforce development, small business enterprises, and entrepreneurial innovation.
- RPC.1-7 By 2030, advance best practices for “Design for Disassembly” and “Buildings As Material Banks” by creating implementation resources in partnership with global cities, and pilot at least one municipal project to maximize the value of carbon already invested in buildings.

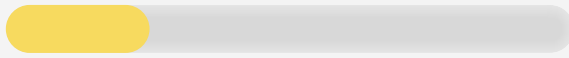
COMMUNITY BENEFITS



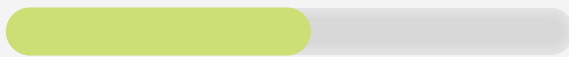
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE



RETHINKING HOW WE USE COMMON BUILDING MATERIALS AND CONSTRUCTION ASSEMBLIES PRESENTS MANY OPPORTUNITIES TO REDUCE EMBODIED EMISSIONS





Responsible Productions & Consumption

RPC.2

STRATEGY

Reduce the carbon footprint of the food system by reducing waste, promoting climate friendly diets, and getting excess food to communities in need.



WHAT WOULD SUCCESS LOOK LIKE?

Amount of food waste is cut in half by 2030, sending as much as possible to communities in need.



GHG REDUCTION POTENTIAL BY 2030

Not Available



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

Tons of excess food or food scraps generated and tons of food disposed to landfill and incineration.



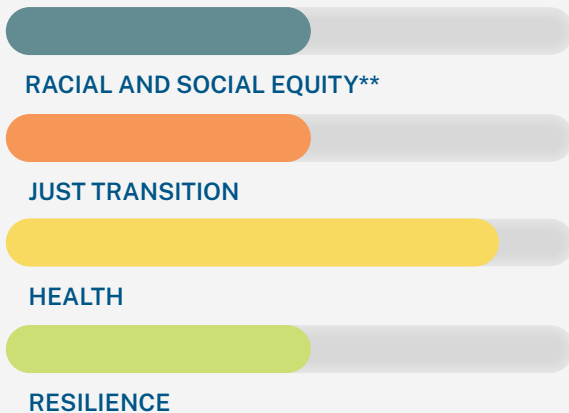
EQUITY METRIC

Tons of recovered food donated to San Francisco CBOs in communities with environmental justice burden as identified in [EJ Communities Map](#)*

Supporting Actions

- RPC.2-1 By 2030, reduce food waste by 50% in alignment with the City’s voluntary commitment to the Pacific Coast Collaborative initiative by implementing food waste reduction guidelines and recommendations in partnership with food retail, distributors, and manufacturers.
- RPC.2-2 By 2022, continue implementing and scale the Kitchen Zero SF pilot program, which reduces food waste by tracking over-purchasing by food generators, and redirects otherwise wasted food to communities in need, including providing recovered fresh produce to communities with limited access.
- RPC.2-3 By 2024, adopt a Food Waste Prevention and Edible Food Recovery policy and develop a program and incentives structure for compliance and monitoring in alignment with California’s State Bill 1383 food recovery regulations.
- RPC.2-4 By 2023, form strategic partnerships between SF Environment’s Green Business Program, City agencies, and hospitality and food industry organizations to reduce over-purchasing of food and encourage lower-carbon intense menu choices.

COMMUNITY BENEFITS





RPC.2-5 By 2024, develop guidance in partnership with other municipal agencies to implement city procurement of food in alignment with the five core values put forth by the Good Food Purchasing Program (GFPP): developing local economies, improving health, valuing the workforce, considering animal welfare, and environmental sustainability, including regenerative agriculture.

RPC.2-6 By 2025, San Francisco Department of Public Health will ensure the Zuckerberg San Francisco General and Laguna Honda Hospitals meet a 20% reduction in carbon and water footprints by implementing sustainable food purchasing standards that ensure food procurement aligns with the core values of the GFPP.

RPC.2-7 By 2030, San Francisco Unified School District will continue to build upon its adopted resolution to participate in the GFPP, aiming to procure food locally and from minority owned businesses and farms, switch entrees to lower-emissions alternatives, reduce over-purchasing of food, and donate meals to communities in need.



San Francisco-based nonprofit Farming Hope manages a garden-to-table job training program for formerly incarcerated or homeless citizens. Through the KitchenZeroSF program (RPS.2-2), they are able to receive donated surplus produce from Imperfect Produce/ Imperfect Foods for their operations.



Responsible Productions & Consumption

RPC.3



STRATEGY

Promote reduction, reuse, repair, and recovery of goods and materials.



WHAT WOULD SUCCESS LOOK LIKE?

By 2030, through a combination of policy, education and outreach, and new infrastructure solutions, San Francisco cuts its generation of discards by 15%, and the disposal of discards to landfill and incineration by 50%.



GHG REDUCTION POTENTIAL BY 2030

Not Available



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

Tons of excess non-food and non-building materials generated and tons disposed to landfill and incineration.



EQUITY METRIC

of affordable housing and small business sites that have removed or reduced contamination charges

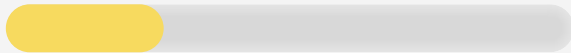
COMMUNITY BENEFITS



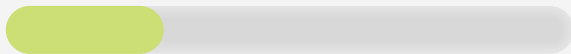
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- RPC.3-1 By 2023, reduce use of non-reusable foodware by requiring, incentivizing, supporting and/or promoting reusables for on and off-site dining (to-go or delivery).
- RPC.3-2 By 2023, reduce, reuse, and repair, by requiring take-back and resale of used clothing, and promoting donation and longevity of used apparel and textiles.
- RPC.3-3 By 2024, encourage or facilitate inclusive and networked neighborhood-scale projects such as lending libraries, repair clinics, and reuse exchanges for tools, equipment, electronics, furniture and other goods that reduce production and consumption of goods.
- RPC.3-4 By 2024, expand outreach, education, and incentives for paper and plastic use reduction by supporting businesses and institutions in their transition to more reusable and plastic-free packaging and digital forms of communication; support policies to extend producer responsibility to reduce and recover packaging.
- RPC.3-5 Increase compliance with mandatory construction and demolition debris recovery (newly amended Environment Code Chapter 14) and mandatory recycling and composting (Environment Code Chapter 19) to increase recovery and reduce disposal while providing economic and social benefits such as local jobs and reduced illegal dumping.
- RPC.3-6 By 2025, advance opportunities, programs and policies within the city, neighborhoods, industrial and corporate campuses, and SFO airport to maximize material recovery.

STRATEGY

Lead the aviation sector by reducing emissions across the airline passenger journey.

Responsible Productions & Consumption

RPC.4



WHAT WOULD SUCCESS LOOK LIKE?

GHG emissions associated with all SFO ground fleet operations and landing/takeoff of aircraft have been reduced and aircraft fuels procured by air carriers are sustainable aviation fuels.



GHG REDUCTION POTENTIAL BY 2030

Not Available



ESTIMATED COST BY 2030

Not Available



CLIMATE METRIC

Gallons of Sustainable Aviation Fuels procured.



EQUITY METRIC

TBD

Supporting Actions

- RPC.4-1 SFO will encourage and incentivize, where viable, switching aviation sector fuel to low carbon sources for both air and ground fleets.
- RPC.4-2 SFO will continue its leadership and partnership with airlines to work to replace up to 50% of its fuel supply with Sustainable Aviation Fuels by 2050.
- RPC.4-3 SFO will explore how to expand its Scope 1 and 2 carbon mitigation and offset program, to also consider qualified soil carbon sequestration as well as other sequestration projects where viable and as an accepted best practice.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE



Healthy Ecosystems

Healthy ecosystems provide nature-based solutions to climate change by sequestering carbon from the atmosphere and storing it in plants, trees, and soil. Stewardship of the city’s natural resources helps restore biodiversity and provides a healthy environment that benefits all San Franciscans.

Healthy Ecosystems deploy nature-based solutions, including ecological management, restoration, urban forestry, and regenerative agriculture to sequester emissions that cannot be eliminated by actions in other sectors. Globally, nature-based climate solutions can provide 37% of the mitigation needed by 2030 to limit temperature rise.⁵¹ Urban ecosystems and nature-based solutions can offer important pathways for sequestering carbon while protecting and restoring healthy, biodiverse ecosystems, natural areas, and urban forests to ensure a nature-rich city that can be enjoyed by everyone.

SECTOR GOAL:

Continual use of nature-based solutions to sequester emissions and support biodiversity.

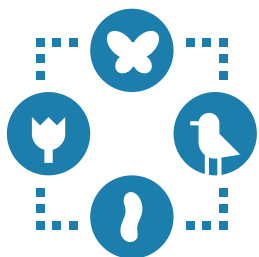
CONTEXT

The Ramaytush Ohlone, the original peoples of the San Francisco Peninsula, have lived in harmony with nature for millennia. Integrating Indigenous Traditional Ecological Knowledge into how the city’s lands, waters, and its population are cared for advances sustainability and climate goals. San Francisco has adopted plans and programs that lay actionable steps for greening the

city, restoring biodiversity, and improving community resilience.⁵² Key examples include the 2018 Biodiversity Resolution, the Significant Natural Resource Areas Management Plan, and decades of work by the San Francisco Urban Forestry Council. These plans and policies aim to increase public access to nature, protect biodiversity, and support green infrastructure and other vital ecosystem services. Healthy Ecosystems strategies and supporting actions leverage these efforts to create crucial carbon sequestration tools that will help the City meet climate goals and create other community benefits.

Beyond the 49 square miles of the city boundaries, San Francisco owns land in surrounding counties, including watershed lands that protect water supplies,

Accomplishments



Completed the pilot block installation of the

Sunset Blvd Biodiversity Master Plan

supporting SF native plants and pollinators



12 miles

of trails created through parks to enjoy nature, vistas, and views

98%

of green waste have been repurposed into landscape materials and returned to our parks



20,000

native and climate resilient plants were planted in parks in 2020

and support many rare and endangered species. Continued resource management best practices, such as grassland restoration, rare species conservation, and invasive plant management ensure these natural lands will continue to store carbon on a much larger scale than the City itself could.

Using nature-based systems to sequester carbon

Implementing ecologically regenerative agricultural practices — commonly referred to as “carbon farming” — on working lands located outside the city can serve as critical tools to mitigate climate change.⁵³ Examples of best management practices include riparian or other woody vegetation restoration to sequester carbon and help offset emissions along with fuels management to reduce the risk of high intensity wildfires to ensure that these lands continue to sequester carbon. Our scientific understanding of carbon storage capacity from natural ecosystems has become more robust and these solutions will be increasingly important to offset the emissions the City cannot eliminate completely to meet its 2040 net-zero emissions goal. However, climate change is a stressor on ecosystems and can potentially reduce their ability to sequester carbon.

For years, organic discards collected through the City’s zero waste program (“green bins”) have been used to create nutrient-rich compost which has traditionally been sold to regional agricultural operations, creating a circular flow of materials, and reducing emissions by keeping organics out of landfills where they emit methane. While still an emerging practice, studies show that applying high-quality compost to farmlands and pasturelands can significantly increase the soil’s ability to sequester carbon from the atmosphere, offering another opportunity to leverage zero waste

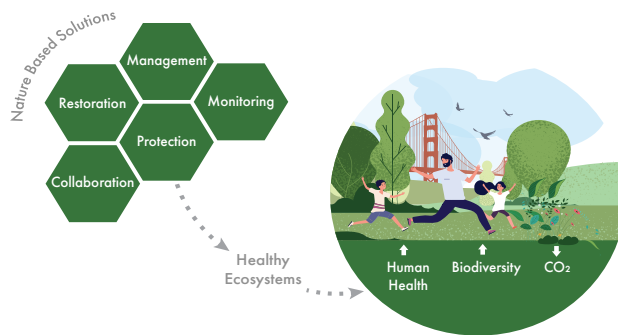


FIGURE 23: RELATIONSHIP BETWEEN HEALTHY ECOSYSTEMS, HEALTH, BIODIVERSITY, AND CLIMATE

efforts to support climate action. The City is working with external partners to study and improve compost application practices.

Climate action and biodiversity

As climate change continues to threaten all aspects of society, the Earth's biodiversity is also in crisis.^{55,54} Species are being lost at a rate 1,000 times greater than at any other time in recorded human history.⁵⁶ San Francisco is a global biodiversity hotspot, defined both by great biological diversity, and by the ongoing threat of human-caused impacts, such as expanding population and development patterns.⁵⁷ Dedicating lands and green space for carbon sequestration can restore and protect the region's undeveloped natural lands, allowing biodiversity to thrive. San Francisco's commitments to marrying biodiversity protection with climate action aligns with global efforts. State and federal governments, as well as C40, the global network of megacities, have set goals to conserve 30% of lands and coastal waters by 2030, both for robust biodiversity and to cut emissions.^{58,59}

“ **Biodiversity loss and climate change are both driven by human economic activities and mutually reinforce each other. Neither will be successfully resolved unless both are tackled together.**

-Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services & Intergovernmental Panel on Climate Change

Generating community health benefits

As San Francisco works to meet its climate goals, it can also meet the need for residents to connect to nature and enjoy safe, green places to walk, meet and build community. For instance, planting street trees sequesters carbon and can support local biodiversity, while urban forestry has many other benefits, such as clean air, cooling, stormwater management, enhancing neighborhood beauty and improving quality of life. Planting street trees also produces benefits that support other sectors; for example, by making streets more pleasant for walking, and by providing shading for buildings, which reduces the energy and associated emissions required to keep them cool.

Many studies have shown that natural environments enhance health and encourage healthy behaviors and there is a growing body of literature on the mental and physical benefits of spending time outdoors.⁶⁰ For instance, children who go to school in areas with green space tend to do better in school.⁶¹ During the pandemic, when San Franciscans were unable to gather indoors, access to greenspace was critical for community health and resilience. Healthy Ecosystems not only mitigate climate change, but also help ecosystems and communities adapt. Additionally, protecting and restoring healthy, biodiverse ecosystems, and promoting smart and equitable urban forestry ensures environmental benefits are justly distributed to all San Franciscans.

Equity and governance

To be successful, proposed healthy ecosystem strategies and activities will require extensive engagement and partnership with stakeholders, including but not limited to: BIPOC communities, agencies representing different jurisdictional boundaries, and private entities. Ongoing and future efforts must demonstrate a strong commitment to inclusive processes to ensure equitable outcomes.

While carbon sequestration and ecosystem conservation are mutually beneficial, in some situations there may be a conflict between the two goals. If, for example, a highly biodiverse California native grassland were planted with fast-growing eucalyptus trees to support sequestration goals, this would destroy the site's indigenous biodiversity and long-term ecological resilience; it could also make the landscape more susceptible to fires, which would release stored carbon. Conversely, in some cases non-native trees may be preferable for the urban landscape, as years of experience have identified species that are able to thrive in the harsh conditions of sidewalk tree planting.

Acknowledging these tensions, Healthy Ecosystems strategies and supporting actions leverage established best practices of urban greening and ecosystem restoration to clarify trade-offs and identify synergies to achieve shared goals.

Strategy Overview

San Francisco already has ambitious plans to grow its urban forest and protect its biodiversity. Healthy Ecosystems climate strategies leverage these efforts for carbon sequestration. These strategies work together by strengthening collaborations and partnerships, increasing community participation in nature-based solutions, and maximizing nature-based resources to sequester carbon.

Increasing collaboration includes strengthening relationships with American Indian organizations, federal and state governing entities and deepening ties among the City agencies engaged in this work. Healthy Ecosystem collaborators will pilot projects to gain better understanding of the carbon storage potential of San Francisco's agriculture lands.

Identifying funding streams will be crucial to the success of each interwoven strategy. Additional funding will ensure that all community members benefit from this work, especially those areas of the city that have fewer trees and less green and open space than other San Francisco neighborhoods.

Top Climate Solution:

Enhance and maintain San Francisco's urban forest and open space



Did you know?

Co-Benefits of Climate Action: Maximizing trees and other urban greening throughout the public realm can result in:

INCREASED PROPERTY VALUES

\$92M
(2021-2050)

REDUCED HEALTH CARE COST

\$422,000
(2021-2050)

HE.1



STRATEGY

Advance citywide collaboration to continually refine nature-based climate solutions that sequester carbon, restore ecosystems and conserve biodiversity.



WHAT WOULD SUCCESS LOOK LIKE?

All relevant agencies are engaged in a properly resourced collaboration that makes substantial and measureable annual progress on soil carbon sequestration and biodiversity projects.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$: 0-1 million



CLIMATE METRIC

of City sequestration and biodiversity projects implemented



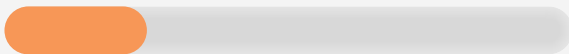
EQUITY METRIC

policies and plans evaluated and improved using racial equity tools

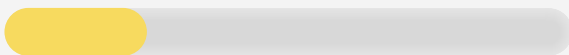
COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- HE.1-1 By 2022, complete the Alameda watershed carbon case study and quantify the value of carbon storage provided by protecting this natural area.
- HE.1-2 By 2022, launch the municipal soil calculator and initiate an assessment of the potential for all City owned lands to sequester carbon while maximizing indigenous biodiversity.
- HE.1-3 By 2023, City departments should develop their own policies and procedures to assess carbon sequestration opportunities for capital projects, prioritize biodiversity and green infrastructure, and maximize local native plants. Departments should work together in the Biodiversity Interagency Working Group to create shared policies and procedures where possible.
- HE.1-4 By 2025, develop best practice guidelines for improving or maintaining carbon sequestration and retention in soils, plants and natural habitats, while preserving biodiversity and ecosystem services.
- HE.1-5 By 2025, incorporate carbon sequestration and biodiversity conservation findings into a Carbon Sequestration and Ecosystem Restoration Strategy for City land and watershed management, consistent with agencies' existing plans and policies.

STRATEGY

Increase equitable community participation and perspectives in nature-based climate solutions, including meaningful efforts to prioritize Indigenous science and Traditional Ecological Knowledge.

Healthy Ecosystems

HE.2



WHAT WOULD SUCCESS LOOK LIKE?

The City will continue to provide and expand access to nature-based climate solution training, education and opportunities for all San Franciscans especially BIPOC communities.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating (no direct reduction)



ESTIMATED COST BY 2030

\$\$: 1-10 million



CLIMATE METRIC

of people engaged during trainings and outreach campaigns



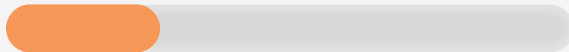
EQUITY METRIC

of acres dedicated for American Indian stewardship

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

Supporting Actions

- HE.2-1 The City will engage American Indian tribes, cultural bearers, neighborhood organizations, local businesses, the San Francisco Unified School District, and non-profit organizations during the planning and implementation of greening projects, including for the purpose of local hiring and workforce development.
- HE.2-2 By 2022, establish an inter-jurisdictional working group of American Indian representation, federal and state parks agencies, cultural districts, local non-profits, and educational and research institutions, dedicated to nature-based solutions, focused on resilience and biodiversity conservation.
- HE.2-3 The City will honor Indigenous knowledge from the original stewards of these lands (Yelamu) and create strong partnerships through meaningful engagement with the Ramaytush Ohlone and the American Indian community to participate in stewardship of lands managed by San Francisco.



STRATEGY

Restore and enhance parks, natural lands and large open spaces.



WHAT WOULD SUCCESS LOOK LIKE?

Natural lands management is fully resourced, so that existing lands can be continually improved and new lands added on an ongoing basis that are also sufficiently resourced for management and restoration.



GHG REDUCTION POTENTIAL BY 2030

Less than 100,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

of acreage improved AND restored for carbon sequestration and biodiversity.



EQUITY METRIC

% natural areas added or restored through community-endorsed processes in communities with environmental justice burden as identified in [EJ Communities Map](#)*

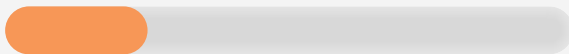
Supporting Actions

- HE.3-1 By 2030, explore expansion of the City’s natural areas preservation system through land transfers and acquisitions of undeveloped/unprotected private and public lands.
- HE.3-2 By 2030, continue improving management of existing salt marshes and explore expanding restoration acreage of degraded Bayshore properties owned by the Port and Recreation and Parks at India Basin and at Candlestick State Recreation Area.
- HE.3-3 By 2025, create a 3-acre horizontal levee at Heron’s Head Park.
- HE.3-4 By 2030, restore and create 173 acres of natural ecological parkland on Yerba Buena and Treasure Islands, including implementing the Yerba Buena Island Habitat Management Plan.
- HE.3-5 By 2030, restore 100+ acres of upland and wetland habitats at the San Bruno Jail and SFO West of Bayshore Properties.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Optimize management of the city's entire urban forest system.

Healthy Ecosystems

HE.4



WHAT WOULD SUCCESS LOOK LIKE?

Typology-based goals and targets are fully developed and balanced with land management objectives and being carried out across the entire city.



GHG REDUCTION POTENTIAL BY 2030

Enabling/Accelerating
(no direct reduction)



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

Plans, policies and annual monitoring are fully funded and being implemented.



EQUITY METRIC

of organizations representing BIPOC communities in plan development

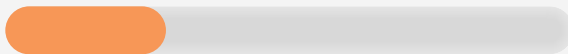
Supporting Actions

- HE.4-1 By 2023, encourage City agencies to develop guidelines for tree species selection and management procedures that incorporate community resilience, carbon sequestration, and ecosystem services and biodiversity, consistent with City agencies' strategic plans and goals.
- HE.4-2 By 2023, pending availability of resources, standardize urban forestry and greening data collection (including street tree census and canopy coverage), and complete the Urban Forest Master Plan Phases 2 (Parks and Open Space) and Phase 3 (Private Lands and Backyards).
- HE.4-3 By 2023, continue and, if applicable, expand urban wood waste diversion to maximize carbon sequestration and conserve landfill space.

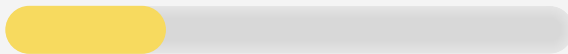
COMMUNITY BENEFITS



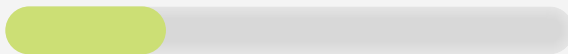
RACIAL AND SOCIAL EQUITY



JUST TRANSITION



HEALTH



RESILIENCE



STRATEGY

Maximize trees throughout the public realm.



WHAT WOULD SUCCESS LOOK LIKE?

The public realm is fully “built-out” in terms of urban forestry and community greening, so that everyone has immediate access to nearby nature.



GHG REDUCTION POTENTIAL BY 2030

Less than 100,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

Count of trees planted and area (sq ft) of public realm installed with native, climate appropriate greening.



EQUITY METRIC

% trees planted in communities with environmental justice burden as identified in [EJ Communities Map](#)*

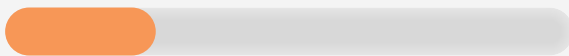
Supporting Actions

- HE.5-1 By 2040, plant 30,000 street trees in the sidewalk tree wells, approximately a 25% increase, to complete the street tree network.,
- HE.5-2 By 2030, maximize, where woody vegetation is appropriate, planting coast live oak and other native trees and arborescent shrubs throughout the entire public realm.
- HE.5-3 By 2023, create a City-managed and -dedicated street tree nursery.
- HE.5-4 By 2023, create a policy to require preservation of mature trees during development or infrastructure modifications and for planting of basal area equivalent of mature trees whose removal is unavoidable.

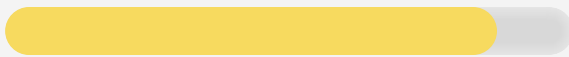
COMMUNITY BENEFITS



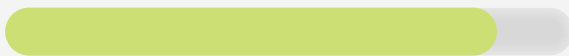
RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE

STRATEGY

Maximize greening and integration of local biodiversity into the built environment.

Healthy Ecosystems

HE.6



WHAT WOULD SUCCESS LOOK LIKE?

City and community greening in the built environment with local native plants has become routine



GHG REDUCTION POTENTIAL BY 2030

Less than 100,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

Count of acreage improved AND restored for carbon sequestration and biodiversity.



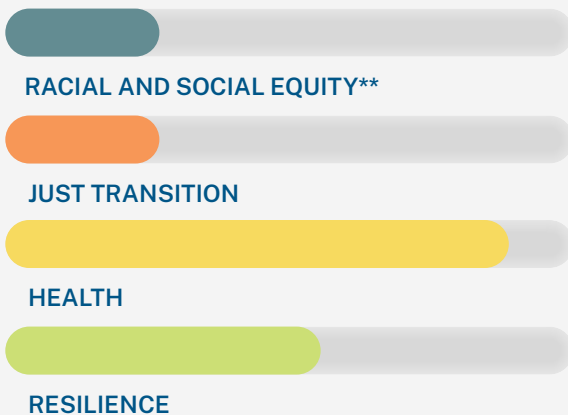
EQUITY METRIC

% incentives distributed to communities with environmental justice burden as identified in [EJ Communities Map](#)*

Supporting Actions

- HE.6-1 By 2023, establish a measurable and geographically specific target for daylighting San Francisco creeks.
- HE.6-2 By 2023, create permanent code and financial incentives for nurseries to sell local natives and for private property owners to preserve green space, protect existing mature trees and shrubs, plant local natives, and install living roofs and walls.
- HE.6-3 By 2026, maximize revegetation of degraded City and State major expressway, highway and rail corridors with hardy, low-maintenance trees and shrubs.
- HE.6-4 By 2025, create a City-owned and managed local native plant nursery that supplies plants annually to City agencies that do not currently have access to local native plants.
- HE.6-5 By 2030, maximize replacing concrete to create more biodiverse green space on public land.
- HE.6-6 By 2030, build 10 pollinator habitat landscapes at public housing sites.
- HE.6-7 By 2030, fully implement the Sunset Boulevard Biodiversity Master Plan by planting native grasses, trees and shrubs for habitat and climate resilience.
- HE.6-8 By 2030, develop and implement science-based recommendations for creating ecological corridors where feasible.

COMMUNITY BENEFITS





STRATEGY

Conduct carbon sequestration farming pilot projects and research.



WHAT WOULD SUCCESS LOOK LIKE?

Appropriate carbon sequestration projects have been piloted and have become best practice on city, private and other public owned land.



GHG REDUCTION POTENTIAL BY 2030

Less than 100,000 mtCO₂e



ESTIMATED COST BY 2030

\$\$\$: 10-100 million



CLIMATE METRIC

Appropriate carbon sequestration Acres of soil sequestration projects implemented.



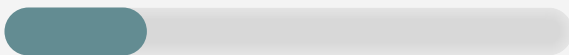
EQUITY METRIC

of projects which include Indigenous science and/or Traditional Ecological Knowledge

Supporting Actions

- HE.7-1 By 2024, apply approximately 500 wet tons of biosolids per year as a soil amendment and to sequester carbon on newly identified sites such as mine reclamation projects in Northern California.
- HE.7-2 Improve compliance with Mandatory Composting (Environment Code Chapter 19 and SB 1383) and optimize organics processing to increase the quantity and quality of compost produced to support soil carbon sequestration activities.
- HE.7-3 By 2030, pilot appropriate carbon sequestration techniques as part of ongoing ecological restoration of degraded habitats within SFPUC lands.
- HE.7-4 By 2025, SFO will expand its carbon mitigation and offset program to include soil carbon sequestration projects, where viable.

COMMUNITY BENEFITS



RACIAL AND SOCIAL EQUITY**



JUST TRANSITION



HEALTH



RESILIENCE



SECTION 6:

NEXT STEPS FOR IMPLEMENTING THE CAP



The CAP is a roadmap for meeting the City’s emissions reduction goals while advancing equity and other critical priorities. Successful implementation will call for government, the private sector and engaged communities to work together to address the climate emergency. Recommended actions must be carried out swiftly, efficiently, and democratically.

Meeting the challenges of climate change and implementing the CAP will call for courage and sustained commitment from political leaders, businesses, community organizations, and residents. Desired outcomes can be accelerated by strategically leveraging planned investments in energy, buildings, transit, housing, and greening efforts. Sufficient funding and expanded stakeholder engagement will be necessary to move from vision to reality.

Ongoing and transparent reporting on key performance indicators, which is to occur annually, will be critical to measure progress against goals and allow for adjustments based on changing conditions. Future CAP updates will occur once every five years and will capture new and ongoing gaps and concerns.



Community supporters gather after the Board of Supervisors vote to pass the 2019 climate emergency resolution.

LEVERAGING OTHER INVESTMENTS

The 2021 Climate Action Plan builds on decades of experience and the momentum created by complementary efforts to reduce emissions and advance equity. It reflects other plans and policy priorities, and identifies technical and financial opportunities, as well as challenges, for accelerated decarbonization.

The adoption of the CAP does not, by itself, fund or authorize implementation of any specific projects or policies, but rather provides a roadmap to achieve equitable climate goals. Although they may be included or referenced in other City plans, many of the CAP’s proposed actions will require legislative approvals. Further, any new actions will be required to undertake all appropriate legal, environmental, and technical analysis.

For example, Building Operations actions such as “BO 2-2: electrification at time of replacement,” will require extensive stakeholder engagement, legal analysis and environmental review to create new legislation. Similarly, some Transportation and Land Use actions, such as “TLU 1-1: Fund and implement the recommendations of the ConnectSF Transit Corridors Study” are sourced from distinct planning efforts, so must ultimately follow their own timelines, decision making, and approval processes in accordance with

the plans and recommendations from which they are drawn. Importantly, for any proposed action to become reality, capital and operational funding options must be vigorously explored, identified, and expanded.

FUNDING THE CAP

After CAP adoption, the City will continue working on actions that already have political authorization, fiscal support and environmental clearance; however, identifying adequate funding sources and undertaking any required technical, legal, and environmental review will be crucial for implementing other strategies. Particularly for actions where costs are borne by citizens and businesses or where federal support is lacking, efforts will be made to structure and phase in actions to control costs for private entities. However, to achieve CAP goals, investment levels must be strategically increased far beyond leveraging existing sources of funding.

These initiatives frequently rely on a multitude of funding streams made of local, regional, state, and federal sources. Securing these funds is highly competitive and often lacking, which means they may not be a dependable source to meet the City’s needs. In many cases, cities and states cannot afford to address climate change and cut emissions on their own. External support, from state and federal governments, is needed more than ever. Other challenges include the fact that

many climate actions do not have a traditional return on investment that can attract private capital. Additionally, there will always be many competing demands on limited public sector funding.

The recent commitment of City funds will be used to assess the costs of implementing specific actions, investigate various funding and financing mechanisms, and make specific recommendations for moving forward. City departments and other key stakeholders, including business and labor voices, financial advisors, and legal and policy experts will collaborate to research and analyze reliable financing models and identify the most promising options.

This process will rely on preliminary work done to outline potential funding sources and will grow to include quantifying potential funding from each source and clarifying how much implementing each strategy will cost (See **Appendix G** for full technical summary). Overall, recommended next steps include:

1. Create an interdepartmental climate finance working group to assess the economic, social, political, and administrative viability of securing new funding sources.
2. Develop a detailed cost estimate for implementing CAP actions (beyond high-level estimates in the CAP).
3. Identify all opportunities to fund CAP strategies from existing funding sources and approved measures.
4. Assess which CAP strategies are not funded or partially funded to identify funding gaps.
5. Investigate a new tax (carbon tax, food tax) and/or increase existing taxes (sales tax, property tax) as a major contributor to reducing funding gaps.
6. Seek out and apply for relevant federal, state, and local grant opportunities which can serve as important seed funding for implementing CAP strategies or other supporting activities such as community engagement or technical analysis.

MONITORING, EVALUATION, AND REPORTING (MER)

Upon completion of the CAP, the City will create and share a robust monitoring, evaluation, and reporting (MER) system that enables stakeholders to track key metrics and understand progress toward targets and goals.

SF Environment will work with key City agencies to establish a governance process, accompanied by a public facing dashboard to report on progress toward implementing the CAP. The dashboard will track climate and equity metrics, which were proposed in Section 5. The metrics are drafts and subject to change, based on multiple factors including: availability of data; introduction of better or higher quality data to quantify impacts; further engagement and discussion with additional stakeholders; and other external changing conditions. Some metrics were still being determined at the time of publication.

The MER system will follow requirements outlined in the updated Chapter 9 of the Environment Code, which calls for the City to measure and monitor sector-based emissions, including municipal emissions, as well as consumption-based emissions.

It will build on existing City data capabilities such as SFE's interactive climate storyboard, DataSF, and municipal and public sector building energy benchmarking. The system will use best practices to ensure accountability and transparency, provide relevant information to a wide range of stakeholders, and adapt as necessary. MER efforts will also serve to report on climate action progress to local, state, national, and global partners.

In addition to transparent reporting, the City government will need to show significant leadership to implement the CAP, including appropriating a budget commensurate with the need to accelerate climate investments. It will also need to speed up the delivery of projects, from planning and environmental review to procurement and construction. The City will also need to further embed climate priorities and values within policies, including education and training programs, and other governance-related activities within City government.

COST OF INACTION VS. BEING PROACTIVE

While the costs of implementing the CAP may seem daunting, there is ample research showing that the costs of not acting are several orders of magnitude greater. Communities around the country are already being financially devastated by unfolding climate disasters.

Fortunately, San Francisco continues to exhibit the political will and leadership to create financing structures that can serve as models for future action, including:

Bonds: San Francisco's Green Bonds Program was launched by the SFPUC in 2015, to fund renewable energy investments. Since that time, the City has issued almost \$2 billion in Green Bonds.

Fees: San Francisco legislated the SF Carbon Fund, which requires that 13% of the cost of airfare for municipal travel be invested in local projects that mitigate and sequester emissions. While the program is a fraction of the city's overall budget, it has been a powerful funding source for neighborhood projects.

Taxes: In 2016, San Francisco voters passed the Soda Tax, which levies a small tax on distributors of sugary drinks. Revenues go toward food security, health education, and outdoor activities, all of which intersect with the city's climate mitigation and resiliency efforts.

Grants: San Francisco has secured a range of competitive grants. For example In 2019, it was awarded \$40 million from the State's Affordable Housing and Sustainable Communities Program to provide affordable housing developments designed to support public transit. And over the last decade, the City has received multiple grants from the California Energy Commission to accelerate the adoption of EVs.

Increased public awareness and participation informed by the MER system will be necessary to create active democratic participation in the CAP and will help to ensure that the city achieves the mandated emission reduction goals articulated in Chapter 9.

ADDITIONAL TOOLS FOR REACHING NET ZERO

Chapter 9 of the Environment Code defines net-zero emissions as a 90% reduction in direct GHG emissions, to be reached by 2040, with the remaining 10% removed from the atmosphere using nature-based sequestration strategies. The City is working on parallel paths to pull carbon out of the atmosphere, even as it maintains momentum to reduce its emissions. Ultimately, San Francisco could sequester many more tons of carbon than the 10% called for in the Environment Code. While City agencies do not currently quantify the carbon sequestration potential of its Healthy Ecosystems strategies, new tools are being developed that can more accurately assess each strategy and provide data to inform how to best deploy them in urban environments and on City-owned land. Areas to explore include sequestration potential of applying organic material to soils, additional tree planting, other urban greening, as well as research into new technological solutions for sequestering carbon.



One example that could serve as a model is the SF Carbon Fund, which places a surcharge on the cost of City employees’ work-related air travel and invests it in local projects that mitigate and sequester emissions. Launched more than 12 years ago, the SF Carbon Fund uses widely accepted protocols to estimate emissions savings. It has created \$1.5M for city-wide community greening projects that not only sequester carbon but provide a range of other benefits such as healthy food and community gathering space.

Similar revenue-producing models could be modified and expanded to fund projects that increase carbon sequestration, soil health, and nutrient recycling. Additionally, the City’s wastewater treatment facility could be designed to capture excess methane gas and convert it low-emissions biofuel for uses that maximize climate benefits. Accounting for natural systems carbon sequestration and other strategies can help bridge the gap from the current projections to the 2040 net-zero target.

ISSUES FOR FUTURE CONSIDERATION

CAP strategies must ensure that all community members, especially the most vulnerable and marginalized, have access to the health, economic, and resilience benefits of climate action. While this CAP is specifically focused on actions that reduce emissions and equitably distribute benefits, future iterations may consider action on other environmental issues to improve the delivery of critical infrastructure and maximize community health and resilience benefits of climate investments.

Addition of a disability justice lens

Climate change has been demonstrated to have both a direct and indirect impact on the effective enjoyment of a wide range of human rights, including the rights of persons with disabilities. Persons with disabilities are often among those most adversely affected in an emergency, sustaining disproportionately higher rates of morbidity and mortality, and at the same time being among those least able to have access to emergency support.⁶³

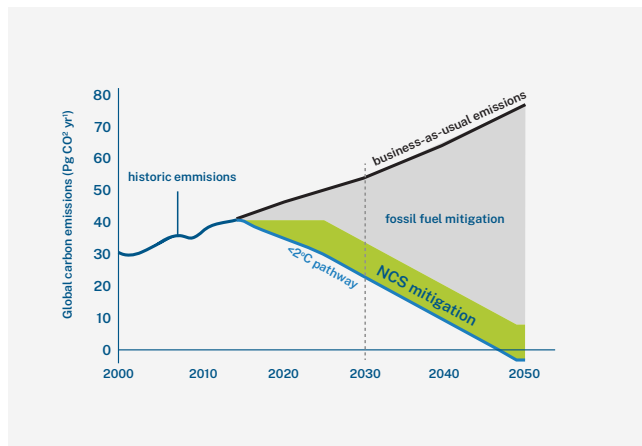


FIGURE 24: NATURE CLIMATE SOLUTIONS (NCS) CONTRIBUTION OF CARBON SEQUESTRATION TOWARDS REACHING NET ZERO EMISSIONS⁶²

Land contamination in the Southeast

During the community engagement process for developing the CAP, community members voiced strong concerns about hazardous waste and land remediation issues, particularly in the city’s Bayview Hunters Point neighborhood. While not directly related to emissions reduction, these issues are important to both the city and communities in San Francisco’s southeast sector, where new development on former Navy lands is growing. A number of City departments have jurisdiction over hazardous waste and land remediation issues and are rigorously working with the community to achieve long-term solutions. Future work streams have been identified to strengthen the connection between climate action, community resilience, and contamination issues. City departments will continue coordinating to:

- Secure funding to engage marginalized communities in identifying climate and environmental issues of greatest concerns to their community.
- Update the City’s Hazards and Climate Resilience Plan, which identifies active and potential contaminated lands and calls out the risk of greater spills and the potential for storage infrastructure to be compromised by flooding.

- Identify funding that supports the Sea Level Rise Working Group in researching how current and former industrial uses of waterfront areas can lead to issues around soil contamination and hazardous materials that may be exacerbated by sea level rise.

Water supply, conservation, and reuse

The City must ensure an adequate and sustainable long-term water supply for the citizens of San Francisco. Over the next year, a new section will be added to the CAP that will include a Water chapter that sets goals, strategies and actions around water consumption, residential and commercial water use, and diversifying water resources, including recycled water, water reuse, purification and storage.

The Water chapter will also address wastewater issues. The process of wastewater treatment generates emissions based on the amount of organic matter, predominantly protein, that is converted into nitrous oxide and released with effluent from the City’s wastewater treatment plants. Methane, a powerful warming gas and biogas, is also released during the decay process in the City’s anaerobic digesters. Capturing this biogas can reduce the carbon intensity of wastewater treatment processes. The Water chapter will look to align the use of biogas produced from the wastewater treatment plants with the City’s Climate Action goals and develop strategies to reduce wastewater and its processing.

In developing this chapter, the SFPUC, SF Environment, and relevant stakeholders will also apply the Racial and Social Equity Assessment Tool (R-SEAT) to ensure an equity-centered approach to its development and recommendations.

BOLD, COLLECTIVE ACTION

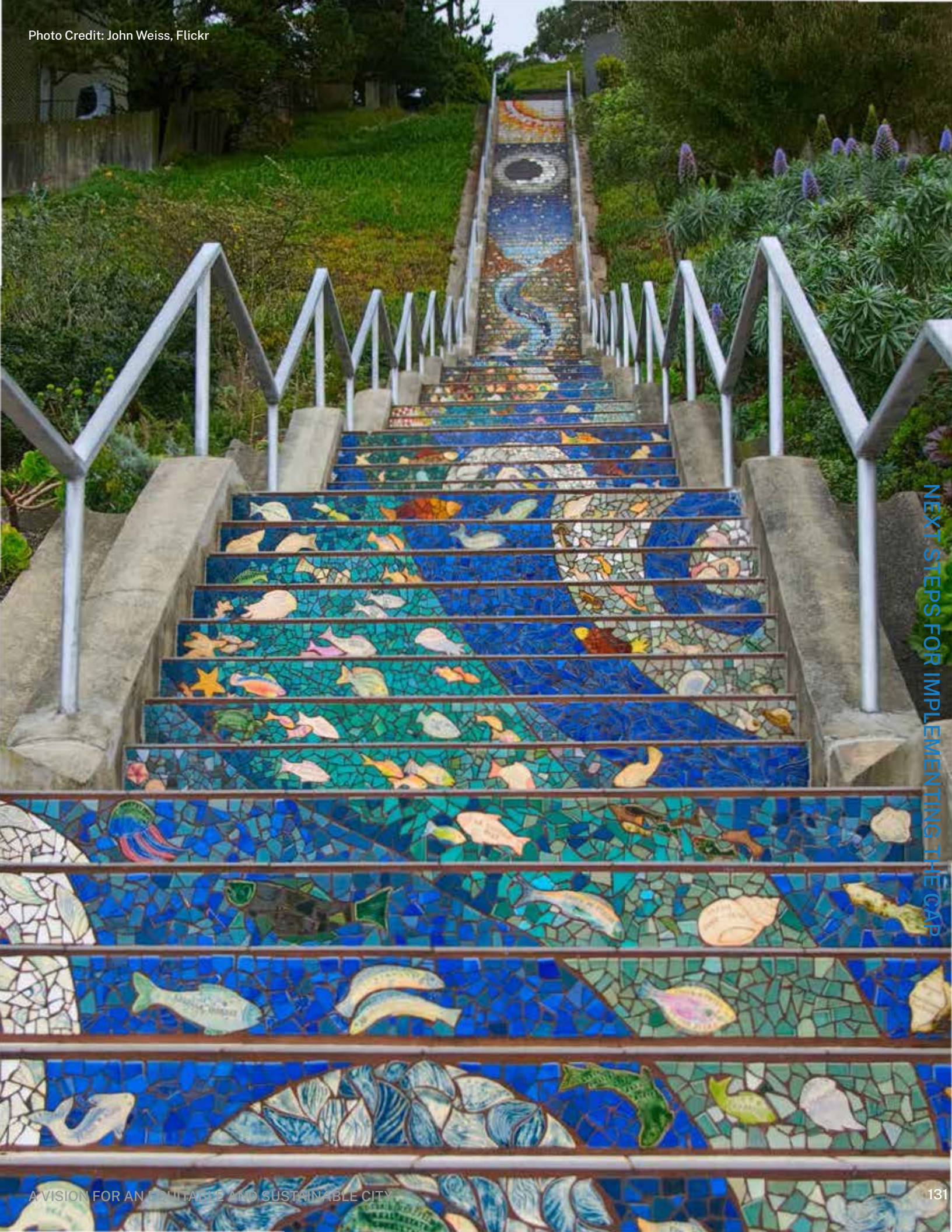
San Francisco is proud of its decades of local climate leadership, but much more action is needed. In 2021, after passionate advocacy from local stakeholders inspired to act by the unfolding climate emergency, the City allocated dedicated funding to develop a detailed analysis of the cost of CAP implementation and identify reliable funding models that would be most successful in San Francisco. It will also take steps to create a new

Climate Equity Hub to ensure San Francisco’s diverse communities are engaged in the ongoing efforts to reduce emissions and transition to a more sustainable future. While the expected initial cost of the CAP will be large, the cost and consequences of inaction would be far larger and much more harmful over time.

The CAP sets ambitious goals for San Francisco. Implementing the CAP will require deliberate policy choices from City leaders, including creating new ordinances, swiftly undertaking necessary environmental review of CAP actions, authorizing meaningful budget and investment allocations, petitioning State and Federal leaders for adequate resources, and making difficult trade-offs with other goals and priorities.

Every resident and institution in San Francisco has a role to play when it comes to building resilience and eliminating emissions. Increasing engagement and participation from more people will be crucial to making progress, particularly with BIPOC stakeholders to deliver on commitments to center equity in CAP implementation. Outreach and communications must highlight the connections between climate action and the four lenses of racial equity, health, economic justice, and community resilience. Public and private support for decarbonization policy is high, but putting it into action will require deliberate decision-making, including tradeoffs with other policy goals. The City cannot solve problems through business as usual approaches or with partial solutions. San Franciscans will need to embrace change, from new housing units to new bike lanes to new practices in our kitchens and more.

City and community leaders, local elected and appointed officials, state, regional, and federal agencies, the private sector, philanthropy, and the entire community must work together to increase climate investment, and secure commitments from all sectors to dedicate greater social, political, and financial resources toward implementing solutions that will benefit and protect us all.



NEXT STEPS FOR IMPLEMENTING THE CAP

ENDNOTES

1. On February 1, 2021 the Commission on the Environment [resolved](#) to state this land acknowledgement at the beginning of each meeting.
 2. According to the [Fourth National Climate Assessment](#), annual economic losses in the United States due to climate change in 2090 (in 2015 \$): Moderate warming (RCP 4.5): \$280 billion/year; Extreme warming (RCP 8.5): \$500 billion/year
 3. Public Policy Institute of California. "Income Inequality and Economic Opportunity in California" December 2020
 4. Data in table is from <https://cal-adapt.org/tools/local-climate-change-snapshot/> unless otherwise noted
 5. RCP 4.5 assumes emissions peak around 2040 and then decline. These emissions scenarios have been updated for the most recent IPCC report to reflect a broader range of possible emissions.
 6. RCP 8.5 assumes there are no significant efforts to limit or reduce emissions. Emissions continue to rise strongly through 2050 and plateau around 2100.
 7. What is considered extremely hot is location specific. Extreme heat threshold temperatures are commonly calculated as the 98th percentile of temperatures between April and October in an area. In San Francisco, an extreme heat day is 85F. By this same calculation, an extreme heat day in Sacramento is 104F.
 8. Number of consecutive days with precipitation of less than 1 millimeter for each year
 9. Sea level rise research used probabilistic projections, for more information see: https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf
 10. RCP 2.6 assumes stringent emissions reductions, with emissions declining by about 70% from 2015 to 2050, to zero by 2080, and below zero thereafter, meaning changes to land use and carbon capture technology might absorb large amounts of carbon dioxide emissions.
 11. "CO2e" represents an amount of a GHG for which atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO2), based on the global warming potential (GWP) of the gas. To estimate baseline emissions and track progress, global warming potential values are used to combine emissions of various greenhouse gases into a single weighted value for emissions, commonly referenced as metric tons of carbon dioxide equivalent (mtCO2e)
 12. Racial disparities described in [Ordinance to Create an Office of Racial Equity](#), July 2019
 13. The Environmental Justice Communities map is based on four inputs: CalEnviroScreen, income data from the state of California, local air pollution data, and demographic data. The demographic data used for the EJ Communities map is SFDPH's Areas of Vulnerability, which includes several indicators, including race.
- This is a draft version of the EJ Communities map that was released in December 2020. The San Francisco Planning Department is still in the process of gathering feedback from the general public and from other agencies. Because of this, the EJ Communities map may be revised during the fall or winter of 2021.
14. CalEPA recently issued a draft of CalEnviroScreen 4.0 (which is the most heavily weighted data source in the EJ Communities Map), so it's likely that the EJ Communities map will be updated once CES 4.0 is finalized.
 14. San Francisco Health Improvement Partnership. [San Francisco Community Health Needs Assessment](#), 2019
 15. American Community Survey and GeoLytics, Inc. [Bay Area Equity Atlas](#), 2019
 16. San Francisco Planning Department Analysis of 2014-2018 IPUMS-USA, University of Minnesota, www.ipums.org. Underlying data from the U.S. Census Bureau.
 17. 18% was supplied by nuclear which is greenhouse-gas free but not renewable.
 18. Renewable energy in San Francisco is defined as solar (PV), wind, small hydro and existing large hydroelectric, geothermal, and biomass. For additional information see San Francisco's Environment Code Chapter 9.
 19. San Francisco Department of Environment. [2019 GHG Emissions Inventory At a Glance Report](#). April 2021
 20. CCAs provide supply where an investor-owned utility provides distribution services.
 21. San Francisco Public Utilities Commission analysis looked at January 2021 enrollment status and used 2019 historical loads.
 22. Disadvantaged communities are defined as the top 25% scoring areas from CalEnviroScreen along with other areas with high amounts of pollution and low populations. CalEnviroScreen is a tool developed by the CalEPA to identify communities disproportionately burdened by pollution and population characteristics that make them more sensitive to pollution.
 23. San Francisco Department of the Environment. [Methane Math: How Cities Can Rethink Emissions from Natural Gas](#), 2017.
 24. Co-benefit calculations are described in Appendix E.
 25. Facilities identified in the City's 2017 Resilient Solar and Storage Roadmap: <https://sfenvironment.org/solar-energy-storage-for-resiliency>
 26. Jobs analysis is described in Appendix F.
 27. 7% percent is the average of residential, municipal, and commercial buildings
 28. World Building Council, Alliance for Building and Construction and Architecture 2030.
 29. Co-benefit calculations are described in Appendix E
 30. This benefit is accrued outside of San Francisco because no natural gas power plants operate within its boundaries.
 31. Jobs analysis is described in Appendix F
 32. In July 2021, The SFMTA started to phase out the term "sustainable" in the context of modes of transportation and it has been replaced with "low-carbon." The modes included in this definition were still be evaluated during the development of this plan and updates will be posted to sfclimateaction.org when the analysis is complete.

33. ConnectSF: [2019 Statement of Needs](#): page 19-20; December 2018
 34. SFMTA. [Shelter-in-Place Allows Muni to Analyze Sources of Delay May](#) 2020.
 35. HEI Panel on the Health Effects of Traffic-Related Air Pollution. "[Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects](#)" Health Effects Institute. 2010
 36. San Francisco Municipal Transportation Agency. [38-Geary Temporary Emergency Transit Lanes Project](#): Evaluation Report, May 2021
 37. Bradley, Greene, Sana, Cooper, Castiglione, Israel and Coy. "Results of the First Large-scale Survey of TNC Use in the Bay Area". Unpublished Manuscript submitted to the Transportation Research Board. August 2020
 38. San Francisco Department of Environment. [2019 GHG Emissions Inventory At a Glance Report](#). April 2021
 39. Stephen Menendian, Samir Gambhir, and Arthur Gailles, "[Racial Segregation in the San Francisco Bay Area, Part 5](#)," Othering and Belonging Institute, August 2020
 40. Michael C. Lens and Paavo Monkkonen, "[Do Strict Land Use Regulations Make Metropolitan Areas More Segregated by Income?](#)" Journal of the American Planning Association 82 (2016)
 41. Cambridge Systematics, Inc. Climate Action Plan Transportation and Land use –Climate Change Mitigation Analysis: Prepared for San Francisco County Transportation Authority. October 22, 2021
 42. Emissions reduction potential informed Cambridge Systematics, Inc Report; Other co-benefits were qualitative assessments by SFMTA & SFCTA Staff using the following definitions as guidance –Congestion: Potential to reduce vehicle miles traveled and congestion; Equity: Potential to improve access to destinations for income and marginalized communities; Public Health: Potential to improve physical fitness, air quality; mental health, ect.; Safety: Potential to improve public safety and reduces collisions; and Economic Vitality: Potential to support access to key destinations for jobs and commerce.
 43. Co-benefit calculations are described in Appendix E
 44. The City's housing production goal was first set by Mayor Ed Lee and carried forward by current Mayor London Breed. It references the 2021 Regional Housing Needs Allocation (RHNA) numbers established by the Metropolitan Transportation Commission (MTC), which sets housing targets for the nine Bay Area counties.
 45. Just 22% of American Indian householders, 23% of Black, and 24% of Latinx householders own their own homes compared to 36% of white householders and 48% of Asian householders. IPUMS data 2014-2018.
 46. Housing requires the orchestration of supportive infrastructure and services including transportation, schools, recreation and open space, civic institutions, the arts and cultural expression, health and social services, and businesses that support livelihoods and daily needs to create a sustainable neighborhood.
 47. San Francisco Planning Department Analysis of 2014-2018 IPUMS-USA, University of Minnesota, www.ipums.org. Underlying data from the U.S. Census Bureau.
 48. AB 686 and AB 1771
 49. Areas in every region of the State whose characteristics have been shown by research to support positive economic, educational, and health outcomes for low-income families – particularly long-term outcomes for children.
 50. Adding to the limitation of resources to support affordable housing, State bonds are now competitive. Each state receives an annual federal allowance of tax-exempt, private activity bonds that can be issued to support public-serving projects including affordable housing. For nearly 15 years, California had not used all of its annual bond capacity but that changed this year, forcing the state to award bonds competitively and reducing availability. Because 4% Low Income Housing Tax Credits (LIHTC) must be paired with these bonds, the limit on bond availability also effectively limits LIHTC. MOHCD's affordable housing development pipeline is likely to slow down as a result of the slowing economy and the State bond shifts.
 51. Griscom, B. W. et al, "[Natural Climate Solutions](#)." Proceedings of the National Academy of Sciences Oct 2017, 114 (44) 11645-11650; DOI: 10.1073/pnas.1710465114
 52. San Francisco Department of the Environment, [Biodiversity Policy History](#), 2018
 53. Carbon Cycle Institute, "[Carbon Farming](#)," 2021
 54. Convention on Biological Diversity, [5th Edition Global Biodiversity Outlook](#), September 2020.
 55. World Wildlife Fund, [Living Planet Report](#), 2020.
 56. United Nations Environment Program, [Spotlight on Nature and Biodiversity](#), August 2021.
 57. Conservation International, [Definition of Global Biodiversity Hotspots](#), 2021
 58. White House Administration and President Joseph R. Biden, [Executive Order on Tackling the Climate Crisis at Home and Abroad](#), January 2021.
 59. State of California Executive Department and Governor Gavin Newsom, [California Executive Order N-82-20](#), October 2020.
 60. Kardan, O., Gozdyra, P., Mistic, B. et al. "Neighborhood greenspace and health in a large urban center." Scientific Reports 5, 11610 (2015). <https://doi.org/10.1038/srep11610>
 61. Dadvand, P. et al. "Green spaces and cognitive development in primary schoolchildren." Proceedings of the National Academy of Sciences June 30, 2015; 112 (26) 7937-7942; first published June 15, 2015; <https://doi.org/10.1073/pnas.1503402112>
 62. Griscom, B. W. et al, "[Natural Climate Solutions](#)." Proceedings of the National Academy of Sciences Oct 2017, 114 (44) 11645-11650; DOI: 10.1073/pnas.1710465114
 63. Office of the High Commissioner for Human Rights (OHCHR), "[The impact of climate change on the rights of persons with disabilities](#)," 2021
- * ** The equity rating in this co-benefits slider was assigned independent of the application of the Racial and Social Equity Assessment Tool (RSEAT). More information on the RSEAT is in Appendix D

APPENDICES

GLOSSARY OF CAP TERMS

APPENDIX A

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

| Term | Definition <i>* From San Francisco Office of Racial Equity Citywide Racial Equity Framework</i> |
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| Adaptive Reuse | Adaptive reuse prioritizes re-using existing sites and buildings instead of tearing down and rebuilding anew, greatly reducing the environmental impacts of development and construction. |
| American Indian | “American Indian” is terminology that has been commonly used by several local American Indian organizations, tribes, and community members. It is important to note however, that whenever feasible, American Indian people traditionally prefer to be identified by their tribal affiliation name (e.g. Ramaytush Ohlone). While the term American Indian is being used for purposes of uniformity in the Climate Action Plan (CAP) people should have the sovereignty and autonomy to describe themselves. Terminology used by organizations representing and serving tribal communities varies and can include American Indian, Native American, and Indigenous. ¹ |
| Bias* | Bias is prejudice in the evaluation of one group and its members relative to another. Acting on bias can be discriminatory and when combined with power, can create negative outcomes for particular groups. Implicit bias is when bias is unconscious, as racial bias often is. Explicit bias refers to conscious prejudice against a group or groups. When addressing bias, for example in a process or individual, the focus should not be on intent, but rather on the impact and outcomes that result. |
| Biodiversity | Biodiversity refers to all the different kinds of life that make up our natural world that can be found in a specific geographic area, including animals, plants, fungi, and microorganisms, such as bacteria. |
| BIPOC | Terms such as People of Color (often abbreviated as “POC”) and Black, Indigenous and People of Color (often abbreviated as “BIPOC”) serve to unify and affirm the parallel experiences of various individuals and diverse peoples into a collective group as a way to build power, unity, belonging and support for changes that benefit the whole group. ² Specifically naming American Indian and Black people acknowledges they have and continue to face the worst impacts of white supremacist culture. ³ When sufficient data and information are available, it is best to name specific races and ethnicities. |
| Buildings as Material Banks | Treating buildings as stores of valuable materials that can be reused or repurposed over time, thus reducing waste and demand for virgin resources. |

¹ Definition provided by [American Indian Cultural District](#)

² San Francisco Planning Racial & Social Equity Initiative Working Definition

³ San Francisco Office of Racial Equity [Citywide Racial Equity Framework](#)

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| Biosolids | Biosolids are a nutrient-rich organic material resulting from the treatment and physical separation of liquids and solids at a wastewater treatment plant. Biosolids contain essential plant nutrients and organic matter and are typically recycled as a fertilizer and soil amendment, and new research shows it can increase soil's ability to sequester carbon from the atmosphere. |
| Carbon | Carbon is a ubiquitous element on Earth, most of which is stored in rocks and is essentially inert on the 100's to 1000's-of-years timescales of interest to humans. The rest of Earth's carbon is stored as CO ₂ (carbon dioxide) in the atmosphere (2%), biomass in land plants and soils (5%), as fossil fuels in a variety of geologic reservoirs (8%), and as a collection of ions in the ocean (85%). |
| Carbon Farming | Carbon farming involves implementing advanced agricultural practices including strategic use of local, seasonal, native, and organic farming methods that are known to improve the rate at which carbon dioxide is removed from the atmosphere and converted to plant material and soil organic matter. |
| Carbon Footprint | A carbon footprint is the estimated amount of greenhouse gases (GHGs) emitted as a result of individual or organizational activities. |
| Carbon Neutral | Carbon neutral goals lead to no net release of GHGs to the atmosphere through a combination of direct emissions reductions and offsetting any remaining emissions with carbon sequestration techniques that utilize natural systems, such as tree planting and soil building. |
| Carbon Sequestration | Carbon sequestration is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils. Carbon that is sequestered in forests and wood products helps to offset emissions sent to the atmosphere from fossil fuels, deforestation, forest fires. |
| Central Utility Plant (CUP) | A central utility plant (CUP) is the epicenter of the mechanical, electrical, and sometimes plumbing systems that serve a building or multiple buildings on a site. |
| Climate Action | Climate action means developing and implementing strategic and focused efforts to reduce GHG emissions and strengthen community resilience to climate impacts. Examples include integrating emissions reduction measures into local, state and federal policies and planning efforts, and providing targeted education, marketing, and funding for implementation of measures. |
| Climate Change | Climate change describes statistically significant fluctuations in average conditions, such as rainfall levels, and surface and ocean temperatures |

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| | measured in a region over a long period of time, that are caused by an excess build-up of human-caused carbon emissions in the atmosphere (i.e. the greenhouse effect). Other key indicators of climate change include rising sea levels, glacier loss, and dramatic changes in animal migration patterns. |
| Climate Pollution | Climate pollution is a general term used to describe all GHGs generated primarily from the burning of fossil fuels emitted into the atmosphere. |
| Community Choice Aggregation | Community Choice Aggregation (CCA) refers to local government programs that aggregate electricity demand within their jurisdictions and procure electricity on behalf of all community members, which is delivered through existing transmission and distribution infrastructure. CCAs must be enabled by state policy (AB 117 in California). |
| Community Solar | Community solar refers to a shared solar photovoltaic (PV) system that allows individual electricity customers without the physical means to install such a system (such as multi-unit apartment dwellers) to access a share of the clean electricity generated by that system, through a special agreement with their power provider. |
| Congestion Pricing | Congestion pricing is a program being explored by the SF County Transportation Authority that would charge a fee to drive downtown at rush hours to reduce traffic and achieve goals for street safety, clean air, and equity. Congestion Pricing in San Francisco would combine a fee with income-based discounts, exemptions, and incentives to make the system fair and encourage the use of sustainable transportation modes like transit, walking, and biking. |
| ConnectSF | ConnectSF is the city’s long-range transportation planning program, which examines future travel demand and potential transportation investments to meet this demand. ConnectSF will identify policies and major transportation investments to build an effective, equitable, and sustainable transportation system for San Francisco’s future. The program involves the SF Planning Department, SF Municipal Transportation Agency, and SF County Transportation Authority. |
| Consumption-based Emissions Inventory (CBEI) | Consumption-based emissions inventories, as opposed to a sector based GHG emissions inventory, use a full lifecycle accounting method that sums up the GHGs of all energy, transportation, food, goods, and services consumed by San Francisco households and governments, regardless of where they were released to the atmosphere. |
| Cross-laminated Timber (CLT) | Cross-laminated timber is part of a class of products known as “mass timber.” CLT, refers to any large-scale, prefabricated, solid engineered wood panel used for building construction. Lightweight yet very strong, with superior acoustic, fire, seismic, and thermal performance, CLT is also fast |

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| | and easy to install, generating almost no waste onsite. CLT offers design flexibility and low environmental impacts ⁴ . |
| Cultural competence | Cultural competence is the ability to understand, communicate with, and effectively interact with people across cultures. Grounded in the respect and appreciation of cultural differences, cultural competence is demonstrated in the attitudes, behaviors, practices, and policies of people, organizations, and systems. ⁵ |
| Decarbonization | Decarbonization is commonly used to refer to eliminating the emissions resulting from the operation of a building, appliance, vehicle, or infrastructure. The term may also be used to refer to emissions resulting from the manufacture and distribution of material goods. |
| Decommissioning | Decommissioning involves withdrawing an existing asset (e.g. a building, infrastructure, or similar types of property) from service, such as by rendering it inoperable, removing it, or repurposing it. |
| Deconstruction | Deconstruction is the systematic dismantling and removal of a building or structure or its parts, in the reverse order of construction, to maximize the salvaging of building components that can be saved and reused for their original purpose or for better recycling. |
| Design for Disassembly (DfD) | Design for Disassembly (DfD) is a building design and construction process that allows for the easy recovery of products, parts, and materials when a building is disassembled or renovated in the future. DfD involves developing the assemblies, components, materials, construction techniques, and information and management systems in order to maximize economic value and minimize environmental impacts through reuse, repair, remanufacture and recycling. ⁶ |
| Disadvantaged Communities (as identified by CalEnviroScreen) | Disadvantaged Communities (DACs) in California are geographic areas that are specifically targeted for investment of Cap & Trade proceeds. In 2012, the Legislature passed SB 535, directing that 25 percent of the proceeds from Cap & Trade revenues go to projects that benefit disadvantaged communities. Census tracts are designated as DACs by CalEnviroScreen . The term “Disadvantaged” does not describe any intrinsic characteristic of a population group, but rather a failure of society which has rendered them at a disadvantage. |
| Disadvantaged Worker | The CAP uses “disadvantaged worker” as a general term to describe residents who reside in areas with high rates of unemployment, have low household incomes, or face barriers to employment. Programs such as San |

⁴ Source: Engineered Wood Association, <https://www.apawood.org/cross-laminated-timber>.

⁵ CSSP (2019). “Key Equity Terms and Concepts: A Glossary for Shared Understanding.” Washington, DC: Center for the Study of Social Policy. Available at: <https://cssp.org/resource/key-equity-terms-concepts/>.

⁶ Source: “Design for Disassembly (DfD) Guide, King County,” <https://kingcounty.gov/depts/dnrp/solid-waste/programs/green-building/construction-demolition/disassembly.aspx>. Authors: Brad Guy and Nicholas Ciarimboli.

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| | Francisco's First Source Hiring or regional workforce development programs may have their own specific criteria for identifying disadvantaged workers. |
| Discrimination | Discrimination includes negative or positive actions or treatment towards members of a particular group based on their membership of that particular group. ⁷ |
| Displacement | Residential and commercial displacement is the process by which a household or commercial tenant is forced to move from its residence or place of business. ⁸ A stable community is one that provides existing residents and businesses the choice to stay in the neighborhood rather than be forcibly displaced as change and pressures occur. ⁹ |
| Ecological Management | Ecological management is an integrated approach to living in nature that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation. |
| Efficient and All-Electric | Efficient and all-electric systems meet a minimum energy efficiency performance level while also transitioning away from fossil fuels to renewable electricity as the exclusive fuel source for a building, building system, or process. |
| EV (electric vehicle) | An electric vehicle is a motor vehicle that uses an electric motor as the basis of its operation. Such vehicles emit virtually no air pollutants. |
| Electrification | Electrification involves switching buildings and vehicles that currently use fossil fuels (e.g. natural gas, gasoline, and diesel) to operate on renewable electricity. |
| Embodied Carbon | Embodied carbon is the sum of all GHG emissions (mostly carbon dioxide) resulting from the mining, harvesting, processing, manufacturing, transportation and installation of any type of material good, but often refers specifically to building materials. |
| Energy Efficiency | Greater energy efficiency means using less energy to perform a task. |
| Environmental Justice | Environmental justice is the equitable distribution of environmental benefits and elimination of environmental burdens to promote healthy communities where all San Franciscans can thrive. Government can foster |

⁷ SF Planning Racial and Social Equity Initiative Action Plan Phase I: https://default.sfplanning.org/Citywide/racial-social-equity/RSEAP_Action_Plan_Phase_1_Adopted_Dec2019.pdf

⁸ UC Berkeley Urban Displacement Project

⁹ SF Planning Community Stabilization Report 2019

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| | environmental justice through processes that amend past injustices while enabling proactive, community-led solutions for the future. ¹⁰ |
| Equity* | Equity entails full and equal access to opportunities, power and resources, whereby all people may thrive and prosper regardless of demographics. |
| Fast Charging Hub | A fast charging hub refers to a facility or site with multiple, publicly accessible, fast or ultra-fast charging stations for fueling electric cars and trucks. |
| Feed-in Tariff | A feed-in tariff is a method for paying electricity generators at a guaranteed price and fixed term. They have proven to be a useful tool to support the growth of small, local renewable electricity generation and clean energy jobs within the community. |
| Form-Based Zoning | Form-based zoning is a method of creating mixed-use, walkable neighborhoods which uses physical metrics and criteria (e.g. building heights, mass and set-backs with well-proportioned street and sidewalk dimensions) instead of other more conventional land use and zoning approaches (e.g. housing units/square area) |
| Fossil Fuels | Fossil fuels are made from decomposed plants and animals stored in the Earth's crust and are comprised of carbon and hydrogen. Extracted from the ground in ways that are destructive to ecosystems and habitats and human health, the raw matter is then processed, refined, transported, stored, and burned for energy. Fossil fuels emit large amounts of GHGs throughout their entire lifecycle. Coal, oil, and natural gas are common examples of fossil fuels. |
| Gentrification | Gentrification is a process of neighborhood change that includes economic change in a historically disinvested neighborhood—by means of real estate investment and new higher-income residents moving in—as well as demographic change—not only in terms of income level, but also in terms of changes in the education level or racial make-up of residents. ¹¹ Gentrification is often used as a politicized term with different meanings depending on the context and author. ¹² |
| Greenhouse Gases (GHG) | Greenhouse gases (GHGs) are known climate pollutants measured or calculated to assess their impact on climate change. GHG's include all of the following: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are typically expressed in the units of metric tons of carbon dioxide equivalents (mtCO ₂ e). |

¹⁰ San Francisco Planning's working definition, adapted from EJ principles from First National People of Color Environmental Leadership Summit

¹¹ Urban Displacement Project, <https://www.urbandisplacement.org/gentrification-explained>

¹² SF Planning [Community Stabilization Report](#) 2019

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| Heat Pump | A heat pump is a device that moves thermal energy from one place to another via mechanical compression and evaporation. A kitchen refrigerator, which cools food by moving heat out from the inside, is a common everyday example. In the building context, heat pumps use renewable electricity instead of natural gas to provide space heating and cooling and water heating at 3 to 5 times higher efficiency. |
| High-Opportunity Areas | High-opportunity areas are designated census tracts with characteristics that support positive economic, educational, and health outcomes for low-income families when affordable housing is located in those areas. These characteristics include addressing racial segregation, educational attainment and achievement, income and job proximity, and environmental health. ¹³ |
| Housing Sustainability District | Housing sustainability districts are defined by Assembly Bill No. 73 (Planning and Zoning: Housing Sustainability Districts Program, 2016) which allows a city or county to create such districts in areas with existing infrastructure and public transportation. These districts can be zoned at higher densities. An environmental impact report (EIR) is completed at the front end (e.g., time of designation), and there is streamlined review on any cases challenging the EIR. In exchange, local governments receive incentive payments from the state. |
| Integrated Resource Plan | An integrated resource plan forecasts the energy resources needed, typically electricity, that a utility or community choice aggregator will need to generate and deliver in order to serve its customers over a period of time. |
| Just Transition | Just Transition is a strategy to shift away from fossil fuels to a low-carbon future while protecting fossil fuel communities and workers, as well as communities who have historically suffered from the pollution from those industries. ¹⁴ |
| Inclusion* | Inclusion means authentically bringing traditionally excluded individuals and/or groups into processes, activities and decision and policy making in a way that shares power. ¹⁵ |
| Intersectionality* | Intersectionality is a concept and frame coined by Professor Kimberlé Crenshaw in 1989 that describes a lens for seeing the way in which various forms of inequality often operate together and exacerbate each other. Rather than seeing race inequality as separate from inequality based on gender, class, sexuality or immigrant status, for example, it recognizes that |

¹³ California Fair Housing Task Force Methodology for the 2021 TCAC/HCD Opportunity Map December 2020, <https://belonging.berkeley.edu/2021-tcac-opportunity-map>.

¹⁴ <https://dornsife.usc.edu/eri/just-transition/>

¹⁵ Authentically bringing traditionally excluded individuals and/or groups into processes, activities, and decision/policy making in a way that shares power. OpenSource Leadership Strategies Some Working Definitions

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| | some people are subject to all of these, and the experience is not just the sum of its parts. ¹⁶ |
| Location Efficient | A building or neighborhood is location efficient when jobs, a variety of retail and services, convenient transit, and safe sidewalks and biking paths are all within close proximity. |
| Kitchen Zero | Kitchen Zero is a state-funded food waste prevention pilot program ¹⁷ that works with 20 institutional kitchens to install special hardware and software that aims to reduce food waste and costs while directing unused edible food to charities. |
| Marginalization | Marginalization is a process that occurs when members of a dominant group relegate a particular group to the edge of society by not allowing them an active voice, identity, or place for the purpose of maintaining power. ¹⁸ |
| Modular Housing | Modular house is constructed by first building sections “off-site” using robotic assembly, then shipped to a construction site where it is put together on a foundation. When done well, this method can reduce building costs and overall construction times. |
| Muni Forward | Muni Forward is a program of the SF Municipal Transportation Agency, which aims to help people get around San Francisco faster, more reliably, and more safely by expanding the Muni Rapid network, making new connections, and giving Muni customers priority on congested streets. |
| Natural Gas | Natural gas as it is commonly known, is a flammable gaseous product primarily consisting of methane used as a source fuel for electricity generation and heating fuel for buildings. Natural gas is primarily extracted from underground hydrocarbon formations by environmentally-harmful methods such as drilling and hydraulic fracturing (“fracking”), and generates emissions that are approximately 80 times more potent than carbon dioxide throughout its refinement, transport, storage, and final delivery to power plants and consumers (via system leakage). Burning natural gas in common household appliances is known to produce harmful indoor air pollution that causes respiratory disease and increases rates of asthma. Additionally, gas plumbing poses serious fire, explosion, and public safety risks; after the 1989 earthquake, gas line ruptures may have been a factor in 34% of post-earthquake fires in San Francisco ¹⁹ . |

¹⁶ Adapted from <https://time.com/5786710/kimberle-crenshaw-intersectionality/>

¹⁷ For more information about Kitchen Zero, visit: https://sfenvironment.org/sites/default/files/fliers/files/kzsf_factsheet.pdf.

¹⁸ CSSP (2019). “Key Equity Terms and Concepts: A Glossary for Shared Understanding.” Washington, DC: Center for the Study of Social Policy. Available at: <https://cssp.org/resource/key-equity-terms-concepts/>.

¹⁹ Improving Natural Gas Safety in Earthquakes, California Seismic Safety Commission (2002), see https://ssc.ca.gov/wp-content/uploads/sites/9/2020/08/cssc_2002-03_natural_gas_safety.pdf.

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| Nature-based Solutions | Nature-based solutions are climate solutions inspired and supported by nature that provide social, economic, and environmental benefits. Nature-based solutions also help build resilience by supporting a range of ecosystem services (e.g. plants that help control stormwater flows) and biodiversity. |
| Net Metering | Net metering involves an agreement with the local utility which allows customers with a renewable energy system, such as rooftop solar panels, to exchange the value of surplus electricity generated by their system for a credit toward their bill for roughly the same amount it would cost to buy it directly from the utility. |
| Net Zero Emissions | Net zero emissions refers to the reduction and sequestration (removal) of GHGs from the atmosphere in a quantity equivalent to what an activity (building operations, vehicle fuels, waste disposed to landfill), or any combination of activities, emits. In the context of the San Francisco Climate Action Plan, net zero is measured against a sector-based emissions inventory. Specific to this Plan, “Building Operations” and “Transportation” refer to carbon pollution directly and indirectly emitted by operations, while “Responsible Production and Consumption” addresses life-cycle emissions from the production or consumption of goods and services. However, these emissions are not yet included in the City’s official GHG inventory since measurement is an emerging science, especially at a city scale. This term is similar to “carbon neutral” (see above). |
| Non-Revenue Fleet | The City’s non-revenue fleet includes any vehicle not used to generate revenue, such as trucks used in maintenance and vehicles used to transport department staff. |
| Protected Bike Lanes | Protected bike lanes are exclusive bicycle lanes, paths, and similar amenities that use different types of barriers (e.g. curbs, flexible delineator posts, permanent planters, other raised features, and sometimes parking) to separate bicyclists from motor vehicle traffic. |
| Racial Equity* | Racial equity encompasses a set of social justice practices rooted in a solid understanding and analysis of historical and present-day oppression, aiming towards a goal of fairness for all. As an outcome, achieving racial equity would mean living in a world where race is no longer a factor in the distribution of opportunity. As a process, racial equity is achieved when those most impacted by systemic racial inequities are meaningfully involved in the creation and implementation of the institutional policies and practices that impact their lives. ²⁰ |
| Redlining | Redlining is a practice through which federal and local governments and financing entities systematically denied public and private financial services to Black and other people of color. This set of practices included |

²⁰ Adapted from Anti-Oppression Resource and Training Alliance (AORTA)

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| | both race and environmental factors as criteria in assessing the perceived credit-worthiness of neighborhoods and led to many of the environmental disparities we see affecting communities of color today. ²¹ |
| Renewable Electricity | Renewable electricity is generated from renewable sources such as wind power, solar power, or hydropower. Renewable electricity produces less GHGs and has a lower environmental footprint than electricity produced from fossil fuels. ²² |
| Renewable Energy | Renewable energy is acquired from naturally replenishing sources such as wind power, solar power, and hydro energy. Although these sources cannot be exhausted, the ability for storage, distribution, and constant flow are limited by current resources. |
| Resilience | Resilience describes the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience. Resilience aims to bridge the gaps between social justice, sustainability, disaster recovery, and other areas. In San Francisco, the term climate resilience is being used to coordinate synergistic efforts that benefit mitigation and adaptation. ²³ |
| R-SEAT | The Racial and Social Equity Assessment Tool (R-SEAT) was developed specifically for the San Francisco Climate Action Plan to evaluate draft strategies and actions for racial and social equity impacts, and identify opportunities to advance positive outcomes for BIPOC, low-income, and other vulnerable populations. R-SEAT was developed by Department of the Environment with critical support from the San Francisco Office Of Racial Equity, San Francisco Department of Public Health, as well as community input from People Organizing to Demand Environmental and Economic Justice (PODER) and Emerald Cities San Francisco Bay Area. |
| Rent Assistance | Rent assistance is financial assistance to help tenants afford rent, i.e. paying no more than 30% of income on rent. This assistance could be one-time aid or ongoing. |
| Responsible Production and Consumption | Responsible Production and Consumption means improving how products, goods and services acquired, used, reused, recycled, and composted to align with the United Nations Sustainable Development Goal (UNSDG) 12. ²⁴ |

²¹ California Environmental Protection Agency (CalEPA), [Pollution and Prejudice: Redlining and Environmental Injustice in California](#), August 16, 2021

²² Specifically, renewable electricity includes energy resources qualifying as renewable pursuant to California Public Resources Code Chapter 8.6, Section 25741(a) and California Public Utilities Code Chapter 2.3, Article 16, Section 399.16(b)(1) or (2), as amended from time to time, or provided by a local publicly owned electric utility subject to California Public Utilities Code Chapter 2.3, Article 16, Section 399.30(j), as amended from time to time.

²³ City and County of San Francisco, [Hazards and Climate Resilience Plan](#), 2020

²⁴ UNSDG 12 suggests that goods and services must meet basic human needs, be socially equitable, minimize environmental impacts over their lifecycle to match the carrying capacity of the earth’s resources and not jeopardize present and future generations.

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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|--|---|
| Sector | Sectors refer to the six areas of the Climate Action Plan, which align with and address the City’s sources of climate pollution, informed by the annual citywide GHG inventory, the Consumption Based Emissions Inventory (CBEI), and existing sustainability and climate action policy and program goals and frameworks. |
| Sector-based, or Conventional Greenhouse Gas (GHG) Emissions Inventory | Sector-based emissions inventories are the typical method cities use to account for greenhouse gases (GHGs) emitted within their geographic/geopolitical jurisdiction. As opposed to the consumption-based emissions inventory (CBEI, see above), sector-based GHGs include only emissions generated within the geographic boundary and administrative control of the City and County of San Francisco. |
| Slow Streets | Slow Streets is a program started by the San Francisco Municipal Transportation Agency (SFMTA) which limits vehicle through-traffic on designated residential streets to encourage safer walking and bike use, allowing people to exercise and recreate in their own neighborhoods. The program has designated at least 30 corridors as Slow Streets. |
| Social equity | Social equity is fairness and justice in the management of public institutions, forming of policy and delivery of public services, taking into account historical and current inequities among groups, such as along gender identity, sex, religion, and disability status. ²⁵ |
| Strategies | In this Climate Action Plan, Strategies refer to the activities designed to achieve a major or overall goal for a Sector. Each Strategy was developed with consideration of the social, economic, policy, data, and governance factors that can inhibit and/or contribute to success. |
| Supporting Actions | Supporting Actions in the Climate Action Plan are the specific steps that will help achieve the overarching Strategy, which may include any combination of policies, programs, outreach, education, or similar activities. |
| Low-carbon modes | Low-carbon modes are ways to travel and get around – such as walking, biking, and taking transit – that generate less greenhouse emissions while advancing other critical city priorities including health, safety, equity, and economic vitality. |
| Systemic racism* | Systemic racism is the joint operation of institutions to produce racialized outcomes, even in the absence of racist intent. Indicators include power inequalities, unequal access to opportunities, and differing policy outcomes by race. Systemic racism is cumulative, pervasive, and durable. |
| Transit Corridors Study | The City’s Transit Corridors Study is part of an investment strategy to assess where major transit capital infrastructure will be made in San Francisco in the medium- and long-term horizon. |

²⁵ San Francisco Planning Racial & Social Equity Initiative Working Definition

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| TNC | Transportation Network Companies (TNC) are also known as “ride-hailing” or “ride sharing applications” which people usually access via their phones to order a ride in a private car. |
| Traditional Ecological Knowledge | Traditional Ecological Knowledge (or TEK) refers to the evolving knowledge acquired by Indigenous and local peoples over hundreds or thousands of years through direct contact with the environment. This knowledge is specific to a location and includes the relationships between plants, animals, natural phenomena, and the landscape that are used for lifeways, such as hunting, fishing, trapping, agriculture, and forestry. TEK is an accumulating body of knowledge, practice, and belief, that encompasses the world view of Indigenous people which includes ecology, spirituality, human and animal relationships, and more. ²⁶ |
| Transmission and Distribution | Transmission and distribution include physical and/or information infrastructure that facilitates the transfer of energy from a generation and/or refining source to where it is consumed. Transmission refers to bulk transfer, such as wholesale delivery of electricity serving an area or region, while distribution refers to the transfer of energy to retail customers, such as individual homes. |
| Vulnerable Populations | <p>“Vulnerable Populations” is an imperfect term which attempts to describe a variety of complicated issues. The specific populations groups encompassed by the term vary from issue to issue. ‘Vulnerable Populations’ does not describe any intrinsic characteristic of a population group, but rather a failure of society which has rendered them vulnerable. Vulnerable populations in the R-SEAT are defined as: older adults, youth, homeless or marginally housed residents, non-English speaking people, immigrants, people with disabilities, people who are socially isolated, and people with pre-existing health conditions.</p> <p>Vulnerable populations in the Housing chapter include seniors, people with disabilities and/or chronic physical or mental health conditions, formerly incarcerated individuals, young adults exiting foster care or other transitional situations, those experiencing domestic violence, and, most visibly, people experiencing homelessness. The Housing sector also uses the term underserved populations to describe those at risk of homelessness, such as the lowest income, and residents of supportive housing buildings.</p> |
| White Supremacy* | White supremacy is a historically based, institutionally perpetuated system of exploitation and oppression of continents, nations, and peoples of color by white peoples and nations of the European continent for the purpose of maintaining and defending a system of wealth, power, and privilege. ²⁷ |

²⁶ <http://climate.calcommons.org/article/tek>

²⁷ Sharon Martinas and the Challenging White Supremacy Workshop, 4th revision (1995). MP Associates and Center for Assessment and Policy Development. (2013). www.racialequitytools.org glossary (PDF). Retrieved from http://www.racialequitytools.org/images/uploads/RET_Glossary913L.pdf

San Francisco Climate Action Plan - 2021

Glossary of Key Terms

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| ZEV (zero emission vehicle) | Vehicles which produce no emissions from the on-board source of power. Examples include regular bicycles, and electric bikes (e-bikes), scooters and cars that use 100% renewable electricity. |
|-----------------------------|--|

COMMUNITY ENGAGEMENT MATERIALS

APPENDIX B



Appendix B-1

San Francisco Climate Action Plan Public Feedback Summary

April 27, 2021

Introduction

This document summarizes public comments received on the draft San Francisco Climate Action Plan (Plan). Specifically, this summary includes public comments collected between December 18, 2020 and March 26, 2021 through the following methods:

- Interactive online open house
- Online survey
- Online workshops
- Pop-up presentations
- Email and phone communication

For detailed responses and feedback, please see supporting documents.

DOCUMENT CONTENTS

| | |
|---------------------------------|----|
| Introduction..... | 1 |
| Engagement Overview..... | 6 |
| Overarching Feedback..... | 8 |
| Individual Sector Feedback..... | 11 |
| Survey Responses..... | 34 |
| Supporting Documents..... | 37 |

PUBLIC ENGAGEMENT OBJECTIVES

The public engagement aimed to achieve the following goals and objectives:

| | |
|------|--|
| Goal | Promote community awareness and knowledge of climate concepts and City climate activities. |
|------|--|



| | | |
|------|---|--|
| A | Objective | Increase awareness of climate impacts and San Francisco’s climate, planning, and resilience programs. |
| | Objective | Convey how climate action, resilience, and equity intersect. |
| Goal | Build community understanding and support for the City’s long-term climate vision and actionable Plan policies. | |
| B | Objective | Clearly communicate the Plan’s focus, boundaries, and intended use, as well as the roles the community and City play in reducing GHG emissions. |
| | Objective | Clarify that Plan strategies are designed to meet emissions targets in the Chapter 9 environment code and are well-vetted and prioritized. |
| Goal | Engage and empower stakeholders to both provide feedback and help with Plan implementation. | |
| C | Objective | Provide opportunities for community members to voice their priorities, concerns, and expectations for implementation strategies. |
| | Objective | Recruit a diverse and committed group of people that are willing to stay involved in Plan implementation. |
| | Objective | Consider and incorporate community input around implementation into the final Plan so that residents feel ownership of the Plan and strongly buy into the actions. |
| Goal | Ensure that equity is a core value reflected within the final CAP. | |
| D | Objective | Solicit feedback about opportunities to advance equity within implementation of Plan strategies. |
| | Objective | Ensure that opportunities to provide feedback are accessible and equitable to community members across demographic indicators such as gender, age, race, ethnicity, language, income, geographic location, immigration status, and access to internet or wifi. |

PUBLIC ENGAGEMENT ACTIVITIES

Throughout this engagement process, a combination of targeted and broad outreach strategies were utilized to reach priority audiences and the general public, respectively (see more information on each method below):

- **Targeted outreach strategies** included amplified outreach through the Community Climate Council, geographically focused and non-English workshops, pop-up presentations, and translated versions of online open house materials and the public online survey.
- **Outreach to the general public** consisted of an online open house, online survey, online workshop series, and phone and email communication.

Participation was promoted at all online workshops, the SFE webpage, and physical flyers distributed throughout San Francisco neighborhoods and underserved communities. Participation in online workshops specifically was promoted through Eventbrite, the SFE webpage, and various social media platforms.

Community Climate Council

The Community Climate Council (CCC) consisted of 11 recruited leaders from San Francisco community-based organizations representing a range of target demographics and stakeholder



groups. Coordination with the CCC was maintained throughout the engagement process, starting with buy-in on the engagement strategies and messaging. An outreach toolkit and training were provided to the CCC members to assist members with engaging contacts, with an emphasis on community members who are typically not involved in public processes or are unlikely to take a survey. The toolkit included Plan factsheets, instructions and talking points, a recorded Plan overview presentation, a briefing PowerPoint Presentation, and a social media strategy.

SFE Webpage

Housed on the SFEEnvironment.org website, the SFE webpage was a central hub of information and an on-going resource to the public. The webpage acted as a go-to landing page for the public to learn about the planning process and ways to get involved.

Key information:

- URL: sfenvironment.org/ClimatePlan

Online Open House

The online open house, housed on the Konveio web platform, provided an opportunity for community members to provide their input on the draft Plan. The online format removed barriers so that participants could provide feedback at a time that is convenient for them and take their time digesting materials. The online open house also housed the online survey (detailed in the section below).

Key information:

- URL: sfclimateaction.konveio.com
- Live for public commenting: December 18, 2020 - March 26, 2021
- Website remains accessible to the public to review draft Plan documents.

Online Surveys

The online survey was housed within the online open house platform and was open through the duration of the online open house. The survey was translated into Spanish and Chinese (and other languages through Google Translate) and included questions regarding Plan strategy/actions, City and community roles, equity, and respondent demographics. Participation in the online survey provided an entry into a raffle for a \$100 Visa Gift card to encourage participation.

Online Workshops

One kick-off webinar and eleven interactive online workshops were held from December 2020 through March 2021 to introduce Plan strategies/actions and gather feedback on Plan content and implementation. Nine workshops were hosted in English, one was hosted in Spanish, and one in Cantonese.



These workshops took place via Zoom during different days of the week and times of the day to foster diverse participation. The workshops typically consisted of a guest speaker, a brief overview presentation of the Plan and Plan process, interactive polls and chat questions, breakout sessions to promote collaborative feedback on Plan strategies and actions.

| WS# | Workshop | Date and Time |
|------|--------------------------------------|--|
| WS1 | Climate & Business | Wed, Dec 9, 2020, 10:00 a.m. -12:00 p.m. PST |
| -- | Kick-off Webinar | Thu, Jan 14, 2021, 5:00-6:30 p.m. PST |
| WS2 | General Workshop Co-hosted with SPUR | Wed, Jan 20, 2021, 12:30-2:30 p.m. PST |
| WS3 | Community Climate Workshop | Thu, Jan 21, 2021, 5:30-7:00 p.m. PST |
| WS4 | Climate & Economy | Wed, Jan 27, 2021, 5:30-7:00 p.m. PST |
| WS5 | Climate & Equity | Tue, Feb 2, 2021, 6:00-7:30 p.m. PST |
| WS6 | Climate & Health | Tue, Feb 9, 2021, 5:30-7:00 p.m. PST |
| WS7 | Climate & Resilience | Thu, Feb 18, 2021, 5:30-7:00 p.m. PST |
| WS8 | Spanish In-language | Tue, Mar 9, 2021, 6:00-7:30 p.m. PST |
| WS9 | Chinese In-language | Thu, March 11, 2021, 6:00-7:30 p.m. PST |
| WS10 | Community Climate Workshop | Fri, Mar 19, 2021,12:30-2:00 p.m. PST |
| WS11 | Community Climate Workshop | Sat, Mar 20, 2021, 10:00-11:30 a.m. PST |

Pop-up Presentations

To engage interested local organizations, SFE offered to host small presentations to inform about the Plan and gather community feedback. Eleven pop-up presentations were held between February 24, 2021 through March 16, 2021 for the following organizations:

- Bayview Hunters Point Environmental Justice Taskforce
- Building Owners and Managers Association (BOMA) San Francisco
- CNPS Yerba Buena, Golden Gate Audubon Society, California Academy of Sciences, Nature in the City, Wildfires to Wildflowers, San Francisco Estuary Institute Urban Nature Lab, Sutro Stewards, Presidio Trust, Literacy for Environmental Justice, Farallon Islands Foundation, Designintent Landscape Architects
- Japantown Task Force
- Pacific Heights Residents Association
- SF Yimby, Urban Environmentalists
- SFUSD Balboa High School - 12th Grade Environmental Science Class
- SFUSD BIPOC Climate Justice Council
- SFUSD Lincoln High School - 10th Grade Green Academy
- Sunrise Movement - Bay Area Hub
- Zero Waste Youth USA



Email and Phone Communication

For those who were not able to join an online workshop and/or participate in the online open house, a phone number and email was provided to answer any questions or receive any feedback. SFE assigned staff to respond to inquiries in English, Spanish, and Chinese throughout the engagement period.

- climate@sfenvironment.org
- (415) 409-8228

Nine emailed letters were received from the following stakeholder groups:

- Alameda County Waste Management Authority (StopWaste)
- Bayview Hunters Point Mothers & Fathers Committee Greenaction for Health and Environmental Justice
- Building Owners and Managers Association (BOMA) San Francisco
- Collaborative letter from Golden Gate Audubon Society, Nature in the City, Wildfires to Wildflowers, and Yerba Buena Chapter of the California Native Plant Society
- Livable City
- Nature in the City
- San Francisco Transit Riders
- Wildfires to Wildflowers
- Yerba Buena Chapter of the California Native Plant Society

No phone calls were received during the engagement process.



Engagement Overview

PARTICIPANT SUMMARY

Through the platforms and methods of engagement below, **238,845 people were reached** during this engagement (saw postings/landed on pages). Of the people reached, **5,777 people were engaged** during this process (took the survey, attended an online workshop, interacted with social media content, etc.). Note that these totals represent total interactions and may double count individuals that engaged across multiple platforms.

| Method | # Reached | # Engaged |
|----------------------|----------------|--------------|
| Online survey | 2,078 | 800 |
| Online open house | 12,285 | 1,405 |
| Workshops + Pop-ups | 1,793 | 1,448 |
| Social media | 220,642 | 1,829 |
| City webpage | 4,143 | 419 |
| Email communications | 389 | 61 |
| Total | 241,330 | 5,962 |

WORKSHOP AND POP-UP PRESENTATIONS SUMMARY

Many participants attended the kick-off webinar via Zoom or Facebook live (50% of total attendance). Among interactive workshops, the Climate & Resilience workshop received the most registrants and the Climate & Equity workshop was most highly attended. Twenty eight percent of workshop attendees responded to the demographic survey.

| Workshop | Attendees | Registrants | Attendance Rate | # | % |
|-----------------------|-----------|-------------|-----------------|--------------------------|--------------------------|
| | | | | Responded to Dem. Survey | Responded to Dem. Survey |
| Kick-off Webinar | 652* | 543** | 120% | N/A | N/A |
| Business | 18 | 18 | 100% | 14 | 78% |
| SPUR | 64 | 128 | 50% | 21 | 33% |
| General | 24 | 45 | 53% | 8 | 33% |
| Climate & Economy | 70 | 99 | 71% | 26 | 37% |
| Climate & Equity | 122 | 176 | 69% | 46 | 38% |
| Climate & Health | 59 | 120 | 49% | 22 | 37% |
| Climate & Resilience | 62 | 187 | 33% | 29 | 47% |
| Chinese | 103 | 160 | 64% | 68 | 66% |
| Spanish | 25 | 28 | 89% | 5 | 20% |
| Community Workshop #1 | 23 | 43 | 53% | 14 | 61% |
| Community Workshop #2 | 12 | 32 | 38% | 9 | 75% |



| | | | | | |
|--|--------------|--------------|------------|------------|------------|
| SFE-led Pop-ups | 64 | 64 | 100% | 64 | 100% |
| Total | 1,171 | 1,643 | 71% | 326 | 28% |
| <i>*Number includes viewers from Zoom Meeting (525) and Facebook live (127).</i> | | | | | |
| <i>**No registration available for Facebook Live.</i> | | | | | |

ONLINE SURVEY SUMMARY

The online survey received 800 responses.

ONLINE OPEN HOUSE SUMMARY

There were 2,837 visitors to online open house who provided a total of 487 comments on the draft Plan materials.

| Metric | Value |
|----------------------------------|-------|
| # of unique visitors | 2,837 |
| # of site visits | 4,929 |
| Average time spent on page (sec) | 183 |
| # of comments | 487 |

SOCIAL MEDIA SUMMARY

Plan-related activity on social media is summarized below.

| KPI | Value |
|---------------------|---------|
| # Posts | 155 |
| # Impressions | 178,725 |
| # Clicks | 418 |
| # Reactions (likes) | 899 |
| # Shares | 157 |



Overarching Feedback

The following table presents themes from overarching, cross-sectoral feedback. Feedback shaded in grey are top recurring comments emphasized across engagement methods.

| Theme | Feedback |
|---|---|
| City’s role | Participants would like the City’s main roles to be providing 1) incentives and 2) regulation .* |
| Affordability | Participants frequently worried about strategy implications for affordability and who would incur the costs. They identified the lack of affordable alternatives as a potential barrier to Plan success. |
| Interagency collaboration & partnerships | Participants requested more interagency collaboration and partnerships with organizations to reduce inefficiencies, create a more unified and consistent approach, and consider potential for scalability across departments and regions. |
| Cross-sectoral approach | Participants acknowledged the interconnectivity of strategies and sectors and supported a collaborative, cross-sectoral approach. |
| Transparency & accountability | Participants support action-oriented goals , clear metrics , and straightforward and transparent progress reporting and emissions tracking . |
| Equity | Participants feel the top two ways the City can be fair and equitable are: 1) funding and support , and 2) establishing shared decision-making and leadership roles with community leaders and organizations .* Participants requested non-digital community outreach in addition to digital. |
| Community role | Participants wished for more education and outreach to empower communities to implement the Plan. Participants also questioned whether the burden of implementation and the penalization of noncompliance should fall on the communities, as opposed to corporations or the City. |
| Workforce development | Participants desired support for workforce development within the local, low-income, and BIPOC communities—including working with students to pursue environmental careers and supporting small businesses to build hiring and training capacity. Participants were also interested in offsetting potential job losses by training existing workforces that would be most affected by Plan implementation. |
| Streamline codes and permitting | Participants cautioned that complicated and time-intensive codes and permitting processes may impede progress toward climate goals. |
| Strategy analysis | Participants expressed concern that certain strategies or poor implementation may increase GHG emissions and deepen racial and socioeconomic inequities. They asked for more rigorous, transparent, and consistent analyses of strategy effectiveness . |



| Theme | Feedback |
|--|---|
| Alignment of existing policies & programs | Participants expressed concerned that the City will use up its resources on the Plan at the expense of ongoing efforts (i.e., current activities would be put on hold). |

* Response prompted from survey question.

ONLINE OPEN HOUSE COMMENT SUMMARY

Page Views

The homepage, survey page, and Plan Overview pages were the most visited on the online open house site. The highest-visited sector pages were Transportation & Land Use, Building Operations, and Healthy Ecosystems.

| Page | # Views | % of Views |
|--------------------------------------|---------------|-------------|
| Home | 12,285 | 65% |
| Survey | 2,078 | 11% |
| Plan Overview | 1,405 | 7% |
| Full List Strategies & Actions | 952 | 5% |
| Summary | 393 | 2% |
| Transportation & Land Use | 314 | 2% |
| Building Operations | 390 | 2% |
| Healthy Ecosystems | 343 | 2% |
| Energy Supply | 236 | 1% |
| Responsible Production & Consumption | 221 | 1% |
| Housing | 189 | 1% |
| Glossary of Key Terms | 43 | <1% |
| Total | 18,849 | 100% |



Comments, by Page

The following table summarizes the content and tone of comments received through the online open house, by page, as identified by the Konveio software.

| Page | # Comments | # Commentors | % Questions | % Suggestions | % Negative | % Neutral | % Positive |
|--------------------------------------|------------|--------------|-------------|---------------|------------|------------|------------|
| Home | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Survey | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Plan Overview | 149 | 57 | 20% | 80% | 28% | 67% | 11% |
| Full List Strategies & Actions | 116 | 20 | 5% | 95% | 22% | 69% | 11% |
| Summary | 48 | 12 | 25% | 58% | 29% | 62% | 16% |
| Transportation & Land Use | 49 | 22 | 22% | 78% | 24% | 61% | 15% |
| Building Operations | 24 | 14 | 27% | 73% | 26% | 65% | 9% |
| Healthy Ecosystems | 54 | 19 | 12% | 88% | 18% | 66% | 16% |
| Energy Supply | 11 | 7 | 27% | 73% | 46% | 46% | 9% |
| Responsible Production & Consumption | 19 | 13 | 27% | 73% | 27% | 73% | 0% |
| Housing | 16 | 8 | 14% | 86% | 52% | 48% | 0% |
| Glossary of Key Terms | 1 | 1 | 0% | 100% | 0% | 0% | 100% |
| Total/Average | 487 | 173 | 18% | 80% | 27% | 56% | 19% |

Comments, by Topic

Comment distribution—including sector-relevant comments from the “Plan Overview”, “Summary”, and “Full List of Strategies” pages—are presented below.

| Building Operations | Energy Supply | Healthy Ecosystems | Housing | Responsible Production & Consumption | Transportation & Land Use | Other |
|---|---------------|--------------------|---------|--------------------------------------|---------------------------|-------|
| Online Open House - Total Comments | | | | | | |
| 48 | 28 | 159 | 53 | 46 | 112 | 19 |

Individual Sector Feedback

This section summarizes public comments received specific to individual Plan sectors. Feedback within each table and table sub headers are presented in ascending order from most common feedback heard to less commonly heard. Feedback shaded in grey, are recurring comments that were most emphasized throughout the methods of engagement. “Konveio” refers to comments posted on the online open house documents.

Notes (applicable to all sector feedback tables below):

“Where Heard” Column key:

WS1-10: Online Workshops 1 through 10

Konveio: Online Open House

Survey: Online Survey

Email: Feedback provided via email

Pop-up: Pop-up presentations

Underserved Communities/Minority Voices: includes feedback from: Equity workshop, Spanish in-language workshop, Chinese in-language workshop, SFUSD BIPOC Climate Justice Council, Japantown Task Force, and Bayview Hunters Point Environmental Justice Taskforce.

Themes with an asterisk (*) represent themes that overlapped among Underserved Communities/Minority Voices and general community feedback.

BUILDING OPERATIONS

| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---|---|---------------------|------------------------------------|
| Areas of Support | | | |
| Workforce development | <ul style="list-style-type: none"> Support for developing workforce while meeting clean energy goals. Interest in retraining existing workforce to address concerns that electrifications will lead to job losses. | BO 3 | WS1, WS4, WS6, WS7, Konveio, Email |
| Building electrification & incentives | <ul style="list-style-type: none"> Support for replacing high-emitting appliances with electric alternatives, provided these alternatives indeed emit less carbon and are affordable. Support for residential electrification incentives/rebates. | BO 1, BO 2 | WS5, WS7, Konveio, Email, Survey |
| New and existing building developments and retrofits | <ul style="list-style-type: none"> Support for passive house building measures. Support for requiring solar installation on new/existing buildings. | BO 1; BO 2 | Konveio |
| | | BO 1, BO 2 | WS7, Konveio |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|---|---------------------|--------------------------|
| | <ul style="list-style-type: none"> Support for City setting an aggressive timeline for buildings to replace/switch to low-impact or natural refrigerants. | BO 4 | Konveio, WS1 |
| Grid resiliency | <ul style="list-style-type: none"> Support for efforts to increase building and electric grid resiliency in the event of natural disasters, power outages, and sea level rise. | BO 1, BO 2 | WS1, WS7, Konveio, Email |
| GWP refrigerants | <ul style="list-style-type: none"> Support for addressing high-GWP refrigerants. | BO 4 | Email |
| Areas for Improvement | | | |
| Direct homeowner outreach | <ul style="list-style-type: none"> Interest in providing more direct outreach to individual homeowners. | BO 1, BO 2, BO 4 | WS2, WS5, WS6, Konveio |
| Water resilience | <ul style="list-style-type: none"> Interest in including strategies that focus on water consumption of buildings, especially as it relates to climate resiliency. | BO 1, BO 2 | WS1, WS4, WS7, Konveio |
| Transparency & tracking | <ul style="list-style-type: none"> Interest in a more accurate analysis of tracking emissions instead of the current WRI market-based. Interest in transparent/updated metrics of energy efficiency available on a website and environmental impact of storage technologies. | BO 1, BO 2 | WS7, Konveio |
| Banning natural gas in new construction | <ul style="list-style-type: none"> Confusion regarding goals and if “new buildings” include residential, commercial, and mixed-use buildings. | BO 1 | WS2, WS3, Konveio |
| Building codes and permits | <ul style="list-style-type: none"> Concern that complicated building codes and permitting processes would make it difficult to decarbonize existing and new buildings. Interest in applying permit compliance checking for appliance replacements. Interest in requiring 100% carbon-free power in all new buildings in 2021. | BO 1, BO 2 | Konveio, Email |
| Energy efficiency in MF/existing | <ul style="list-style-type: none"> Interest in installation energy efficient appliances in multifamily construction and existing buildings. | BO 1, BO 2 | WS4, Survey |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|---|---------------------|-------------------------------------|
| Contractor list | <ul style="list-style-type: none"> Interest in City suggesting experts and qualified contractors to support transition and to help residents and property owners make plans. | BO 2 | WS1, WS4 |
| Grid resiliency | <ul style="list-style-type: none"> Interest in creating grid relationships beyond the building level (resilient infrastructure at the block/neighborhood scale). | BO 1, BO 2 | WS1 |
| Commercial buildings | <ul style="list-style-type: none"> Concern that Plan does not acknowledge that fuel switching for commercial buildings, when compared to residential buildings, is more complex and would therefore require more time, coordination, and planning. | ES 1, ES 2 | Email |
| Non-compliance | <ul style="list-style-type: none"> Interest in City including what would happen to those who don't comply with electrification. | BO 1, BO 2 | WS2 |
| Equity | | | |
| Cost burden | <ul style="list-style-type: none"> Concern that the immediate cost shifts from buildings switching to electric will burden small businesses, low-income, and middle-income communities and renters. Concern that low-income residents who cannot afford the replacements will be penalized. Interest in a staggered timeline for each neighborhood based on socioeconomic factors. | BO 1, BO 2 | WS2, WS4, WS5, WS10, Konveio, Email |
| BIPOC Employment | <ul style="list-style-type: none"> Support for prioritizing companies that employ local BIPOC individuals. | BO 3 | Konveio |
| Specific constituencies | <ul style="list-style-type: none"> Interest in identifying specific constituencies as opposed to simply using the BIPOC acronym to address different and diverse communities. | All | WS5 |
| Equitable implementation & outcomes | <ul style="list-style-type: none"> Support for oversight, accountability, and transparency of strategies. | All | WS5 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---|---|---------------------|--------------------|
| Other Considerations | | | |
| Increased education and outreach | <ul style="list-style-type: none"> Support for increased public awareness efforts and community outreach to educate homeowners and ease concerns about required changes. | N/A | WS6, WS4, WS3, WS7 |
| Environmental health | <ul style="list-style-type: none"> Interest in considering health effects from indoor air quality issues. | All | WS10 |
| Building community support | <ul style="list-style-type: none"> Interest in developing strong messaging tailored to each audience to build community support and political will. | All | WS10 |
| Underserved Communities/Minority Voices | | | |
| Electrification cost incentives & education* | <ul style="list-style-type: none"> Desire for cost incentives and education for low-income and elderly residents to switch to all electric. | BO-2 | WS5, WS8, WS9 |
| | <ul style="list-style-type: none"> Interest in seeing education and promotion of electrification via continued community workshops and other media/social media. | All | WS8, WS9 |
| Transparency* | <ul style="list-style-type: none"> Emphasized the need for transparency with goal progress (emissions reductions/costs) via a dashboard. | N/A | WS5, WS8, WS9 |
| State funding* | <ul style="list-style-type: none"> Would like the City to continue working with the State to secure funding for electrification. Worried that progressive cities get less state funding. | N/A | WS8 |
| Decarbonization | <ul style="list-style-type: none"> Support for decarbonization and moving away from fossil fuels. | BO-1, BO-2, BO-3 | WS8 |



ENERGY SUPPLY

| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|--|---------------------|--|
| Area of Support | | | |
| Microgrids & decentralization | <ul style="list-style-type: none"> Support to move towards microgrids instead of centralized source high voltage grid system and for community-owned distributed energy sources. | ES 3 | WS5, Konveio |
| Renewable energy | <ul style="list-style-type: none"> Support for more renewable energy sources and more ambitious renewable energy goals. Mixed support for hydropower: some want to increase use and others highlighted unintended consequences on ecosystem health. | ES 2 | WS1, Konveio |
| Grid structure | <ul style="list-style-type: none"> Support for the use of district energy and steam. | ES 3 | WS2 |
| Carcinogenic fuels | <ul style="list-style-type: none"> Support for stopping wood and biofuel burning and reducing use of carcinogenic fuels. | ES 2 | Konveio |
| Areas for Improvement | | | |
| Workforce development | <ul style="list-style-type: none"> Interest in the city helping to increase workforce development and training efforts. | ES 4 | WS1, WS2, WS4, WS5, WS10, WS11, Survey |
| Education | <ul style="list-style-type: none"> Interest in proactive, culturally responsive, and widespread education to communicate energy goals and benefits to communities. | N/A | WS3, WS4, WS7, Konveio |
| Incentives | <ul style="list-style-type: none"> Interest in the City providing incentives or funds to small businesses and NGOs for switching to electric and energy efficient appliances. Interest in income-based clean energy subsidies and incentives. | ES 2 | WS4, WS7 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|-----------------------------|---|---------------------|-------------------|
| Transparency | <ul style="list-style-type: none"> Interest in transparent communication about goals, implementation, challenges, timeline, etc. with residents by distributing information and engaging the community. | All | WS10, WS11 |
| | <ul style="list-style-type: none"> Interest in making the Plan’s GHG emissions accounting more comprehensive, consistent, and audited by a third party. | ES 1 | Email |
| Renewable energy | <ul style="list-style-type: none"> Some interest in placing wind turbines throughout the city. | ES 2 | WS8, Konveio |
| Density | <ul style="list-style-type: none"> Concern that density is incompatible with on-site energy independence via solar. | ES 2 | Konveio |
| Other benefits | <ul style="list-style-type: none"> Interest in policies for clean power sources that may not help lower GHG emissions but provide many other benefits. | ES-1 | Email |
| Equity | | | |
| Cost burden | <ul style="list-style-type: none"> Interest in the City implementing a bond to fund solar power at affordable housing. Concern that it is harder for low-income communities to access renewable energy. | ES 2 | WS4, WS7, Konveio |
| Green gentrification | <ul style="list-style-type: none"> Concern that any efforts for an equitable transition away from the City’s natural gas system will worsen gentrification by making the area more desirable (green gentrification), therefore augmenting the housing shortage. | ES 5 | Konveio |
| Other Considerations | | | |
| Multiple actors | <ul style="list-style-type: none"> Interest in clarity and use of multiple levers, including public/private partnerships, philanthropy, NGOs, and unions. | N/A | WS1, WS11 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|---|---------------------|-----------------------|
| External energy sources | <ul style="list-style-type: none"> Confusion as to whether San Francisco will use energy generated outside city borders and work with the state to ensure GHG-free electricity. | ES 1 | WS2, WS7 |
| Timeline | <ul style="list-style-type: none"> Question about the timeline for implementation. | All | WS10 |
| Connections to health | <ul style="list-style-type: none"> Interest in discussing and considering the intersection of health and energy supply. | N/A | WS10 |
| Underserved Communities/Minority Voices | | | |
| Cost burden* | <ul style="list-style-type: none"> Would like the City to assist with increased utility cost to low-income, elderly, and non-profits. | ES 1, ES 2, ES 3 | WS5, WS8, WS9, pop-up |
| In-language outreach and education | <ul style="list-style-type: none"> Request for in-language outreach and education | ES 1, ES 2, ES 3 | WS8, WS9 |
| Safety | <ul style="list-style-type: none"> Existing building power capacity may not be able to handle a transition to all electric appliances which may cause short-circuiting. This may be dangerous for residents, especially the elderly. | ES 2, ES 3, ES 5 | WS5, WS9 |
| Cultural relevance | <ul style="list-style-type: none"> Concern that the transition to energy efficient appliances is not culturally relevant (electric stove) and may harm business owners. | N/A | WS8, WS9 |
| Workforce development* | <ul style="list-style-type: none"> Interest in workforce development through City College. | ES 4 | WS5 |



HEALTHY ECOSYSTEMS

| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|--|---------------------|--|
| Areas of Support | | | |
| Native plants | <ul style="list-style-type: none"> Support for expansion of native ecosystems and limitation of invasive species and use of pesticides. Emphasis on planting native wetland plants/grasses, and low-lying fauna instead of trees. | HE 8 | WS2, WS3, WS4, WS6, WS7, Konveio, Survey |
| Urban greening/ forestry | <ul style="list-style-type: none"> Support for planting street trees, native trees, and preserving existing mature trees. | HE 5 | Survey |
| | <ul style="list-style-type: none"> Support for increased funding for urban forestry/ecosystem stewardship programs. Support for creating wildlife corridors around the city and converting concrete/AstroTurf to planters and green spaces especially in underutilized areas. | HE 5, HE 6 | WS3, Konveio, Survey |
| Areas for Improvement | | | |
| Community involvement and education | <ul style="list-style-type: none"> Interest in funding community participation and providing financial incentives to businesses and residents to encourage living architecture and native plants in gardens and nurseries. Interest in active communication between community and the city during greening projects. Interest in partnering with schools and other organizations like architecture firms for stewardship work. Interest in education opportunities on the importance of green areas. | HE 2 | WS1, WS5, WS6, WS7, WS11, Konveio, Email |
| | <ul style="list-style-type: none"> Interest in integrating a citizen science component by expanding data inputs and public awareness of urban habitat. | HE 1, HE 2, HE 7 | Email |
| Other ecosystems | <ul style="list-style-type: none"> Interest in including wetlands, perennial grasslands, and oceans in the strategies. | N/A | WS5, Konveio |
| Stewardship jobs | <ul style="list-style-type: none"> Interest in the City allocating funding and creating ecosystem stewardship and gardening positions. | HE 2 | WS4, Konveio, Email |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|--|------------------------|------------------------------|
| Safe environment | <ul style="list-style-type: none"> • Interest in conducting thorough testing, clean-ups, and remediation of all radioactive and hazardous waste contamination along and near waterfront areas. • Interest in addressing the issue of rising sea levels and groundwater threatening to flood radioactive and hazardous waste contamination sites in vulnerable and at-risk communities. | N/A | Email, Survey |
| Resilience | <ul style="list-style-type: none"> • Interest in creating resilient ecosystems in the face of natural disasters and sea level rise. | All | WS10, WS11 |
| Protect and expand green space | <ul style="list-style-type: none"> • Interest in limiting population in the city and support for monitoring ecological management progress. • Interest in protecting existing habitats from development. • Interest in limiting outdoor lighting and controlling runoff. | HE 5, HE 6, HE 7, HE 8 | Konveio |
| Agriculture on rooftops and backyards | <ul style="list-style-type: none"> • Interest in having land use policy also support local, small scale agriculture on rooftops and in backyards. | HE 8 | Konveio |
| Equity | | | |
| Restoration efforts | <ul style="list-style-type: none"> • Interest in empowering local communities, specifically native voices, to access green spaces and engaging them in land stewardship efforts and the City’s decision making. • Interest in focusing urban greening efforts on underserved areas while limiting gentrification (e.g. finding balance between green spaces/affordable housing development). • Interest in linking racial and social equity to health and green spaces. | HE 2 | WS4, WS5, WS6, WS10, Konveio |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|------------------------------|---|---------------------|------------------------|
| Job creation | <ul style="list-style-type: none"> Support for creating career pipelines for environment jobs by hiring within communities and ensuring every org has a DEI framework to address institutional inequities. | HE 2 | WS2, WS4, WS5, Konveio |
| Community involvement | <ul style="list-style-type: none"> Interest in engaging and following leadership from frontline and historically underserved communities. Interest in City partnerships with local BIPOC organizations or low-income communities. | All | WS5, Email |
| Funding | <ul style="list-style-type: none"> Support for redistribution/increase of funding to historically ignored areas to maintain healthy ecosystems | HE 4 | Konveio |
| Space limitation | <ul style="list-style-type: none"> Concern that some neighborhoods have more room for parks and open space than others. Thus, more urbanized neighborhoods will not have opportunities for added green spaces. | HE7, HE8 | WS11 |
| Explicitness | <ul style="list-style-type: none"> Interest in calling out equity explicitly in the strategies. | All | WS5 |
| Other Considerations | | | |
| Alignment of goals | <ul style="list-style-type: none"> Interest in aligning goals (especially housing goals) of City agencies and regulating industries (e.g., transportation, landscaping, construction). Interest in mandating cross-agency collaboration and strengthening and advancing City departments' existing policies, such as San Francisco's Biodiversity Resolution. | HE 1, HE 2 | WS2, WS3, WS5, Email |
| Density | <ul style="list-style-type: none"> Interest in getting rid of the Shadow Ordinance and building up, not out. | N/A | Konveio |
| Terms | <ul style="list-style-type: none"> Confusion about what "built environment" means. | HE 4 | WS11 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|---|---------------------|-------------|
| Environmental health | <ul style="list-style-type: none"> Interest in addressing pollution-related public health emergencies in already-impacted Bayview Hunters Point and Treasure Island. | N/A | Email |
| Underserved Communities/Minority Voices | | | |
| Cost burden & incentives | <ul style="list-style-type: none"> Although eager to reduce emissions and make changes, hesitant of the accompanying costs to residents. Would like the City to provide financial support and incentives. | HE 4 | WS5, WS8 |
| Education to elderly | <ul style="list-style-type: none"> Interest in seeing an outreach and education plan that reaches the elderly populations. | HE 3 | WS8, WS9 |
| Unique community barriers | <ul style="list-style-type: none"> Interest in seeing tailored greening and restoration plans for different communities with unique barriers. | All | WS9 |
| Clean streets | <ul style="list-style-type: none"> Interest in seeing the City take action on cleaning and maintenance of existing streets and parks. | N/A | WS9 |
| Conflict with housing need | <ul style="list-style-type: none"> Concern about space conflicts with the need for new housing. | HE 7 | WS 5 |



HOUSING

| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|------------------------------------|--|---------------------|-----------------------------------|
| Areas of Support | | | |
| Housing development | <ul style="list-style-type: none"> Support for new housing, especially infill development. | Sector goal | Survey |
| Process streamlining | <ul style="list-style-type: none"> Support for streamlining the planning and building process. | H 3 | Konveio |
| Underutilized buildings | <ul style="list-style-type: none"> Support for redeveloping and renovating underutilized buildings to contribute to housing goals. | H2, H 3 | WS6 |
| Expanding tenant services | <ul style="list-style-type: none"> Support for financially supporting affordable housing for BIPOC communities by expanding tenant services. | H1 | Konveio |
| Areas for Improvement | | | |
| Affordability | <ul style="list-style-type: none"> Concern that affordable housing may not be cost-effective for developers. Interest in: <ul style="list-style-type: none"> Granting surplus City-owned land at no cost to non-profit developers to build affordable housing and maximize the density. Developing more affordable units lower in new buildings and in less desirable harder to rent/sell facings. Providing a density bonus to effectively reduce the land cost per unit or to offer direct affordable housing grants to developers. Interest in the City requiring a certain number of affordable units to be built and leased before allowing any new market rate housing. Interest in replacing rent control with a rent subsidy based on each tenant's tax returns. | H 3, H 4 | WS5, WS6, WS11, Konveio |
| Green and resilient housing | <ul style="list-style-type: none"> Interest in the City setting requirements for sustainable water systems in all new housing. Interest in planning for resilient housing prior to construction as opposed to afterwards. | H 1, H 2, H 3, H 4 | WS1, WS2, WS3, WS4, WS11, Konveio |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---------------------------------------|---|---------------------|---|
| Goals and targets | <ul style="list-style-type: none"> Mixed feelings about the feasibility of the sector goal. Some think the sector goal is too low, while others think the sector goal is unrealistic. With the housing shortage and growing industry, more units are needed to increase housing affordability, especially for BIPOC residents. | N/A | WS2, WS3 |
| | <ul style="list-style-type: none"> Interest in aligning Strategy 3 with Transportation and Land Use: expanding transit access and options and making sure housing density aligns with access to transit, businesses, and services, especially schools. | H 3 | Konveio |
| Community | <ul style="list-style-type: none"> Interest in adding support of site-based community building. | H 1 | Email |
| Affordable housing green space | <ul style="list-style-type: none"> Interest in seeing green space access requirements for affordable housing. | N/A | WS6 |
| Partnerships | <ul style="list-style-type: none"> Interest in City forming formal connections between non-profits, trade groups, and other organizations. | H 3 | WS1 |
| Equity | | | |
| Affordability | <ul style="list-style-type: none"> Interest in distributing affordable housing through all neighborhoods unless BIPOC communities requested housing in cultural districts. Interest in developing affordable housing near goods and services. Interest in solutions that build housing affordability, as opposed to affordable housing. Interest in making explicit the housing burden by race and outlining the historic inequities that mean current BIPOC communities are overburdened with housing costs. | H 1, H 3, H 4 | WS1, WS2, WS5, WS7, WS10, Konveio, Survey |
| Gentrification | <ul style="list-style-type: none"> Interest in supporting small businesses and protecting the area from gentrification. Interest in protecting current communities from displacement. | H 1 | WS5, WS6, WS11 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|---|---------------------|----------------------|
| Combating multi-generational poverty | <ul style="list-style-type: none"> Interest in introducing and growing new land and building ownership models that cultivate community and begin to grow wealth in communities with multi-generational poverty. | H 4 | Email |
| Other Considerations | | | |
| Resistance | <ul style="list-style-type: none"> Concern about resistance to building affordable housing sites, larger buildings, and shelters for unhoused people. | H 2 | WS2, WS3, WS10, WS11 |
| Inclusion of the middle class | <ul style="list-style-type: none"> Mixed interests in who to focus on in these strategies. Some believe that strategies need to include the lower middle class as well, while others believe that all the resources that go to the middle class are further overburdening lower-income BIPOC communities. | H 1, H 2, H 4 | WS7, WS11, Konveio |
| Terms | <ul style="list-style-type: none"> Confusion about what “affordable” means in the context of the 30% affordable housing goal. | N/A | WS6, WS7 |
| Scale | <ul style="list-style-type: none"> Concern that housing issues are regional and some affected by SF’s housing policies live outside of the city. | N/A | WS5 |
| Housing quality | <ul style="list-style-type: none"> Interest in the City discussing the quality of new housing. | H 1, H 2 | WS10 |
| Underserved Communities/Minority Voices | | | |
| Small property owners | <ul style="list-style-type: none"> Support for actions that encourage small property owners to add housing and rehabilitate existing units but interested in accompanying policies that protect small property owners from non-compliant, non-paying renters. | H 1, H 2, H 3, H 4 | WS8, WS9, Pop-up |
| Revised zoning and permitting | <ul style="list-style-type: none"> Support for updating zoning and allowing live-work spaces. Interested in policies/permits that allow building up versus building out. Support for affordable housing in all neighborhoods, including low-density neighborhoods. | H 3 | WS8, WS9, |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|-------------------------------|--|---------------------|-------------|
| Sector goals* | <ul style="list-style-type: none"> • Would like clarity on how to 5,000 new housing units per year metric was developed. Interest in a more aggressive timeline for new housing. • 30% affordable housing goal seems low | N/A | WS5, Pop-up |
| Transparency* | <ul style="list-style-type: none"> • Need for easy to understand, real time tracking towards Plan goals and resulting benefits to specific communities/demographics. | N/A | WS8, WS9 |
| Affordable housing* | <ul style="list-style-type: none"> • Support for increased funding and development of affordable housing. | H 4 | Pop-up |
| | <ul style="list-style-type: none"> • Interest in a more aggressive timeline and goal for affordable housing. Would also like to speed up the process for residents to obtain affordable housing. | H 1, H 2, H 4 | WS8 |
| Multilingual education | <ul style="list-style-type: none"> • Interest in multilingual education and outreach regarding next steps to achieve plan goals and responsibility/resources for residents. • Interest in continued coordination via community workshops | All | WS8 |
| Unhoused | <ul style="list-style-type: none"> • Would like the Plan to detail actions to assist the unhoused through mental health programs and job training on top of financial assistance. | H 2 | WS8 |



RESPONSIBLE PRODUCTION & CONSUMPTION

| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|------------------------------------|---|---------------------|--------------------------------|
| Areas of Support | | | |
| Waste reduction | <ul style="list-style-type: none"> Support for prioritizing waste reduction (e.g., food waste and packaging). | RPC 2, RPC 3 | WS1, WS4 |
| Producer responsibility | <ul style="list-style-type: none"> Support for extending producer responsibility policies. | RPC 3 | WS2, Konveio |
| Embodied carbon | <ul style="list-style-type: none"> Support for reduction of embodied carbon in buildings and infrastructure. | RPC 1 | WS1, WS2, Konveio |
| Food and plant-based diets | <ul style="list-style-type: none"> Support for promoting and subsidizing plant-based diets, especially by providing incentives for plant-based restaurant meals and committing to plant-based foods in City buildings. | RPC 2 | WS5, Konveio |
| Consumption | <ul style="list-style-type: none"> Support for considering consumption-based emissions. | RPC 3 | Konveio |
| Areas for Improvement | | | |
| Reuse of goods and services | <ul style="list-style-type: none"> Interest in encouraging and capturing the decarbonization impacts of reuse and secondhand markets. This could include community repair events, lists of repair businesses, and donation avenues, and a requirement for Recology to ensure reuse of durable items and materials. Interest in limiting virgin plastic items and single-use items and closing loopholes in the current plastic bag ban. Interest in seeing textiles and clothing products mentioned in the measures. Interest in banning or taxing unsustainable materials. | RPC 3 | WS1, WS4, WS7, Konveio, Survey |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---|--|---------------------|------------------------------|
| Waste reduction, recycling, and compost | <ul style="list-style-type: none"> Interest in pressuring companies to reduce packaging or incorporate environmentally friendly packaging options. Interest in re-introducing materials drop-off locations in the city. Interest in providing biogas digesters and compostable bags in parks to divert dog waste. Interest in getting SF access to anaerobic digester at Recology. | RPC 3 | WS4, WS10, WS11, Konveio |
| Education & outreach | <ul style="list-style-type: none"> Interest in educating community, particularly students, about the link between soil health, foods, and human health. Interest in engaging communities to buy local and sustainable products, if they need to buy at all. | RPC 5 | WS3, WS6, WS6, WS11, Konveio |
| Building materials | <ul style="list-style-type: none"> Interest in reusing construction and demolition materials. Interest in limiting cement use in San Francisco. Interest in using a lighter colored alternative to the cement/asphalt currently used in some city sidewalks. Interest in seeking out architects using decarbonizing building practices such as mass timber. Interest in considering fence material made from plastic detergent jugs. Interest in mentioning steel in the measures. | RPC 1 | WS4, Konveio, Survey |
| Workforce development | <ul style="list-style-type: none"> Interest in retraining and retaining blue collar employees who get displaced. | N/A | WS10, WS11 |
| | <ul style="list-style-type: none"> Interest in local recycling and local green jobs. | N/A | WS4 |
| Food and plant-based diets | <ul style="list-style-type: none"> Interest in the promotion of regenerative agriculture products as part of a Food Waste Prevention and Edible Food Recovery Policy. | RPC 2 | WS7, Konveio |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---|--|---------------------|---------------|
| Consumption emissions | <ul style="list-style-type: none"> Interest in seeing a specific goal around consumption emissions that includes the production and transportation of the goods and other stages of the life cycle. | RPC 3 | WS7, Konveio |
| Reporting requirements | <ul style="list-style-type: none"> Interest in requiring Environmental Product Declarations (EPDs) that identify total embodied carbon of different categories of products. | N/A | WS1 |
| Other modes | <ul style="list-style-type: none"> Interest in including plans to curb aviation and maritime emissions. | RPC 4 | WS1 |
| Community | <ul style="list-style-type: none"> Support facilitating the creation of inclusive and networked neighborhood scale projects. | RPC 3-3 | Email |
| Equity | | | |
| Impact on businesses | <ul style="list-style-type: none"> Concern that the goal will disproportionately impact BIPOC-, locally-owned, or small businesses. | N/A | WS6, WS11 |
| Access to food | <ul style="list-style-type: none"> Interest in providing access to fresh produce in certain districts that previously did not have access. Interest in making sure that donation centers stay culturally relevant to recipients. | RPC 2 | WS6 |
| Other Considerations | | | |
| COVID | <ul style="list-style-type: none"> Interest in addressing impacts of COVID-19 on responsible production and consumption. | N/A | WS1, WS6, WS7 |
| Community gardens | <ul style="list-style-type: none"> Question about where community gardens fit in this goal. Interest in encouraging landlords to optimize unused space such as a community garden. | N/A | WS10, Konveio |
| Corporate responsibility and enforcement | <ul style="list-style-type: none"> Interest in focusing efforts to ensure responsible consumption and production on corporations, not on consumers. | RPC 3 | Konveio |
| | <ul style="list-style-type: none"> Concern of how the City will hold companies accountable for lifecycle emissions and new standards for materials. | N/A | WS2 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|--|---------------------------|-------------|
| Other materials | <ul style="list-style-type: none"> Interest in including e-waste. | RPC 3 | WS2 |
| Legal authority | <ul style="list-style-type: none"> Concern about how the City will enforce waste and food systems outside of the city. | N/A | WS3 |
| Underserved Communities/Minority Voices | | | |
| Restrictions for producers* | <ul style="list-style-type: none"> Interest in seeing City or state set limitations for production (permitting for production and penalties for overproduction). Interest in City and state increasing sustainability standards for producers. | RPC1, RPC 2, RPC 3, RPC 4 | W5, W8, W9 |
| Clear education and resources* | <ul style="list-style-type: none"> Interest in clear/simple communication, education, and resources for residences. Interest in educating children about RPC practices and provide funding to teach in schools. | RPC 5 | W5, W8, W9 |
| Support for small businesses* | <ul style="list-style-type: none"> Interest in the City providing financial support for restaurants and other small businesses to encourage RPC practices. | RPC 3 | W5, W9 |
| COVID* | <ul style="list-style-type: none"> Do these strategies and actions take into account COVID-19 or any type of other pandemic/emergency response in the future? | N/A | W8 |

TRANSPORTATION & LAND USE

| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|-------------------------------------|---|---------------------|--|
| Areas of Support | | | |
| Public transit | <ul style="list-style-type: none"> Support for improving MUNI (safety, reliability, speed, service area). Support for setting goals around transit speed and reliability. | TLU 1 | WS5, WS7, WS10, WS11, Konveio, Email, Survey |
| Transit-oriented development | <ul style="list-style-type: none"> Support for transit-oriented development. Support for a streamlined approval process for housing near transit. | TLU 5 | WS4, WS6, Konveio, Email, Survey |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|------------------------------|---|---------------------|---|
| Reducing VMT | <ul style="list-style-type: none"> Support for reducing VMT by increasing the cost of parking and using parking resources more efficiently. | TLU 4 | WS1, WS2, WS3, WS10, Konveio |
| Bicycling | <ul style="list-style-type: none"> Support for the City defending bicycling just as much as pedestrians or cars. Start shifting from “streets for cars”, to “streets for people.” Support for adding more protected bike lanes. Support for making electric bikes more affordable. | TLU 2 | WS1, WS2, WS7, Konveio |
| Density and Diversity | <ul style="list-style-type: none"> Support for increasing density, diversity of land uses, and location efficiency across San Francisco. | TLU 6 | WS 6, Survey |
| Parking | <ul style="list-style-type: none"> Support for parking permits. | TLU 4 | Email |
| Pricing tools | <ul style="list-style-type: none"> Support for equitable pricing tools. | TLU 3 | Email |
| Areas for Improvement | | | |
| Transit-oriented development | <ul style="list-style-type: none"> Interest in developing housing along bike corridors in addition to near public transit. Interest in investing the additional revenue from upzoning the corridors into community benefits. | TLU 6 | WS2, WS4, WS5, WS6, WS7, Konveio, Email |
| Bike access and safety | <ul style="list-style-type: none"> Interest in more communal storage/bike racks in garages and ways to discourage bike theft. Interest in bikeshares. Interest in enforcing bicyclists to adhere to the laws. Interest in making installing bike racks easier (not requiring months of community hearings). | TLU 2 | WS2, WS10, Konveio |
| Transit | <ul style="list-style-type: none"> Support for making public transit free for all riders. Support for free transit passes for residents. | TLU 1 | WS7, Konveio |
| | <ul style="list-style-type: none"> Interest in developing apps that track public transit options to make them more reliable. | TLU 1 | WS11 |
| | <ul style="list-style-type: none"> Interest in requesting more frequent cleaning of buses and trains so they are more pleasant to ride. Interest in considering giving all buses priority at intersections, raising MUNI trains on a platform, and/or adding more bus-only lanes. | TLU 1 | Konveio |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---------------------------------------|--|---------------------|--|
| | <ul style="list-style-type: none"> Interest in eliminating low-use MUNI routes and subsidizing ride-share fares for needy riders. | N/A | Konveio |
| | <ul style="list-style-type: none"> Interest in focusing on all city stations and off-peak hours, as opposed to focusing most services and funding on the peak hours downtown. | TLU 3 | Email |
| Reducing VMT | <ul style="list-style-type: none"> Concern that EVs are not a sustainable solution to cars. Car tires are polluting, and cars take up parking and road space and mainly benefit wealthy people. Interest in installation of EV chargers in multifamily construction and existing buildings. Interest in phasing out conventional commercial and delivery vehicles, cabs, and ride-hailing vehicles. Interest in the City leading by example and making all City-owned vehicles/bikes electric (if not already). | TLU 7 | WS4, Konveio |
| Pricing tools | <ul style="list-style-type: none"> Interest in additional pricing tools to capture the full range of climate externalities associated with driving private cars and advancing equity. | TLU 3 | Email |
| Household transportation audit | <ul style="list-style-type: none"> Interest in the City offering a transportation audit per household to identify transportation needs and make recommendations for shifts to align with Plan goals. | TLU 2 | Konveio |
| Equity | | | |
| Zoning | <ul style="list-style-type: none"> Interest in up-zoning parts of the city that were founded as Whites-only communities. Interest in expanding multifamily zoning to all neighborhoods, not just in transit corridors to combat environmental injustice. Concern that a NIMBY neighborhood will resist sustainable transit options and transit-oriented development. | TLU 6 | WS2, WS4, WS5, WS6, WS7, WS10, Konveio |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|--|---|---------------------|-----------------------------|
| Cost burden | <ul style="list-style-type: none"> Concern that electric charging is not accessible and expensive. Concern that restricting e-bike subsidies to low-income people will not be as effective because wealthier people are doing most of the driving. | TLU 2 | WS1, WS5, WS10, Konveio |
| | <ul style="list-style-type: none"> Concern that simply increasing the cost of car ownership without providing easy-to-use alternatives will further punish communities of color. | TLU 4 | Email |
| Other considerations | | | |
| Pandemic | <ul style="list-style-type: none"> Concern that pandemic has moved the City and the residents in the wrong direction. | TLU 1, TLU 2 | WS1, WS2, WS5, WS7, Konveio |
| Commuters | <ul style="list-style-type: none"> Concern that many commuters and other drivers come from outside of the city and county. Therefore, local policies won't be as affective. Need for coordination on a regional scale. | TLU 3, TLU 7 | WS3, Survey |
| City "charm" | <ul style="list-style-type: none"> Concern of finding the balance of upzoning and keeping the charm and history of the city (e.g., old Victorian homes) that draw residents and tourists. | TLU 6 | Konveio |
| CEQA | <ul style="list-style-type: none"> Interest in removing the appeal process in CEQA which slows down transit oriented or affordable housing development. | N/A | Konveio, Survey |
| Transit First policy | <ul style="list-style-type: none"> Concern that city is not living up to its Transit First policy. | TLU 1 | Email, Survey |
| Underserved Communities/Minority Voices | | | |
| Convenience | <ul style="list-style-type: none"> Support for expanding the public transportation network, more direct routes for longer distances, and creating more regional connections. | TLU 1 | WS5, WS8, WS9 |
| Safety | <ul style="list-style-type: none"> Interest in increasing safety and security on public transit. | TLU 1, TLU 2 | WS5, WS8, WS9 |



| THEME | FEEDBACK | RELEVANT STRATEGIES | WHERE HEARD |
|---------------------------------|---|---|---------------|
| Education and perception | <ul style="list-style-type: none"> • Interest in City campaigns or programs catered to different communities to spur behavior change around public transit. | TLU 1, TLU 2, TLU 3, TLU4, TLU 5, TLU 7 | WS5, WS8, WS9 |
| Reliability* | <ul style="list-style-type: none"> • Interest in a one-stop-shop for real-time transit and traffic updates - that is simple and user friendly for all populations. • Interest in timing of public transit being more reliable. • Suggestion for routine route audits to adjust frequency according to demand. | TLU1, TLU 2 | WS8, WS9 |
| Increased density | <ul style="list-style-type: none"> • Concern that encouraging high density development will negatively impact housing costs, health conditions, and displacement. | TLU5 | WS5 |



Survey Responses

This section summarizes responses from the online open house survey.

HOW DID YOU HEAR ABOUT THIS OPEN HOUSE?

Respondents learned about the open house through a range of communication channels, but most survey respondents heard through community organizations.

| Communication Method | # Responses | % Responses |
|------------------------|-------------|-------------|
| SF Environment website | 112 | 13% |
| Social Media | 110 | 13% |
| Flyer | 11 | 1% |
| A friend of colleague | 121 | 14% |
| Community organization | 320 | 37% |
| Other (please specify) | 200 | 23% |
| Total | 874 | |

Top “Other” responses included:

- An email from CleanPowerSF (37 responses)
- SF Public Library email, newsletter, or bulletin (36 responses)
- Other/unidentified email (24 responses)
- Email from Friends of the Urban Forest (23 responses)

WHAT TOP THREE STRATEGIES DO YOU THINK THE PLAN SHOULD FOCUS ON?

The top-voted strategies were:

1. Store more **carbon in our plants, trees, and soils** (462 votes)
2. **Transit, walking and biking** over driving (388 votes)
3. Increase **renewable energy** and **energy storage** (341 votes)
4. Shift buildings to **non-fossil fuel sources** (230 votes)

| Strategies | # Responses | % Responses |
|---|-------------|-------------|
| Store more carbon in our plants, trees, and soils | 462 | 20% |
| Transit, walking and biking over driving | 388 | 17% |
| Increase renewable energy and energy storage | 341 | 15% |
| Shift buildings to non-fossil fuel sources | 230 | 10% |
| Shift to electric or lower-carbon vehicle fuels | 226 | 10% |
| Reduce the use of single-use materials | 216 | 9% |
| Affordable housing and housing security | 198 | 9% |
| Increase number and type of green jobs | 175 | 8% |
| Consume fewer/different goods and services | 82 | 4% |
| Total | 2318 | |



HOW WELL DO THE STRATEGIES/ACTIONS DO THE FOLLOWING? RATE FROM 1-5.

- Respondents overall rated the strategies as **doing the best job** at **motivating and inspiring** you to take action to reduce climate pollution and **providing direction to local government** on actions to take to reduce climate pollution.
- Respondents gave the **lowest rating** to the strategies’ ability to **provide guidance on actions each of us can take** in San Francisco to reduce climate pollution.
- Respondents gave the most “**unknown**” ratings to the ability of the strategies to **benefit communities that experience higher environmental burden**.

| Strategies and Actions | 1 (Not at all) | 2 | 3 | 4 | 5 (very well) | Unknown | |
|--|----------------|------------|------------|------------|---------------|------------|------------|
| Provide direction to local government on actions to take to reduce climate pollution. | | 28 | 56 | 201 | 192 | 87 | 236 |
| Provide guidance on actions each of us can take in San Francisco to reduce climate pollution in our own neighborhoods. | | 37 | 139 | 187 | 148 | 90 | 199 |
| Motivate and inspire you to take action to reduce climate pollution. | | 47 | 98 | 174 | 186 | 101 | 194 |
| Benefit communities that experience higher environmental burden. | | 39 | 106 | 174 | 141 | 86 | 254 |
| Total | | 151 | 399 | 736 | 667 | 364 | 883 |

WHICH ROLE(S) SHOULD THE CITY TAKE TO HELP MEET THE GOALS OF THE CLIMATE ACTION PLAN? PLEASE SELECT YOUR TOP TWO CHOICES.

| Role | Total responses | % Total responses |
|--------------|-----------------|-------------------|
| Visioning | 197 | 24% |
| Leadership | 231 | 28% |
| Engagement | 274 | 33% |
| Incentives | 482 | 58% |
| Regulation | 374 | 45% |
| Total | 835 | |

WHAT ROLE SHOULD SAN FRANCISCO RESIDENTS AND BUSINESSES TAKE? PLEASE SELECT YOUR TOP CHOICE.

| Role | Total responses | % Total responses |
|--|-----------------|-------------------|
| Leader | 84 | 11% |
| Collaborator | 541 | 68% |
| Follower | 118 | 15% |
| Uninvolved | 8 | 1% |
| I'm not sure/need more information to decide | 49 | 6% |
| Total | 800 | |



HOW CAN THE CITY BE FAIR/EQUITABLE?

| Approach | # Responses | % Responses |
|--|-------------|-------------|
| Shared decision-making | 265 | 20% |
| Funding and support | 296 | 22% |
| Engage/collaborate with leaders | 207 | 15% |
| Translate resources | 86 | 6% |
| Design policies/programs with incentives | 246 | 18% |
| Data gathering and tracking | 73 | 5% |
| Evaluate and report on impact | 145 | 11% |
| Other | 39 | 3% |
| Total | 1357 | |

DO YOU HAVE ANY OTHER COMMENTS, CONCERNS, OR QUESTIONS ABOUT THE SAN FRANCISCO CLIMATE ACTION PLAN UPDATE?

(See Supporting Document A for detailed responses)

Themes from the open-ended responses:

- Trees, tree, plant, planting, native (315 mentions)
- Climate, change, emissions, carbon (226 mentions)
- Public, people, residents, community, neighborhoods (194 mentions)
- Transit, streets, cars, transportation, vehicles (87 mentions)
- Funding, money, cost, incentives (67 mentions)
- Housing, housed (47 mentions)
- Health (29 mentions)

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| SECTOR(S) | RELEVANT STRATEGIES | THEME TYPE | THEME | COMMENT / DRAFT TEXT | ACTION | RESPONSE / NEW DRAFT TEXT | REVISION IMPLEMENTED? | SOURCE |
|---------------|---------------------|---|-------------------------------|---|---|---|-----------------------------------|--|
| | | Support, Improvement, Equity, Underserved Communities/Minority Voices, Other Considerations | | | A - CAP revision recommended B - No revision recommended C - Applicable to future implementation or other resource (eg. Different Plan) | | Yes No N/A - not applicable | |
| General | All | Underserved Communities/Minority Voices | Multilingual education | Interest in multilingual education and outreach regarding next steps to achieve plan goals and responsibility/resources for residents. | | Will expand during CAP implementation. | | WS8 |
| General | All | Underserved Communities/Minority Voices | Multilingual education | Interest in continued coordination via community workshops | | Will be necessary during CAP implementation. | | WS8 |
| Energy Supply | ES 3 | Support | Microgrids & decentralization | Support to move towards microgrids instead of centralized source high voltage grid system and for community-owned distributed energy sources. | B - No revision recommended | Where it may be cost-effective and have resilience benefits, the SFPUUC continues to support distributed energy sources (i.e., solar + storage) and the ability for those resources to island. See ES 2-3 for details on some of our current and planned work. | N/A - not applicable | WS5, Konveio |
| Energy Supply | ES 2 | Support | Renewable energy | Support for more renewable energy sources and more ambitious renewable energy goals. | B - No revision recommended | Addressed in Energy Supply sector chapter | N/A - not applicable | WS1, Konveio |
| Energy Supply | ES 2 | Support | Renewable energy | Mixed support for hydropower: some want to increase use and others highlighted unintended consequences on ecosystem health. | B - No revision recommended | The City uses the statewide definition of renewable energy which allow for the use of existing large hydro in certain circumstances. | N/A - not applicable | WS1, Konveio |
| Energy Supply | ES 5 | Support | Grid structure | Support for the use of district energy and steam. | B - No revision recommended | San Francisco's existing district energy systems - the electric grid and steam loops - are addressed. Modern district hot and chilled water systems offer significant benefits, and the Mission Rock chilled and hot water loop under construction is an example. However, for existing urban areas with multiple property owners, the complexity, expense, and potential for delay are substantial barriers to their construction. | No | WS2 |
| Energy Supply | ES 2 | Support | Carcinogenic fuels | Support for stopping wood and biofuel burning and reducing use of carcinogenic fuels. | B - No revision recommended | Biofuels are considered by the state to be eligible Renewable Portfolio Standard (RPS) resources, and their procurement can support vegetation management and wildfire risk mitigation efforts. The City and County of San Francisco has not adopted a policy that prohibits procurement from biomass-derived resources, but CleanPowerSF has not executed any contracts with biomass facilities as a result of competitive solicitations undertaken to-date. For information about PG&E's reliance on biomass, please see their power content label (https://www.energy.ca.gov/filebrowser/download/3245). For more information about biomass and biofuels, please check out the Department of Environment's webpage (https://sfenvironment.org/energy/renewable-energy/biomass-biofuels). For more information about the thinking behind the City's 100% renewable electricity goal, please see the Mayor's Renewable Energy Task Force Report (https://sfenvironment.org/sites/default/files/files/sfe_re_r_energieworkforcerecommendationsreport.pdf) | N/A - not applicable | Konveio |
| Energy Supply | ES 4 | Improvement | Workforce development | Interest in the city helping to increase workforce development and training efforts. | B - No revision recommended | The City and the SFPUUC regularly engages in community education around its programs, including its energy work. BO 2 and BO 3 also include actions to enhance outreach and education. | N/A - not applicable | WS1, WS2, WS4, WS5, WS10, WS11, Survey |
| Energy Supply | N/A | Improvement | Education | Interest in proactive, culturally responsive, and widespread education to communicate energy goals and benefits to communities. | B - No revision recommended | | N/A - not applicable | WS3, WS4, WS7, Konveio |
| Energy Supply | ES 2 | Improvement | Incentives | Interest in the City providing incentives or funds to small businesses and NGOs for switching to electric and energy efficient appliances. | B - No revision recommended | Incentives for equipment in buildings are addressed by Building Operations strategies BO2, BO3, and BO4, and supporting actions proposing equitable distribution of incentives, technical support, and workforce development resources as well as propose new/upgraded anti-displacement policies. | N/A - not applicable | WS4, WS7 |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Energy Supply | ES 2 | Improvement | Incentives | Interest in income-based clean energy subsidies and incentives. | B - No revision recommended | City-sponsored clean energy programs, such as community solar and GoSolarSF, have income eligibility requirements already. This concept will continue to be centered in our work around incentivizing clean energy. Please see ES 1-4, ES 2-4, and ES 2-5 for more information. | N/A - not applicable | WS4, WS7 |
|---------------|------|-------------|----------------------|--|--|--|----------------------|-------------------|
| Energy Supply | All | Improvement | Transparency | Interest in transparent communication about goals, implementation, challenges, timeline, etc. with residents by distributing information and engaging the community. | B - No revision recommended | By 2022, the SFPUC will be adopting equitable engagement guidelines to improve our engagement with the community. The SFPUC also hosts quarterly community outreach meetings about its power programs. Sandy to ask SFE to add in some language around overall CAP communication. | N/A - not applicable | WS10, WS11 |
| Energy Supply | ES 1 | Improvement | Transparency | Interest in making the Plan's GHG emissions accounting more comprehensive, consistent, and audited by a third party. | C - Applicable to future implementation or other resource (eg. Different Plan) | Details regarding the GHG emissions associated with energy supply can be found in utility "product content labels" that are prepared in the manner prescribed by State law and regulations. Please check out the product content labels for the three main utility providers in San Francisco (CleanPowerSF, Hetch Hetchy Power, PG&E) for more detail. San Francisco's greenhouse gas emission inventory follows Global Protocol for Cities and guidance from ICLEI, as well as California law and regulations. The City continues to support the development of local renewable energy, including wind, where feasible and cost-effective. | N/A - not applicable | Email |
| Energy Supply | ES 2 | Improvement | Renewable energy | Some interest in placing wind turbines throughout the city. | B - No revision recommended | The City continues to support the development of local renewable energy, including wind, where feasible and cost-effective. | N/A - not applicable | WS8, Konveio |
| Energy Supply | ES 2 | Improvement | Density | Concern that density is incompatible with on-site energy independence via solar. | B - No revision recommended | Density of housing is a factor for full on-site energy independence, but it is compatible with development of onsite solar, as building and garage roofs are often great places for solar. The City supports onsite solar where it is feasible and cost-effective, and supports energy efficiency as an important resource in promoting greater energy independence. | N/A - not applicable | Konveio |
| Energy Supply | ES-1 | Improvement | Other benefits | Interest in policies for clean power sources that may not help lower GHG emissions but provide many other benefits. | B - No revision recommended | It's incredibly important that we ensure our energy policies prioritize communities and offer co-benefits. However, it's not clear what clean energy work would benefit communities but not lower GHG emissions. | N/A - not applicable | Email |
| Energy Supply | ES 2 | Equity | Cost burden | Interest in the City implementing a bond to fund solar power at affordable housing. | B - No revision recommended | The City continues to support the development of onsite solar at affordable housing (ES 2-1). The City systematically optimizes appropriate financing options, such as bonds, in order to meet program priorities. | N/A - not applicable | WS4, WS7, Konveio |
| Energy Supply | ES 2 | Equity | Cost burden | Concern that it is harder for low-income communities to access renewable energy. | B - No revision recommended | The City is working to ensure low-income communities can access the benefits of renewable energy by ensuring rates for renewable energy are affordable and accessible for low-income residents (ES 1-4), our affordable housing developments can access onsite solar and storage (ES 2-1), and our programs are designed to support our low-income communities (ES 2-5). | N/A - not applicable | WS4, WS7, Konveio |
| Energy Supply | ES 5 | Equity | Green gentrification | Concern that any efforts for an equitable transition away from the City's natural gas system will worsen gentrification by making the area more desirable (green gentrification), therefore augmenting the housing shortage. | B - No revision recommended | A recurring point in stakeholder outreach was that low-income communities and communities of color are hurt first, and worst - including by health impacts of exposure to indoor and outdoor pollution from natural gas combustion. See Building Operations Strategies BO2, BO3, and BO4, which address equitable distribution of incentives, technical support, and workforce development resources as well as propose new/upgraded anti-displacement policies. | N/A - not applicable | Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Energy Supply | N/A | Other Considerations | Multiple actors | Interest in clarity and use of multiple levers, including public/private partnerships, philanthropy, NGOs, and unions. | B - No revision recommended | N/A - not applicable | WS1, WS11 |
|---------------------|------------------|---|--|---|------------------------------|----------------------|------------------------------------|
| Energy Supply | ES1 | Other Considerations | External energy sources | Confusion as to whether San Francisco will use energy generated outside city borders and work with the state to ensure GHG-free electricity. | B - No revision recommended | N/A - not applicable | WS2, WS7 |
| Energy Supply | All | Other Considerations | Timeline | Question about the timeline for implementation. | B - No revision recommended | N/A - not applicable | WS10 |
| Energy Supply | N/A | Other Considerations | Connections to health | Interest in discussing and considering the intersection of health and energy supply. | B - No revision recommended | N/A - not applicable | WS10 |
| Energy Supply | ES 1, ES 2, ES 3 | Underserved Communities/Minority Voices | Cost burden* | Would like the City to assist with increased utility cost to low-income, elderly, and non-profits. | B - No revision recommended | N/A - not applicable | WS5, WS8, WS9, pop-up |
| Energy Supply | ES 1, ES 2, ES 3 | Underserved Communities/Minority Voices | In-language outreach and education | Request for in-language outreach and education | B - No revision recommended | N/A - not applicable | WS8, WS9 |
| Energy Supply | ES 2, ES 3, ES 5 | Underserved Communities/Minority Voices | Safety | Existing building power capacity may not be able to handle a transition to all electric appliances which may cause short-circuiting. This may be dangerous for residents, especially the elderly. | B - No revision recommended | N/A - not applicable | WS5, WS9 |
| Energy Supply | N/A | Underserved Communities/Minority Voices | Cultural relevance | Concern that the transition to energy efficient appliances is not culturally relevant (electric stove) and may harm business owners. | B - No revision recommended | N/A - not applicable | WS8, WS9 |
| Energy Supply | ES 4 | Underserved Communities/Minority Voices | Workforce development* | Interest in workforce development through City College. | A - CAP revision recommended | Yes | WS5 |
| Building Operations | BO 3 | Support | Workforce development | Support for developing workforce while meeting clean energy goals. | B - No revision recommended | N/A - not applicable | WS1, WS4, WS6, WS7, Konveio, |
| Building Operations | BO 3 | Support | Workforce development | Interest in retraining existing workforce to address concerns that electrifications will lead to job losses. | A - CAP revision recommended | Yes | WS1, WS4, WS6, WS7, Konveio, Email |
| Building Operations | BO 1, BO 2 | Support | Building electrification & incentives | Support for replacing high-emitting appliances with electric alternatives, provided these alternatives indeed emit less carbon and are affordable. | B - No revision recommended | N/A - not applicable | WS5, WS7, Konveio, Email, Survey |
| Building Operations | BO 1, BO 2 | Support | Building electrification & incentives | Support for residential electrification incentives/rebates. | B - No revision recommended | N/A - not applicable | WS5, WS7, Konveio, Email, Survey |
| Building Operations | BO 1, BO 2 | Improvement | New and existing building developments and retrofits | Support for passive house building measures. | B - No revision recommended | N/A - not applicable | Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Building Operations | 80 1, BO 2 | Support | New and existing building developments and retrofits | Support for requiring solar installation on new/existing buildings. | B - No revision recommended | Solar PV, solar thermal, and/or living roof are currently required on new buildings. | N/A - not applicable | WS7, Konveio |
|----------------------------|------------------|-------------|--|---|--|--|----------------------|--------------------------|
| Building Operations | BO 4 | Support | New and existing building developments and retrofits | Support for City setting an aggressive timeline for buildings to replace/switch to low-impact or natural refrigerants. | B - No revision recommended | Refrigerants are controlled by technology, market and product availability, and regulation by state and federal government that cannot be pre-empted locally. | N/A - not applicable | Konveio, WS1 |
| Building Operations | BO 1, BO 2 | Support | Grid resiliency | Support for efforts to increase building and electric grid resiliency in the event of natural disasters, power outages, and sea level rise. | B - No revision recommended | Electric grid resilience, including building-scale measures, are addressed by ES 3. | N/A - not applicable | WS1, WS7, Konveio, Email |
| Building Operations | BO 4 | Support | GWP refrigerants | Support for addressing high-GWP refrigerants. | B - No revision recommended | See BO 4 | N/A - not applicable | Email |
| Building Operations | BO 1, BO 2, BO 4 | Improvement | Direct homeowner outreach | Interest in providing more direct outreach to individual homeowners. | C - Applicable to future implementation or other resource (eg. Different Plan) | Actions intended to provide outreach (BO 2-9 and BO 3-2) will depend on adequate City resources, and would be supplemented by utility, State, Federal, and professional organization outreach. | N/A - not applicable | WS2, WS5, WS6, Konveio |
| Building Operations | BO 1, BO 2 | Improvement | Water resilience | Interest in including strategies that focus on water consumption of buildings, especially as it relates to climate resiliency. | C - Applicable to future implementation or other resource (eg. Different Plan) | Addressed by SPUC Water Enterprise: https://sipuc.org/learning/conserv-water-and-hazards-and-climate-resilience-plan . Also note that the Cap will be updated in a year to include a "Water Sector" chapter. | N/A - not applicable | WS1, WS4, WS7, Konveio |
| Building Operations | BO 1, BO 2 | Improvement | Transparency & tracking | Interest in a more accurate analysis of tracking emissions instead of the current WRI market-based. | B - No revision recommended | Consistency with ongoing methods is valuable for tracking change over time. For consistency of tracking, substantial changes to methods are implemented in parallel to established practice, as in the case of Scope 3/consumption-based tracking. Staff are open to additional tracking if feasible and required data is available. However, the comment does not propose a specific change or improvement. | N/A - not applicable | WS7, Konveio |
| Building Operations | BO 1, BO 2 | Improvement | Transparency & tracking | Interest in transparent/updated metrics of energy efficiency available on a website and environmental impact of storage technologies. | C - Applicable to future implementation or other resource (eg. Different Plan) | Addressed by SPUC Water Enterprise: https://sipuc.org/learning/conserv-water-and-hazards-and-climate-resilience-plan . Also note that the Cap will be updated in a year to include a "Water Sector" chapter. | N/A - not applicable | WS7, Konveio |
| Building Operations | BO 1 | Improvement | Banning natural gas in new construction | Confusion regarding goals and if "new buildings" include residential, commercial, and mixed-use buildings. | B - No revision recommended | Efficiency is disclosed via municipal and private sector energy benchmarking reports, as well as BayREN Energy Atlas. | N/A - not applicable | WS7, Konveio |
| Building Operations | BO 1, BO 2 | Improvement | Building codes and permits | Concern that complicated building codes and decarbonize existing and new buildings. | A - CAP revision recommended | "New buildings" are defined in CA Building Code as newly constructed structures that have never been occupied, and this definition is utilized by the All-Electric New Construction Ordinance (2020). Added new action BO 2-11 to address (single integrated permit for heat pump water heaters). | N/A - not applicable | WS2, WS3, Konveio |
| Building Operations | BO 1, BO 2 | Improvement | Building codes and permits | Interest in applying permit compliance checking for appliance replacements. | C - Applicable to future implementation or other resource (eg. Different Plan) | City enforces the Energy Code and related policies for all types of projects including electrification replacements. Wfil include this within the policy development and implementation roll-out of BO2 supporting actions. | N/A - not applicable | Konveio, Email |
| Building Operations | BO 1, BO 2 | Improvement | Building codes and permits | Interest in requiring 100% carbon-free power in all new buildings in 2021. | B - No revision recommended | Action would be redundant in the context of transitioning to 100% carbon-free electricity for all uses citywide by 2025. (See Energy Supply) | N/A - not applicable | Konveio, Email |
| Building Operations | BO 1, BO 2 | Improvement | Energy efficiency in MF/existing | Interest in installation energy efficient appliances in multifamily construction and existing buildings. | C - Applicable to future implementation or other resource (eg. Different Plan) | Incentive programs, including BayREN Residential and Multifamily Building Efficiency, support appliance efficiency, and California Title 20 Appliance Standards and US DOE appliance standards set minimum performance for newly installed equipment. | N/A - not applicable | WS4, Survey |
| Building Operations | BO 2 | Improvement | Contractor list | Interest in City suggesting experts and qualified contractors to support transition and to help residents and property owners make plans. | C - Applicable to future implementation or other resource (eg. Different Plan) | BayREN, EnergyAccessSF, and SF DBI maintain lists of experts related to existing buildings and new construction. See also: allelectricdesign.org . See Energy Supply chapter. | N/A - not applicable | WS1, WS4 |
| Building Operations | BO 1, BO 2 | Improvement | Grid resiliency | Interest in creating grid relationships beyond the building level (resilient infrastructure at the block/neighborhood scale). | C - Applicable to future implementation or other resource (eg. Different Plan) | Repeat of above. | N/A - not applicable | WS1 |
| Building Operations | BO 1, BO 2 | Improvement | Grid resiliency | Interest in creating grid relationships beyond the building level (resilient infrastructure at the block/neighborhood scale). | C - Applicable to future implementation or other resource (eg. Different Plan) | | N/A - not applicable | WS1 |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Building Operations | ES 1, ES 2 | Improvement | Commercial buildings | Concern that Plan does not acknowledge that fuel switching for commercial buildings, when compared to residential buildings, is more complex and would therefore require more time, coordination, and planning. | B - No revision recommended | Agree that electrification of existing large commercial buildings and existing large multifamily buildings with non-standardized central systems is more complex than smaller commercial and residential buildings with 'packaged' systems. This concern is a key reason the Zero Emission Buildings Taskforce included a separate Existing Large Commercial Buildings Workgroup, which was recommended the 2035 target date to reflect the urgency of climate risks facing real estate. | N/A - not applicable | Email |
|----------------------------|------------|---|--|---|--|--|----------------------|-------------------------------------|
| Building Operations | BO 1, BO 2 | Improvement | Non-compliance | Interest in City including what would happen to those who don't comply with electrification. | B - No revision recommended | The CAP lays out strategies; the forum to develop critical details will be subsequent engagement with stakeholders and legislative processes. | N/A - not applicable | WS2 |
| Building Operations | BO 1, BO 2 | Equity | Cost burden | Concern that the immediate cost shifts from buildings switching to electric will burden small businesses, low-income, and middle-income communities and renters. | B - No revision recommended | Subsequent engagement with stakeholders and legislative proposals would be the forum to refine specific proposals, including related actions proposed in BO 2 and BO 3 that propose actions to provide incentives, education, and technical resources. | N/A - not applicable | WS2, WS4, WS5, WS10, Konweio, Email |
| Building Operations | BO 1, BO 2 | Equity | Cost burden | Concern that low-income residents who cannot afford the replacements will be penalized. | B - No revision recommended | One of the first BO actions is: BO 2-8: By 2023, develop and adopt tenant protection and anti-displacement policies for renters in buildings transitioning to efficient and all-electric systems. | N/A - not applicable | WS2, WS4, WS5, WS10, Konweio, Email |
| Building Operations | BO 1, BO 2 | Equity | Cost burden | Interest in a staggered timeline for each neighborhood based on socioeconomic factors. | B - No revision recommended | ES 5 (Plan for the equitable decommissioning of the city's natural gas system) proposes to develop geographically focused electrification plans. | N/A - not applicable | WS2, WS4, WS5, WS10, Konweio, Email |
| Building Operations | BO 3 | Equity | BIPOC Employment | Support for prioritizing companies that employ local BIPOC individuals. | B - No revision recommended | See BO 3-3. | N/A - not applicable | Konweio |
| Building Operations | All | Equity | Specific constituencies | Interest in identifying specific constituencies as opposed to simply using the BIPOC acronym to address different and diverse communities. | B - No revision recommended | Actions relating to existing residential were developed through an Anchor Partner Network - a collaboration between Dept of Environment, PODER, and Emerald Cities to engage specific constituencies (workers, tenants, owners, etc.). The CAP is a strategic document which prioritizes racial equity, and some acronyms are helpful for brevity. | N/A - not applicable | WS5 |
| Building Operations | All | Equity | Equitable implementation & outcomes | Support for oversight, accountability, and transparency of strategies. | B - No revision recommended | The CAP is a public proposal to inform and guide subsequent action. Subsequent engagement with stakeholders including legislative proposals would be the forum to refine specific proposals, including metrics and reporting beyond what is specifically addressed in the CAP. | N/A - not applicable | WS5 |
| Building Operations | N/A | Other Considerations | Increased education and outreach | Support for increased public awareness efforts and community outreach to educate homeowners and ease concerns about required changes. | B - No revision recommended | The Clean Energy Buildings Hub (now called 'Climate Equity Hub') proposed in BO 3-2 would be responsible for outreach & education to building owners and other customers, residential & commercial. Adequate funding resources are needed to meet the community expectation expressed in this comment. | N/A - not applicable | WS6, WS4, WS5, WS7 |
| Building Operations | All | Other Considerations | Environmental health | Interest in considering health effects from indoor air quality issues. | C - Applicable to future implementation or other resource (eg. Different Plan) | Health effects are cited throughout the narrative of Climate Action Plan. | N/A - not applicable | WS10 |
| Building Operations | All | Other Considerations | Building community support | Interest in developing strong messaging tailored to each audience to build community support and political will. | B - No revision recommended | The Clean Energy Buildings Hub (now called 'Climate Equity Hub') proposed in BO 3-2 would be responsible for outreach & education to building owners and other customers, residential & commercial. Adequate funding resources are needed to meet the community expectation expressed in this comment. | N/A - not applicable | WS10 |
| Building Operations | BO-2 | Underserved Communities/Minority Voices | Electrification cost incentives & education* | Desire for cost incentives and education for low-income and elderly residents to switch to all electric. | B - No revision recommended | See BO 2-9 and BO 3-2. Elderly residents will need to be included in targeted outreach. | N/A - not applicable | WS5, WS8, WS9 |
| Building Operations | All | Underserved Communities/Minority Voices | Electrification cost incentives & education* | Interest in seeing education and promotion of electrification via continued community workshops and other media/social media. | B - No revision recommended | The Clean Energy Buildings Hub (now called 'Climate Equity Hub') proposed in BO 3-2 would be responsible for outreach & education to building owners and other customers, residential & commercial. Adequate funding resources are needed to meet the community expectation expressed in this comment. | N/A - not applicable | WS8, WS9 |
| Building Operations | N/A | Underserved Communities/Minority Voices | Transparency* | Emphasized the need for transparency with goal progress (emissions reductions/costs) via a dashboard. | B - No revision recommended | See: San Francisco Climate Dashboard (SFEnvironment.org/sf-climate-dashboard) | N/A - not applicable | WS5, WS8, WS9 |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Building Operations | N/A | Underserved Communities/Minority Voices | State funding* | Would like the City to continue working with the State to secure funding for electrification. Worried that progressive cities get less state funding. | B - No revision recommended | N/A - not applicable | WS8 |
|------------------------------------|-----------------|---|------------------------------|---|--|----------------------|--|
| Building Operations | 80-1, 80-2, 80- | Underserved Communities/Minority Voices | Decarbonization | Support for decarbonization and moving away from fossil fuels. | B - No revision recommended | N/A - not applicable | WS8 |
| Transportation and Land Use | TLU 1 | Support | Public transit | Support for improving MUNI (safety, reliability, speed, service area). | B - No revision recommended | N/A - not applicable | WS5, WS7, WS10, WS11, Konveio, Email, Survey |
| Transportation and Land Use | TLU 1 | Support | Public transit | Support for setting goals around transit speed and reliability. | B - No revision recommended | N/A - not applicable | WS5, WS7, WS10, WS11, Konveio, Email, Survey |
| Transportation and Land Use | TLU 5 | Support | Transit-oriented development | Support for transit-oriented development. | B - No revision recommended | N/A - not applicable | WS4, WS6, Konveio, Email, Survey |
| Transportation and Land Use | TLU 5 | Support | Transit-oriented development | Support for a streamlined approval process for housing near transit. | B - No revision recommended | N/A - not applicable | WS4, WS6, Konveio, Email, Survey |
| Transportation and Land Use | TLU 4 | Support | Reducing VMT | Support for reducing VMT by increasing the cost of parking and using parking resources more efficiently. | B - No revision recommended | N/A - not applicable | WS1, WS2, WS5, WS10, Konveio |
| Transportation and Land Use | TLU 2 | Support | Bicycling | Support for the City defending bicycling just as much as pedestrians or cars. Start shifting from "streets for cars", to "streets for people." | B - No revision recommended | N/A - not applicable | WS1, WS2, WS7, Konveio |
| Transportation and Land Use | TLU 2 | Support | Bicycling | Support for adding more protected bike lanes. | C - Applicable to future implementation or other resource (eg. Different Plan) | N/A - not applicable | WS1, WS2, WS7, Konveio |
| Transportation and Land Use | TLU 2 | Support | Bicycling | Support for making electric bikes more affordable. | B - No revision recommended | N/A - not applicable | WS1, WS2, WS7, Konveio |
| Transportation and Land Use | TLU 6 | Support | Density and Diversity | Support for increasing density, diversity of land uses, and location efficiency across San Francisco. | B - No revision recommended | N/A - not applicable | WS 6, Survey |
| Transportation and Land Use | TLU 4 | Support | Parking | Support for parking permits. | B - No revision recommended | N/A - not applicable | Email |
| Transportation and Land Use | TLU 3 | Support | Pricing tools | Support for equitable pricing tools. | B - No revision recommended | N/A - not applicable | Email |
| Transportation and Land Use | TLU 6 | Improvement | Transit-oriented development | Interest in developing housing along bike corridors in addition to near public transit. | B - No revision recommended | N/A - not applicable | WS2, WS4, WS5, WS6, WS7, Konveio, Email |
| Transportation and Land Use | TLU 6 | Improvement | Transit-oriented development | Interest in investing the additional revenue from upzoning the corridors into community benefits. | B - No revision recommended | N/A - not applicable | WS2, WS4, WS5, WS6, WS7, Konveio, Email |
| Transportation and Land Use | TLU 2 | Improvement | Bike access and safety | Interest in more communal storage/bike racks in garages and ways to discourage bike theft. | B - No revision recommended | N/A - not applicable | WS2, WS10, Konveio |
| Transportation and Land Use | TLU 2 | Improvement | Bike access and safety | Interest in bikeshares. | A - CAP revision recommended | N/A - not applicable | WS2, WS10, Konveio |
| Transportation and Land Use | TLU 2 | Improvement | Bike access and safety | Interest in enforcing bicyclists to adhere to the laws. | B - No revision recommended | N/A - not applicable | WS2, WS10, Konveio |
| Transportation and Land Use | TLU 2 | Improvement | Bike access and safety | Interest in making installing bike racks easier (not requiring months of community hearings). | A - CAP revision recommended | N/A - not applicable | WS2, WS10, Konveio |
| Transportation and Land Use | TLU 1 | Improvement | Transit | Support for making public transit free for all riders. Support for free transit passes for residents. | B - No revision recommended | N/A - not applicable | WS7, Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Transportation and Land Use | TLU 1 | Improvement | Transit | Interest in developing apps that track public transit options to make them more reliable. | C - Applicable to future implementation or other resource (eg. Different Plan) | These exist and are led by private sector -- muni integrates data to support this and provides next muni (epp) | N/A - not applicable | WS11 |
|-----------------------------|-------|-------------|---------------------|---|--|--|----------------------|--|
| Transportation and Land Use | TLU 1 | Improvement | Transit | Interest in requesting more frequent cleaning of buses and trains so they are more pleasant to ride. | C - Applicable to future implementation or other resource (eg. Different Plan) | This does not necessarily rise to the level of inclusion in the CAP. Cleaning practices have improved drastically during COVID shutdown. | N/A - not applicable | Konveio |
| Transportation and Land Use | TLU 1 | Improvement | Transit | Interest in considering giving all buses priority at intersections, raising MUNI trains on a platform, and/or adding more bus-only lanes. | B - No revision recommended | TLU.1 includes multiple actions that call for bus-only lanes and Muni Forward actions. The ConnectSF TCS action (TLU.1-1) would include more of this work to achieve the 5-min network. | N/A - not applicable | Konveio |
| Transportation and Land Use | N/A | Improvement | Transit | Interest in eliminating low-use MUNI routes and subsidizing ride-share fares for needy riders. | B - No revision recommended | Low-use routes are currently removed because of the pandemic and the 5min frequent network reimagines the transit network for ridership and frequency. Subsidies exist in the Essential Trip Card and transit discounts are in place for specific groups. Rideshare has been showed to have negative impacts on traffic and environment. | N/A - not applicable | Konveio |
| Transportation and Land Use | TLU 1 | Improvement | Transit | Interest in focusing on all city stations and off-peak hours, as opposed to focusing most services and funding on the peak hours downtown. | C - Applicable to future implementation or other resource (eg. Different Plan) | The TCS is focused on studying transit network needs based on citywide travel, rather than peak hour only and downtown travel. | N/A - not applicable | Email |
| Transportation and Land Use | TLU 7 | Improvement | Reducing VMT | Concern that EVs are not a sustainable solution to cars. Car tires are polluting, and cars take up parking and road space and mainly benefit wealthy people. | B - No revision recommended | The City's goal is 80% low-carbon trips via transit, walking, biking. Transit and biking are not sufficient substitutes to vehicles for the mobility access for some individuals, including people with physical disability. EV Roadmap calls for 100% zero-emission vehicle sales by 2050 and all transportation by 2040. | N/A - not applicable | WS4, Konveio |
| Transportation and Land Use | TLU 7 | Improvement | Reducing VMT | Interest in installation of EV chargers in multifamily construction and existing buildings. | b - No revision recommended | EV Ready Building ordinance requires that 20% of parking spaces are EV charging ready in new construction and major rehabs. TLU7-2 includes expansion of citywide charging infrastructure, including at least one fast charging hub in a disadvantaged community. | N/A - not applicable | WS4, Konveio |
| Transportation and Land Use | TLU 7 | Improvement | Reducing VMT | Interest in phasing out conventional commercial and delivery vehicles, cabs, and ride-hailing vehicles. | B - No revision recommended | TLU7-3 includes infrastructure planning to support CCSF non-revenue and small business medium/heavy duty vehicles. CARB Advanced Clean Fleets Regulation will require large delivery companies and CCSF fleet to procure 100% ZEV trucks by 2027. | N/A - not applicable | WS4, Konveio |
| Transportation and Land Use | TLU 7 | Improvement | Reducing VMT | Interest in the City leading by example and making all City-owned vehicles/bikes electric (if not already). | B - No revision recommended | TLU7-4 will establish a standard to prioritize ZEV's for TNCs operating at the airport. CARB's Clean Miles Standard requires TNC's to increase electric miles to 60-90% of total by 2030 (rules pending). Lyft and Uber have committed to 100% zero emission by 2030. | N/A - not applicable | WS4, Konveio |
| Transportation and Land Use | TLU 3 | Improvement | Pricing tools | Interest in additional pricing tools to capture the full range of climate externalities associated with driving private cars and advancing equity. | B - No revision recommended | Ordinance [403(b)(4)] calls for adding additional vehicle classes as these vehicles become commercially available. | N/A - not applicable | Email |
| Transportation and Land Use | TLU 2 | Improvement | Household transport | Interest in the City offering a transportation audit per household to identify transportation needs and make recommendations for shifts to align with Plan goals. | C - Applicable to future implementation or other resource (eg. Different Plan) | CARB Advanced Clean Fleets Regulation will require large delivery companies and CCSF fleet to procure 100% ZEV trucks by 2027. TLU7-3 includes infrastructure | N/A - not applicable | Konveio |
| Transportation and Land Use | TLU 6 | Equity | Zoning | Interest in up-zoning parts of the city that were founded as Whites-only communities. | B - No revision recommended | The city does a household travel and travel decision survey to understand transportation needs citywide. | N/A - not applicable | Konveio |
| Transportation and Land Use | TLU 6 | Equity | Zoning | Interest in expanding multifamily zoning to all neighborhoods, not just in transit corridors to combat environmental injustice. | B - No revision recommended | See multiple actions in Housing strategies H.1 and H.2 | N/A - not applicable | WS2, WS4, WS5, WS6, WS7, WS10, Konveio |
| Transportation and Land Use | TLU 6 | Equity | Zoning | Concern that a NIMBY neighborhood will resist sustainable transit options and transit-oriented development. | B - No revision recommended | Already an action TLU 6-2: "Examine rezoning to allow for multi-family housing throughout San Francisco." | N/A - not applicable | WS2, WS4, WS5, WS6, WS7, WS10, Konveio |
| Transportation and Land Use | TLU 6 | Equity | Zoning | | B - No revision recommended | This is a long-standing challenge with multiple dimensions that many cities face. | N/A - not applicable | WS2, WS4, WS5, WS6, WS7, WS10, Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| | | | | | | | | |
|------------------------------------|---------------------|---|--------------------------|---|------------------------------|---|----------------------|-----------------------------|
| Transportation and Land Use | TLU 7 | Equity | Cost burden | Concern that electric charging is not accessible and expensive. | B - No revision recommended | TLU7-2 includes expansion of citywide charging infrastructure, including at least one fast charging hub in a disadvantaged community. | N/A - not applicable | WS1, WS5, WS10, Konveio |
| Transportation and Land Use | TLU 2 | Equity | Cost burden | Concern that restricting e-bike subsidies to low-income people will not be as effective because weather people are doing most of the driving. | B - No revision recommended | TLU7-2 aims at promoting equity in access not subsidizing wealthy individuals e-bike purchases | N/A - not applicable | WS1, WS5, WS10, Konveio |
| Transportation and Land Use | TLU 4 | Equity | Cost burden | Concern that simply increasing the cost of car ownership without providing easy-to-use alternatives will further punish communities of color. | B - No revision recommended | Strategies one and two are all about making the system better and expanding transit access, especially to low-income households and communities of concern. These are necessary steps to make pricing equitable. Pricing measures also generate needed funds that allow for the improvement of the transit system. | N/A - not applicable | Email |
| Transportation and Land Use | TLU 1, TLU 2 | Other Considerations | Pandemic | Concern that pandemic has moved the City and the residents in the wrong direction. | B - No revision recommended | SFMTA had to make tough decisions due to budget shortfalls. Immediate recovery efforts and TCS/SFS are aimed at connecting this path, and bringing transit back stronger than before the pandemic. | N/A - not applicable | WS1, WS2, WS5, WS7, Konveio |
| Transportation and Land Use | TLU 3, TLU 7 | Other Considerations | Commuters | Concern that many commuters and other drivers come from outside of the city and county. Therefore, local policies won't be as effective. Need for coordination on a regional scale. | B - No revision recommended | TLU1-8 calls more effective regional coordination. | N/A - not applicable | WS3, Survey |
| Transportation and Land Use | TLU 6 | Other Considerations | City "charm" | Concern of finding the balance of upzoning and keeping the charm and history of the city (e.g., old Victorian homes) that draw residents and tourists. | B - No revision recommended | This is a long-standing challenge with multiple dimensions that many cities face. | N/A - not applicable | Konveio |
| Transportation and Land Use | TLU 5 | Other Considerations | CEQA | Interest in removing the appeal process in CEQA which slows down transit oriented or affordable housing development. | B - No revision recommended | Staff supports policy changes that would accelerate climate action. | N/A - not applicable | Konveio, Survey |
| Transportation and Land Use | TLU 1 | Other Considerations | Transit First policy | Concern that city is not living up to its Transit First policy. | B - No revision recommended | The CAP TLU actions paired with ConnectSF and other ongoing efforts is aiming to advance transit first policy. | N/A - not applicable | Email, Survey |
| Transportation and Land Use | TLU 1 | Underserved Communities/Minority Voices | Convenience | Support for expanding the public transportation network, more direct routes for longer distances, and creating more regional connections. | B - No revision recommended | TLU1 addresses all of these concerns; ConnectSF expands the transit network and creates more and better regional connections. Longer regional trips will be supported with better direct connections, while the transit network in the city will be redesigned to facilitate more diverse trips with speedy and efficient transfers | N/A - not applicable | WS5, WS8, WS9 |
| Transportation and Land Use | TLU 1, TLU 2 | Underserved Communities/Minority Voices | Safety | Interest in increasing safety and security on public transit. | B - No revision recommended | Action for the SFMTA's ambassador program is included to support safety improvements. | N/A - not applicable | WS5, WS8, WS9 |
| Transportation and Land Use | TLU 1, TLU 2, TLU 2 | Underserved Communities/Minority Voices | Education and perception | Interest in City campaigns or programs catered to different communities to spur behavior change around public transit. | A - CAP revision recommended | See TLU 7-1 | N/A - not applicable | WS5, WS8, WS9 |
| Transportation and Land Use | TLU1, TLU 2 | Underserved Communities/Minority Voices | Reliability* | Interest in a one-stop-shop for real-time transit and traffic updates - that is simple and user friendly for all populations. | B - No revision recommended | See multiple actions in TLU1 and TLU 7-1 | N/A - not applicable | WS8, WS9 |
| Transportation and Land Use | TLU1, TLU 2 | Underserved Communities/Minority Voices | Reliability* | Interest in timing of public transit being more reliable. | B - No revision recommended | See multiple actions in TLU1 | N/A - not applicable | WS8, WS9 |
| Transportation and Land Use | TLU1, TLU 2 | Underserved Communities/Minority Voices | Reliability* | Suggestion for routine route audits to adjust frequency according to demand. | B - No revision recommended | There are many factors that influence transit planning decisions beyond just ridership. Simplifying that decision by implementing a simple ridership audit is not advisable. | N/A - not applicable | WS8, WS9 |
| Transportation and Land Use | TLU5 | Underserved Communities/Minority Voices | Increased density | Concern that encouraging high density development will negatively impact housing costs, health conditions, and displacement. | B - No revision recommended | Multiple Housing actions in H.1 and H.2 focus on supporting low-and-middle income residents through community stabilization programs, rehabilitation of existing housing, and finding ways to reduce construction costs for development. | N/A - not applicable | WS5 |
| Housing | Sector goal | Support | Housing development | Support for new housing, especially infill development. | B - No revision recommended | Yes, various strategies in the Housing and Transportation and Land Use sections support infill development. Within the Housing Chapter, strategies H3-1, H2-2, and H4-1 Thanks for the support See strategy H 3-2 | N/A - not applicable | Survey |
| Housing | H 3 | Support | Process streamlining | Support for streamlining the planning and building process. | B - No revision recommended | | N/A - not applicable | Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Housing | H2, H 3 | Support | Underutilized buildings | Support for redeveloping and renovating underutilized buildings to contribute to housing goals. | C - Applicable to future implementation or other resource (eg. Different Plan) | While perceptions of what are "underutilized" buildings or parcels likely vary, the CAP and other housing policy efforts under way such as the 2022 Housing Element Update, include policies to expand housing capacity in commercial and residential districts (including single family areas) while protecting rental housing occupied by low and moderate income renters. See strategy H1-3 | N/A - not applicable | WS6 |
|----------------|------------------|-------------|-----------------------------|---|--|--|----------------------|-----------------------------------|
| Housing | H1 | Support | Expanding tenant services | Support for financially supporting affordable housing for BIPOC communities by expanding tenant services. | B - No revision recommended | | N/A - not applicable | Konveio |
| Housing | H 3, H 4 | Improvement | Affordability | Concern that affordable housing may not be cost-effective for developers. Interest in: | | This is the beginning comment that is then followed by points below. | | WS5, WS6, WS11, Konveio |
| Housing | H 3, H 4 | Improvement | Affordability | granting surplus City-owned land at no cost to non-profit developers to build affordable housing and maximize the density. | A - CAP revision recommended | Added language that public surplus land will continue to be prioritized for affordable housing based on timing, financial feasibility, and other community needs. | | WS5, WS6, WS11, Konveio |
| Housing | H 3, H 4 | Improvement | Affordability | Developing more affordable units lower in new buildings and in less desirable harder to rent/sell facings. | B - No revision recommended | In the interest of equity, City policy is to require inclusionary on-site affordable units to be distributed throughout the building, however, for buildings over 120 feet, affordable units may be located in the lower two thirds of the building. (see page 57 of the MOHCD Inclusionary Manual for details https://simohcd.org/sites/default/files/Documents/MOH/Inclusionary%20Manual%2010.15.2018.pdf) | N/A - not applicable | WS5, WS6, WS11, Konveio |
| Housing | H 3, H 4 | Improvement | Affordability | providing a density bonus to effectively reduce the land cost per unit or to offer direct affordable housing grants to developers. | C - Applicable to future implementation or other resource (eg. Different Plan) | Various strategies reference incentivizing more housing and more affordable housing for vulnerable groups, which include density bonuses, and there are various density bonuses already in place in SF including state density bonus, HOMESE, and Proposition E (2019) | N/A - not applicable | WS5, WS6, WS11, Konveio |
| Housing | H 3, H 4 | Improvement | Affordability | Interest in the City requiring a certain number of affordable units to be built and leased before allowing any new market rate housing. | B - No revision recommended | Meeting housing targets across all incomes is important and the City has struggled to meet the Mayor's goal of 5,000 units per year. In addition, market rate housing often funds affordable housing either through on-site inclusionary units and in-lieu fees, or through increased property tax revenue from new buildings. As a result, restricting market rate could be counterproductive to meeting affordable targets | N/A - not applicable | WS5, WS6, WS11, Konveio |
| Housing | H 3, H 4 | Improvement | Affordability | Interest in replacing rent control with a rent subsidy based on each tenant's tax returns. | B - No revision recommended | This proposed approach to rent control would be a significant departure in local policy and would need to be developed with substantial input from community members and adopted by elected officials | N/A - not applicable | WS5, WS6, WS11, Konveio |
| Housing | H 1, H 2, H 3, H | Improvement | Green and resilient housing | Interest in the City setting requirements for sustainable water systems in all new housing. | B - No revision recommended | All new construction and substantial renovations require water-efficient fixtures per the Building Code and LEED, developments 250,000 SF and larger are required to treat and reuse non-potable water onsite, projects 40k+ must complete a water-balance model for SFPUC. | N/A - not applicable | WS1, WS2, WS3, WS4, WS11, Konveio |
| Housing | H 1, H 2, H 3, H | Improvement | Green and resilient housing | Interest in planning for resilient housing prior to construction as opposed to afterwards. | B - No revision recommended | See also Buildings Chapter, Hazards & Climate Resilience Plan, current building code, and new stormwater management mapping for how new housing supports resilience. | N/A - not applicable | WS1, WS2, WS3, WS4, WS11, Konveio |
| Housing | N/A | Improvement | Goals and targets | Mixed feelings about the feasibility of the sector goal. Some think the sector goal is too low, while others think the sector goal is unrealistic. With the housing shortage and growing industry, more units are needed to increase housing affordability, especially for BIPOC residents. | B - No revision recommended | While there are a number of ideas included in this comment we feel it aligns with various strategies and goals articulated. | N/A - not applicable | WS2, WS3 |
| Housing | H 3 | Improvement | Goals and targets | Interest in aligning Strategy 3 with Transportation and Land Use: expanding transit access and options and making sure housing density aligns with access to transit, businesses, and services, especially schools. | B - No revision recommended | Action H-3-1 largely aligns with this comment; Please see also the Transportation and Land Use Chapter. | N/A - not applicable | Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Housing | H 1 | Improvement | Community | Interest in adding support of site-based community building. | Actions H1-1 and H1-2 emphasize using policy to address the needs of people of color and supporting cultural districts and other priority geographies to support communities and the stability and return of residents and businesses, which can include community facilities. Housing, including affordable housing, includes open space requirements on-site; please see also the Healthy Ecosystems chapter. The City already works closely with nonprofit affordable developers and labor, and facilitates community advisory committees. We agree to distributing affordable housing broadly in the city, particularly in higher opportunity areas, as emphasized in H1-4 and H4-1, as well as investment in cultural districts, as in H1-2. Agree, this is addressed in H3-1 and H4-1 These two goals are not mutually exclusive. Subsidized affordable housing is part of how housing affordability is improved along with increased housing production overall, stabilization and protection strategies, construction and process cost reductions. Housing element is focused on these issues and includes extensive data on racial inequities related to income and housing Addressed in various strategies but particularly H1-1 and H-2 | Email |
|---------|---------------|----------------------|--------------------------------------|--|---|---|
| Housing | N/A | Improvement | Affordable housing green space | Interest in seeing green space access requirements for affordable housing. | B - No revision recommended | WS6 |
| Housing | H 3 | Improvement | Partnerships | Interest in City forming formal connections between non-profits, trade groups, and other organizations. | B - No revision recommended | WS1 |
| Housing | H 1, H 3, H 4 | Equity | Affordability | Interest in distributing affordable housing through all neighborhoods unless BIPOC communities requested housing in cultural districts. | B - No revision recommended | WS1, WS2, WS5, WS7, WS10, Konveio, Survey |
| Housing | H 1, H 3, H 4 | Equity | Affordability | Interest in developing affordable housing near goods and services. | B - No revision recommended | WS1, WS2, WS5, WS7, WS10, Konveio, Survey |
| Housing | H 1, H 3, H 4 | Equity | Affordability | Interest in solutions that build housing affordability, as opposed to affordable housing. | B - No revision recommended | WS1, WS2, WS5, WS7, WS10, Konveio, Survey |
| Housing | H 1, H 3, H 4 | Equity | Affordability | Interest in making explicit the housing burden by race and outlining the historic inequities that mean current BIPOC communities are overburdened with housing costs. | C - Applicable to future implementation or other resource (eg. Different Plan) | WS1, WS2, WS5, WS7, WS10, Konveio, Survey |
| Housing | H 1 | Equity | Gentrification | Interest in supporting small businesses and protecting the area from gentrification. Interest in protecting current communities from displacement. | B - No revision recommended | WS5, WS6, WS11 |
| Housing | H 4 | Equity | Combating multi-generational poverty | Interest in introducing and growing new land and building ownership models that cultivate community and begin to grow wealth in communities with multi-generational poverty. | B - No revision recommended | Email |
| Housing | H 2 | Other Considerations | Resistance | Concern about resistance to building affordable housing sites, larger buildings, and shelters for unhoused people. | B - No revision recommended | WS2, WS3, WS10, WS11 |
| Housing | H 1, H 2, H 4 | Other Considerations | Inclusion of the middle class | Mixed interests in who to focus on in these strategies. Some believe that strategies need to include the lower middle class as well, while others believe that all the resources that go to the middle class are further overburdening lower-income BIPOC communities. | B - No revision recommended | WS7, WS11, Konveio |
| Housing | N/A | Other Considerations | Terms | Confusion about what "affordable" means in the context of the 50% affordable housing goal. | B - No revision recommended | WS6, WS7 |
| Housing | N/A | Other Considerations | Scale | Concern that housing issues are regional and some affected by SF's housing policies live outside of the city. | B - No revision recommended | WS5 |
| Housing | H 1, H 2 | Other Considerations | Housing quality | Interest in the City discussing the quality of new housing. | B - No revision recommended | WS10 |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

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| Housing | H 1, H 2, H 3, H 4 | Underserved Communities/Minority Voices | Small property owners | Support for actions that encourage small property owners to add housing and rehabilitate existing units but interested in accompanying policies that protect small property owners from non-compliant, non-paying renters. | B - No revision recommended | Additional and rehabilitated housing is supported in the CAP, including H 3-2 and H 3-3. The Rent Board provides mediation services between landlords and tenants. There are also federal and other funding currently available to help tenants and property owners with unpaid rent due to Covid-19. | N/A - not applicable | WS8, WS9, Pop-up |
| Housing | H 3 | Underserved Communities/Minority Voices | Revised zoning and permitting | Support for updating zoning and allowing live-work spaces. | B - No revision recommended | Many workers in San Francisco have been working from home due to the Covid-19 pandemic, and zoning does not seem to have been a barrier. | N/A - not applicable | WS8, WS9, |
| Housing | H 3 | Underserved Communities/Minority Voices | Revised zoning and permitting | Interested in policies/permits that allow building up versus building out. | B - No revision recommended | Addressed in policies that promote additional housing in the city, especially higher resource areas close to transit, jobs, and services, including H3-1, H1-4, and H2-2 | N/A - not applicable | WS8, WS9, |
| Housing | H 3 | Underserved Communities/Minority Voices | Revised zoning and permitting | Support for affordable housing in all neighborhoods, including low-density neighborhoods. | B - No revision recommended | Addressed in H 4-1 | N/A - not applicable | WS8, WS9, |
| Housing | N/A | Underserved Communities/Minority Voices | Sector goals* | Would like clarity on how to 5,000 new housing units per year metric was developed. Interest in a more aggressive timeline for new housing. | C - Applicable to future implementation or other resource (eg. Different Plan) | 5,000 units is a Mayoral goal that exceeds current RHNA targets. RHNA will increase with new Housing element to be adopted by 2023. | N/A - not applicable | WS5, Pop-up |
| Housing | N/A | Underserved Communities/Minority Voices | Sector goals* | 30% affordable housing goal seems low | B - No revision recommended | The 50% goal of 5,000 units represents 1,500 affordable units, more than ever produced in one year. New RHNA targets for affordable housing will increase and will require additional resources to achieve the new affordable housing targets. | N/A - not applicable | WS5, Pop-up |
| General | N/A | Underserved Communities/Minority Voices | Transparency* | Need for easy to understand, real time tracking towards Plan goals and resulting benefits to specific communities/demographics. | | See CAP Section 6: Next Steps for Implementing the CAP; Monitoring, Evaluation and Reporting for discussion on this. | | WS8, WS9 |
| Housing | H 4 | Underserved Communities/Minority Voices | Affordable housing* | Support for increased funding and development of affordable housing. | B - No revision recommended | Agreed, City funds have been increasing in recent years with the passage of two affordable housing general obligation bonds in 2015 and 2019 and the use of general fund and other sources; however, many of these funds are one-time and will need to be renewed in the future. | N/A - not applicable | Pop-up |
| Housing | H 1, H 2, H 4 | Underserved Communities/Minority Voices | Affordable housing* | Interest in a more aggressive timeline and goal for affordable housing. Would also like to speed up the process for residents to obtain affordable housing. | B - No revision recommended | The City is committed to providing more affordable housing as soon as possible. | N/A - not applicable | WS8 |
| Housing | H 2 | Underserved Communities/Minority Voices | Unhoused | Would like the Plan to detail actions to assist the unhoused through mental health programs and job training on top of financial assistance. | C - Applicable to future implementation or other resource (eg. Different Plan) | The CAP seeks to support vulnerable populations, including the unhoused, but most efforts to support mental health and job training live in other City efforts, often in partnership with community organizations. | N/A - not applicable | WS8 |
| Responsible Production & Consumption | RPC 2, RPC 3 | Support | Waste reduction | Support for prioritizing waste reduction (e.g., food waste and packaging). | B - No revision recommended | Comment supports existing language | N/A - not applicable | WS1, WS4 |
| Responsible Production & Consumption | RPC 3 | Support | Producer responsibility | Support for extending producer responsibility policies. | A - CAP revision recommended | Added language to support policies to extend producer responsibility to reduce and recover packaging to RPC 3-4. | Yes | WS2, Konveio |
| Responsible Production & Consumption | RPC 1 | Support | Embodied carbon | Support for reduction of embodied carbon in buildings and infrastructure. | B - No revision recommended | Comment supports existing language | N/A - not applicable | WS1, WS2, Konveio |
| Responsible Production & Consumption | RPC 2 | Support | Food and plant-based diets | Support for promoting and subsidizing plant-based diets, especially by providing incentives for plant-based restaurant meals and committing to plant-based foods in City buildings. | C - Applicable to future implementation or other resource (eg. Different Plan) | Could be implemented in RPC 2-5, RPC 2-6, RPC 2-7 by being included into the Good Food Purchasing Program (GFP). | N/A - not applicable | WS5, Konveio |
| Responsible Production & Consumption | RPC 3 | Support | Consumption | Support for considering consumption-based emissions. | B - No revision recommended | Consumption based emissions were considered overall and CAP focuses on CBEI in another CAP chapter. | N/A - not applicable | Konveio |
| Responsible Production & Consumption | RPC 3 | Improvement | Reuse of goods and services | Interest in encouraging and capturing the decarbonization impacts of reuse and secondhand markets. This could include community repair events, lists of repair businesses, and donation avenues, and a requirement for Recology to ensure reuse of durable items and materials. | B - No revision recommended | Comments support existing language except specific reference to Recology, that level of detail more suitable for future implementation. | N/A - not applicable | WS1, WS4, WS7, Konveio, Survey |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

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| Responsible Production & Consumption | RPC 3 | Improvement | Reuse of goods and services | Interest in limiting virgin plastic items and single-use items and closing loopholes in the current plastic bag ban. | B - No revision recommended | Comment on limiting virgin plastic and single use supports existing language on reducing non-reusables, reuse, repair etc.. Comment on closing loophole in plastic bag ban more suitable for future implementation of policy and not in CAP. Addressed in RPC 3-2. | N/A - not applicable | WS1, WS4, WS7, Konveio, Survey |
| Responsible Production & Consumption | RPC 3 | Improvement | Reuse of goods and services | Interest in seeing textiles and clothing products mentioned in the measures. | B - No revision recommended | | N/A - not applicable | WS1, WS4, WS7, Konveio, Survey |
| Responsible Production & Consumption | RPC 3 | Improvement | Reuse of goods and services | Interest in banning or taxing unsustainable materials. | B - No revision recommended | RPC 3-1 includes opt on for requiring foodware reusables, which means banning non-reusable or 'single use' foodware, and includes incentivizing which could include taxing if appropriate. | N/A - not applicable | WS1, WS4, WS7, Konveio, Survey |
| Responsible Production & Consumption | RPC 3 | Improvement | Waste reduction, recycling, and compost | Interest in pressuring companies to reduce packaging or incorporate environmentally friendly packaging options. | A - CAP revision recommended | Added language to support policies to extend producer responsibility to reduce and recover packaging to RPC 3-4, and RPC 3-4 also encourages environmentally friendly reusable packaging. | Yes | WS4, WS10, WS11, Konveio |
| Responsible Production & Consumption | RPC 3 | Improvement | Waste reduction, recycling, and compost | Interest in re-introducing materials drop-off locations in the city. | B - No revision recommended | Comment supports existing language and subactions envisioned in RPC 3-1 and 3-2, including drop-off locations for textiles and as needed for other goods. Separate from CAP. City re-introducing drop-off locations for beverage containers. | N/A - not applicable | WS4, WS10, WS11, Konveio |
| Responsible Production & Consumption | RPC 3 | Improvement | Waste reduction, recycling, and compost | Interest in providing biogas digesters and compostable bags in parks to divert dog waste. | C - Applicable to future implementation or other resource (eg. Different Plan) | Need to assess feasibility of using digesters in parks vs larger centralized digester to be developed in future implementation outside CAP strategies. | N/A - not applicable | WS4, WS10, WS11, Konveio |
| Responsible Production & Consumption | RPC 3 | Improvement | Waste reduction, recycling, and compost | Interest in getting SF access to anaerobic digester at Recology. | C - Applicable to future implementation or other resource (eg. Different Plan) | Recology does not have current digester nor may have space for one in SF, but may develop regional digester in future. Need to assess feasibility. | N/A - not applicable | WS4, WS10, WS11, Konveio |
| Responsible Production & Consumption | RPC 5 | Improvement | Education & outreach | Interest in educating community, particularly students, about the link between soil health, foods, and human health. | B - No revision recommended | There was not capacity to administer a community challenge, so strategy RPC 5 was removed from CAP | N/A - not applicable | WS3, WS6, WS6, WS11, Konveio |
| Responsible Production & Consumption | RPC 5 | Improvement | Education & outreach | Interest in engaging communities to buy local and sustainable products, if they need to buy at all. | B - No revision recommended | Comment supports existing language in RPC 2 and 3, and further development in implementation. | N/A - not applicable | WS3, WS6, WS6, WS11, Konveio |
| Responsible Production & Consumption | RPC 1 | Improvement | Building materials | Interest in reusing construction and demolition materials. | B - No revision recommended | Comment supports existing language: RPC 1-6 and RPC 1-4. | N/A - not applicable | WS4, Konveio, Survey |
| Responsible Production & Consumption | RPC 1 | Improvement | Building materials | Interest in limiting cement use in San Francisco. | B - No revision recommended | RPC 1-2 focuses on the design and procurement of low carbon structural materials for new construction. Incentives, policies and/or guidelines will address low carbon concrete (of which cement is a key ingredient). For project teams to meet the requirements of RPC 1-1, the concrete mix is a likely early consideration. | N/A - not applicable | WS4, Konveio, Survey |
| Responsible Production & Consumption | RPC 1 | Improvement | Building materials | Interest in using a lighter colored alternative to the cement/asphalt currently used in some city sidewalks. | C - Applicable to future implementation or other resource (eg. Different Plan) | The Department of the Environment is coordinating with the Department of Public Works to evaluate the current sidewalk specification and determine opportunities to update the requirements to allow for products that are nontoxic and reduce the heat island effect. | N/A - not applicable | WS4, Konveio, Survey |
| Responsible Production & Consumption | RPC 1 | Improvement | Building materials | Interest in seeking out architects using decarbonizing building practices such as mass timber. | B - No revision recommended | RPC 1-2 focuses on the design and procurement of low carbon structural materials for new construction. The process to develop incentives, policies and/or guidelines for mass timber will include a range of stakeholders, including architects. | N/A - not applicable | WS4, Konveio, Survey |
| Responsible Production & Consumption | RPC 1, RPC3 | Improvement | Building materials | Interest in considering fence material made from plastic detergent jugs. | B - No revision recommended | This is a level of detail not suitable for CAP. Current strategies allow recycling plastic containers to be used in fencing or other building materials to keep them out of the landfill, and there are manufacturers creating a number of materials from recycled plastics. | N/A - not applicable | WS4, Konveio, Survey |
| Responsible Production & Consumption | RPC 1 | Improvement | Building materials | Interest in mentioning steel in the measures. | B - No revision recommended | RPC 1-2 focuses on the design and procurement of low carbon structural materials for new construction. Incentives, policies and/or guidelines will address structural steel. For project teams to meet the requirements of RPC 1-1, steel manufacturing processes are a likely early consideration. | N/A - not applicable | WS4, Konveio, Survey |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Responsible Production & Consumption | Improvement | Workforce development | Interest in retraining and retaining blue collar employees who get displaced. | C - Applicable to future implementation or other resource (eg. Different Plan) | RPC strategies that might possibly create displacement also can result in new jobs. Retraining and retaining can be addressed in future implementation as needed if there is displacement. | WS10, WS11 |
|--------------------------------------|----------------------|--|--|--|--|---------------|
| Responsible Production & Consumption | Improvement | Workforce development | Interest in local recycling and local green jobs. | B - No revision recommended | Comment supports language that creates new local jobs, including recycling, such as in RPC 1-4, 1-6, and potentially in RPC 2 and 3. | WS4 |
| Responsible Production & Consumption | Improvement | Food and plant-based diets | Interest in the promotion of regenerative agriculture products as part of a Food Waste Prevention and Edible Food Recovery Policy. | A - CAP revision recommended | In RPC 2-5 added regenerative agriculture language, and can be considered in any future food policy (RPC 2-3). | WS7, Konveio |
| Responsible Production & Consumption | Improvement | Consumption emissions | Interest in seeing a specific goal around consumption emissions that includes the production and transportation of the goods and other stages of the life cycle. | B - No revision recommended | CAP in a different chapter (as I understand) will include a CBEI goal that include life cycle emissions | WS7, Konveio |
| Responsible Production & Consumption | Improvement | Reporting requirements | Interest in requiring Environmental Product Declarations (EPDs) that identify total embodied carbon of different categories of products. | B - No revision recommended | Together with Life Cycle Assessments, Environmental Product Declarations will be a key documentation and compliance mechanism for RPC 1-1. | WS1 |
| Responsible Production & Consumption | Improvement | Other modes | Interest in including plans to curb aviation and maritime emissions. | B - No revision recommended | RE: aviation emissions, see RPC 4: Lead the aviation sector by reducing emissions across the airline passenger journey; and RPC 4-2: SFO will continue its leadership and partnership with airlines to work to replace up to 50% of its fuel supply with Sustainable Aviation Fuels by 2050. | WS1 |
| Responsible Production & Consumption | Improvement | Community | Support facilitating the creation of inclusive and networked neighborhood scale projects. | B - No revision recommended | Addressing maritime emissions is challenging because emissions from large maritime ships, boats, and off-road equipment are currently beyond the control of the city. San Francisco will continue to work with state and federal entities to find ways to reduce these emissions. Comment supports language in RPC 3-3. | Email |
| Responsible Production & Consumption | Equity | Impact on businesses | Concern that the goal will disproportionately impact BIPOC-, locally-owned, or small businesses. | B - No revision recommended | Before implementation, all actions will be subject to a Racial Equity Scan and Coeffects Assessment as well as engagement with impacted individuals/businesses. Also see RPC 1-6, RPC 2-2, RPC 3-3 for actions that explicitly respond to an identified | WS6, WS11 |
| Responsible Production & Consumption | Equity | Access to food | Interest in providing access to fresh produce in certain districts that previously did not have access. | A - CAP revision recommended | RPC 2-2 added language to include providing recovered fresh produce to communities with limited access. | WS6 |
| Responsible Production & Consumption | Equity | Access to food | Interest in making sure that donation centers stay culturally relevant to recipients. | C - Applicable to future implementation or other resource (eg. Different Plan) | Agree with this suggestion, need ideas and resources to implement. | WS6 |
| Responsible Production & Consumption | Other Considerations | COVID | Interest in addressing impacts of COVID-19 on responsible production and consumption. | B - No revision recommended | COVID impacts have been considered and reflected in extending some timelines and some strategies address impacts such as with adaptive reuse of office spaces in RPC 1-2. Consumption patterns were impact especially with restaurant closure and shift to delivery but with recovery consumption | WS1, WS6, WS7 |
| Responsible Production & Consumption | Other Considerations | Community gardens | Question about where community gardens fit in this goal. | C - Applicable to future implementation or other resource (eg. Different Plan) | Current CAP doesn't discuss community gardens. SFE currently supports community gardens typically through our zero waste grant program by providing free backyard composting training programs and GCETP- Gardening Composting Educator Training Program which trains residents to maintain community gardens throughout SF. | WS10, Konveio |
| Responsible Production & Consumption | Other Considerations | Community gardens | Interest in encouraging landlords to optimize unused space such as a community garden. | C - Applicable to future implementation or other resource (eg. Different Plan) | Current CAP doesn't discuss community gardens. SFE currently supports community gardens typically through our zero waste grant program by providing free backyard composting training programs and GCETP- Gardening Composting Educator Training Program which trains residents to maintain community gardens throughout SF. | WS10, Konveio |
| Responsible Production & Consumption | Other Considerations | Corporate responsibility and enforcement | Interest in focusing efforts to ensure responsible consumption and production on corporations, not on consumers. | B - No revision recommended | Efforts need to be focused on both corporations/businesses and consumers, with all having a critical role to play to ensure responsible consumption and production. | Konveio |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Responsible Production & Consumption | N/A | Other Considerations | Corporate responsibility and enforcement Other materials | Concern of how the City will hold companies accountable for lifecycle emissions and new standards for materials. Interest in including e-waste. | C - Applicable to future implementation or other resource (eg. Different Plan) A - CAP revision recommended | How the City can leverage its legal authority to hold companies accountable will be addressed as policies and programs are developed and implemented in the future. Added electronics to RPC 3-3. | N/A - not applicable Yes No N/A - not applicable | WS2 WS2 WS3 W5, W8, W9 |
|--------------------------------------|-----------------|---|---|---|--|--|---|--|
| Responsible Production & Consumption | RPC 3 | Other Considerations | Other materials | Interest in including e-waste. | A - CAP revision recommended | Added electronics to RPC 3-3. | Yes | WS2 |
| Responsible Production & Consumption | N/A | Other Considerations | Legal authority | Concern about how the City will enforce waste and food systems outside of the city. | B - No revision recommended | San Francisco does not have powers to enforce food system waste outside of our jurisdictional boundaries. | No | WS3 |
| Responsible Production & Consumption | RPC1, RPC 2, RP | Underserved Communities/Minority Voices | Restrictions for producers* | Interest in seeing City or state set limitations for production (permitting for production and penalties for overproduction). | B - No revision recommended | It is unclear if this comment is directed at consumer product manufacturers or building developers (both or neither?) Generally speaking, San Francisco has committed to reduce the generation of new items 15% by 2030 using a 2015 baseline. The solutions will look different for different sectors of industry. For example, for the building industry, this translates to incentives for adaptive reuse, infrastructure/policies/programs to support building material reuse, and policy to cap the waste generated on a construction site (per square foot of development) while also mandating deconstruction and source separation to increase the potential for rescue. As it relates to restaurants and food waste, see RPC 2-4. | N/A - not applicable | W5, W8, W9 |
| Responsible Production & Consumption | RPC1, RPC 2, RP | Underserved Communities/Minority Voices | Restrictions for producers* | Interest in City and state increasing sustainability standards for producers. | B - No revision recommended | The City has an Environmentally Preferable Purchasing Ordinance (Environment Code Chapter 2), as well as regulations that define sustainability requirements for a range of product categories. These are updated and expanded regularly and can be reviewed online at www.SFapproved.org. As it relates to RPC 1, by introducing embodied carbon reductions for building materials, producers are being held accountable to reduce the impacts of material extraction, manufacture, and transport - as well as other product impacts that are outside the direct producer's sphere of influence. | N/A - not applicable | W5, W8, W9 |
| Responsible Production & Consumption | RPC 5 | Underserved Communities/Minority Voices | Clear education and resources* | Interest in clear/simple communication, education, and resources for residences. | B - No revision recommended | There was not capacity to administer a community challenge, so strategy RPC 5 was removed from CAP | N/A - not applicable | W5, W8, W9 |
| Responsible Production & Consumption | RPC 5 | Underserved Communities/Minority Voices | Clear education and resources* | Interest in educating children about RPC practices and provide funding to teach in schools. | A - CAP revision recommended | There was not capacity to administer a community challenge, so strategy RPC 5 was removed from CAP | Yes | W5, W8, W9 |
| Responsible Production & Consumption | RPC 3 | Underserved Communities/Minority Voices | Support for small businesses* | Interest in the City providing financial support for restaurants and other small businesses to encourage RPC practices. | A - CAP revision recommended | Added word "supporting" in RPC 3-1 financial support and assistance for is being implemented in starting in 2021-2022. | Yes | W5, W9 |
| Responsible Production & Consumption | N/A | Underserved Communities/Minority Voices | COVID* | Do these strategies and actions take into account COVID-19 or any type of other pandemic/emergency response in the future? | A - CAP revision recommended | Consideration was given to pandemic impacts over time and some strategies modified or extended timewise to allow recovery time. Recommend extend date from 2023 to 2024 for RPC 3-1. Future is uncertain and don't see further need for revisions. | Yes | W8 |
| Healthy Ecosystems | HE 5 | Support | Urban greening/forestry | Support for planting street trees, native trees, and preserving existing mature trees. | B - No revision recommended | Included in HE 4 and HE 5. | N/A - not applicable | Survey |
| Healthy Ecosystems | HE 5, HE 6 | Support | Urban greening/forestry | Support for increased funding for urban forestry/ecosystem stewardship programs. | B - No revision recommended | Funding and Capacity Needs apply to entire CAP, and so are addressed appropriately more broadly. | N/A - not applicable | WS3, Konveio, Survey |
| Healthy Ecosystems | HE 5, HE 6 | Support | Urban greening/forestry | Support for creating wildlife corridors around the city and converting concrete/AstroTurf to planters and green spaces especially in underutilized areas. | B - No revision recommended | Addressed in Healthy Ecosystems sector chapter | N/A - not applicable | WS3, Konveio, Survey |
| Healthy Ecosystems | HE 2 | Improvement | Community involvement and education | Interest in funding community participation and providing financial incentives to businesses and residents to encourage living architecture and native plants in gardens and nurseries. | A - CAP revision recommended | Addressed in HE 6-2. | | WS1, WS5, WS6, WS7, WS11, Konveio, Email |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

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| Healthy Ecosystems | HE 2 | Improvement | Community involvement and education | Interest in active communication between community and the city during greening projects. | A - CAP revision recommended | Changes made to HE 2-1 and 2-2. | WS1, WS5, WS6, WS7, WS11, Konveio, Email |
| Healthy Ecosystems | HE 2 | Improvement | Community involvement and education | Interest in partnering with schools and other organizations like architecture firms for stewardship work. | A - CAP revision recommended | Changes made to HE 2-1 and 2-2. | WS1, WS5, WS6, WS7, WS11, Konveio, Email |
| Healthy Ecosystems | HE 2 | Improvement | Community involvement and education | Interest in education opportunities on the importance of green areas. | B - No revision recommended | Addressed broadly by HE Strategy 2. | N/A - not applicable |
| Healthy Ecosystems | HE 1, HE 2, HE 7 | Improvement | Community involvement and education | Interest in integrating a citizen science component by expanding data inputs and public awareness of urban habitat. | C - Applicable to future implementation or other resource (eg. Different Plan) | Addressed broadly in HE Strategy 2. | N/A - not applicable |
| Healthy Ecosystems | N/A | Improvement | Other ecosystems | Interest in including wetlands, perennial grasslands, and oceans in the strategies. | C - Applicable to future implementation or other resource (eg. Different Plan) | All ecological communities will be addressed in the implementation of HE 1-5 and HE 3-1. | WS5, Konveio |
| Healthy Ecosystems | HE 2 | Improvement | Stewardship jobs | Interest in the City allocating funding and creating ecosystem stewardship and gardening positions. | A - CAP revision recommended | Funding and Capacity Needs apply to entire CAP, and so are addressed appropriately more broadly. | WS4, Konveio, Email |
| Healthy Ecosystems | N/A | Improvement | Safe environment | Interest in conducting thorough testing, clean-ups, and remediation of all radioactive and hazardous waste contamination along and near waterfront areas. | C - Applicable to future implementation or other resource (eg. Different Plan) | See Hazards and Climate Resilience Plan (HCRP) https://s/planning.org/project/hazards-and-climate-resilience-plan | Email, Survey |
| Healthy Ecosystems | N/A | Improvement | Safe environment | Interest in addressing the issue of rising sea levels and groundwater threatening to flood radioactive and hazardous waste contamination sites in vulnerable and at-risk communities. | C - Applicable to future implementation or other resource (eg. Different Plan) | See Hazards and Climate Resilience Plan (HCRP) https://s/planning.org/project/hazards-and-climate-resilience-plan | Email, Survey |
| Healthy Ecosystems | All | Improvement | Resilience | Interest in creating resilient ecosystems in the face of natural disasters and sea level rise. | B - No revision recommended | Included in HE 3-2 AND 3-3. (*Note: this issue was finally mentioned on the very last page of Appendix A of the HCRP, and only re consequences. There were no strategies to address in the HCRP) | WS10, WS11 |
| Healthy Ecosystems | HE 5, HE 6, HE 7 | Improvement | Protect and expand green space | Interest in limiting population in the city and support for monitoring ecological management progress. | B - No revision recommended | Included generally in HE Strategy 3. | Konveio |
| Healthy Ecosystems | HE 5, HE 6, HE 7 | Improvement | Protect and expand green space | Interest in protecting existing habitats from development. | B - No revision recommended | Included in HE 3-1. | Konveio |
| Healthy Ecosystems | HE 5, HE 6, HE 7 | Improvement | Protect and expand green space | Interest in limiting outdoor lighting and controlling runoff. | C - Applicable to future implementation or other resource (eg. Different Plan) | Lighting should be addressed in ENERGY sector. Runoff is addressed by all the greening actions, though it does raise the point about a water chapter. | Konveio |
| Healthy Ecosystems | HE 8 | Improvement | Agriculture on rooftops and backyards | Interest in having land use policy also support local, small scale agriculture on rooftops and in backyards. | C - Applicable to future implementation or other resource (eg. Different Plan) | Applies to Responsible Production and Consumption Chapter as this is about localization, and not so much carbon sequestration. | Konveio |
| Healthy Ecosystems | HE 2 | Equity | Restoration efforts | Interest in empowering local communities, specifically native voices, to access green spaces and engaging them in land stewardship efforts and the City's decision making. | A - CAP revision recommended | Changes made to HE 2-1. | WS4, WS5, WS6, WS10, Konveio |
| Healthy Ecosystems | HE 2 | Equity | Restoration efforts | Interest in focusing urban greening efforts on underserved areas while limiting gentrification (eg. finding balance between green spaces/affordable housing development). | B - No revision recommended | Racial equity is a primary goal of the CAP, and has been integrated into strategies and actions as appropriate through application of an racial equity scan. | WS4, WS5, WS6, WS10, Konveio |
| Healthy Ecosystems | HE 2 | Equity | Restoration efforts | Interest in linking racial and social equity to health and green spaces. | B - No revision recommended | Same as above. | WS4, WS5, WS6, WS10, Konveio, Konveio |
| Healthy Ecosystems | HE 2 | Equity | Job creation | Support for creating career pipelines for environment jobs by hiring within communities and ensuring every org has a DEI framework to address institutional inequities. | A - CAP revision recommended | Changes made to HE 2-1. | WS4, WS5, WS6, WS10, Konveio, Konveio |
| Healthy Ecosystems | All | Equity | Community involvement | Interest in engaging and following leadership from frontline and historically underserved communities. | A - CAP revision recommended | Changes made to HE 2-1 and 2-2. | WS5, Email |
| Healthy Ecosystems | All | Equity | Community involvement | Interest in City partnerships with local BIPOC organizations or low-income communities. | A - CAP revision recommended | Changes made to HE 2-1 and 2-2. | WS5, Email |

APPENDIX B-2: CAP Community Engagement feedback - City comment resolution form

| Healthy Ecosystems | HE 4 | Equity | Funding | Support for redistribution/increase of funding to historically ignored areas to maintain healthy ecosystems | A - CAP revision recommended | Konveio |
|--------------------|------------|---|----------------------------|---|--|----------------------|
| Healthy Ecosystems | HE7, HE8 | Equity | Space limitation | Concern that some neighborhoods have more room for parks and open space than others. Thus, more urbanized neighborhoods will not have opportunities for added green spaces. | B - No revision recommended | WS11 |
| Healthy Ecosystems | All | Equity | Explicitness | Interest in calling out equity explicitly in the strategies. | A - CAP revision recommended | WS5 |
| Healthy Ecosystems | | Other Considerations | Alignment of goals | Interest in aligning goals (especially housing goals) of City agencies and regulating industries (e.g., transportation, landscaping, construction). | C - Applicable to future implementation or other resource (eg. Different Plan) | WS2, WS3, WS5, Email |
| Healthy Ecosystems | HE 1, HE 2 | Other Considerations | Alignment of goals | Interest in mandating cross-agency collaboration and strengthening and advancing City departments' existing policies, such as San Francisco's Biodiversity Resolution. | B - No revision recommended | WS2, WS3, WS5, Email |
| Healthy Ecosystems | N/A | Other Considerations | Density | Interest in getting rid of the Shadow Ordinance and building up, not out. | C - Applicable to future implementation or other resource (eg. Different Plan) | Konveio |
| Healthy Ecosystems | HE 4 | Other Considerations | Terms | Confusion about what "built environment" means. | B - No revision recommended | WS11 |
| Healthy Ecosystems | N/A | Other Considerations | Environmental health | Interest in addressing pollution-related public health emergencies in already-impacted Bayview Hunters Point and Treasure Island. | B - No revision recommended | Email |
| Healthy Ecosystems | HE 4 | Underserved Communities/Minority Voices | Cost burden & incentives | Although eager to reduce emissions and make changes, hesitant of the accompanying costs to residents. Would like the City to provide financial support and incentives. | C - Applicable to future implementation or other resource (eg. Different Plan) | WS5, WS8 |
| Healthy Ecosystems | HE 3 | Underserved Communities/Minority Voices | Education to elderly | Interest in seeing an outreach and education plan that reaches the elderly populations. | B - No revision recommended | WS8, WS9 |
| Healthy Ecosystems | All | Underserved Communities/Minority Voices | Unique community barriers | Interest in seeing tailored greening and restoration plans for different communities with unique barriers. | A - CAP revision recommended | WS9 |
| Healthy Ecosystems | N/A | Underserved Communities/Minority Voices | Clean streets | Interest in seeing the City take action on cleaning and maintenance of existing streets and parks. | B - No revision recommended | WS9 |
| Healthy Ecosystems | HE 7 | Underserved Communities/Minority Voices | Conflict with housing need | Concern about space conflicts with the need for new housing. | B - No revision recommended | WS 5 |

GHG EMISSIONS MODELING: METHODOLOGIES AND ASSUMPTIONS

APPENDIX C

Appendix C-1: Sector-based and Consumption-based Emissions Inventories Overview

San Francisco has been tracking its emissions for more than two decades. As part of its commitment, emissions are tracked and reported to ensure progress.

HOW ARE EMISSIONS TRACKED?

Emissions inventories are essential tools for climate action planning and management. An emissions inventory estimates heat-trapping gases that are generated by specific activities for a specific time period. San Francisco tracks and collects activity data to calculate three main types of emissions for the city:

- Carbon dioxide
- Methane
- Nitrous oxide

Further, the city uses two types of emissions inventories to inform their climate action efforts. The annual sector-based inventory analyzes emissions that are produced within the geographical boundaries of San Francisco. This is the traditional means by which governments and other institutions have calculated their emissions. By contrast, the consumption-based emissions inventory (CBEI) evaluates emissions related to goods and service that are consumed within the city, regardless of where

they are produced. Due to its complexity, the CBEI inventory is performed about every five years. Both inventories, complement each other to provide a more complete account of the emissions generated by the city.

SECTOR-BASED EMISSIONS INVENTORY

San Francisco has been a leader in emissions inventories since 2008. Since then, the city has refined its datasets and data collection processes for both community-wide and municipal activities. An annual sector-based emissions inventory is used to measure San Francisco's local, geopolitically bound, emissions against the City's stated reduction goals.¹ SF Environment calculates and reports emissions on behalf of the City and County of San Francisco by using the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC).² The GPC methodology is a global standardized framework used by most cities that report their emissions. The methodology is regularly updated with the best-available science and methods. Reported city emissions for 2010 were verified by a third-party in 2012³.

Process and Methodology

San Francisco's traditional inventory groups emissions into six sectors: transportation, building operations, landfilled organics, municipal (government) operations, wastewater, and agriculture.⁴

¹ Geopolitical refers to emissions occurring within the geographically boundary as well as certain emissions outside the city boundary. Cities typically account for their influence to reduce emissions out-of boundary such as from electricity and natural gas production and distribution, intraregional vehicle travel, and discards of organic waste to landfills.

² GPC is a global framework unifying the way cities inventory and disclose GHG emissions for reporting purposes to and in compliance with commitments to the Global Covenant of Mayors (GCoM). GPC Protocol at <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>. The methodology and sectors

tracked were third party verified during inventory year 2012. Current GHG inventories are completed according to the guidance of verifiers in 2012.

³ [Updated Technical Review of the 2010 Community-wide GHG Inventory for City and County of San Francisco](#), ICF International, 2013.

⁴ Emissions from Landfilled Organics, previously known as the Waste sector, occur when disposed organics break down (decompose) in a landfill and produce methane.

2019 Sector-Based Emissions Inventory Findings

The 2019 sector-based emissions inventory showed that San Francisco emitted 4.64 million metric tons of carbon dioxide equivalent (mtCO₂e)⁵, which is 41% below emissions levels in 1990. These reductions came despite a 22% increase in population and a near tripling of economic output from \$59.7 billion in 1990 to \$178.5 billion in 2019. As a result, San Francisco's emissions per capita were 5.21 mtCO₂e/person in 2019, about half of the 11 mtCO₂e/person estimated in 1990.

The City releases detailed information and analysis on its inventory emissions, as well as the relevant policies and programs which help to reduce emissions, in the [San Francisco Carbon Footprint Website and Dashboard](#).

CONSUMPTION-BASED EMISSIONS INVENTORY (CBEI)

In addition to the sector-based emissions inventory, the city also uses a consumption-based emissions inventory (CBEI). A CBEI estimates emissions by analyzing the full life-cycle of all goods and services that are consumed in San Francisco. It includes measuring “upstream” emissions from the production, distribution and sale of products consumed in San Francisco, as well as “downstream” emissions from the eventual use and disposal of these products. Emissions are measured regardless of where different product stages took place or where emissions were released.

Since most of the goods and services consumed in San Francisco are produced outside of the City's boundaries in other states or countries, the CBEI is considerably larger (up to three times larger) than the conventional inventory. Most of San Francisco's consumption-based emissions (63%) are from the production phase of the global supply chain, highlighting the need to explore ways to reduce consumption and measure and account for the city's progress in reducing these emissions.

Process and Methodology

SF Environment collaborated with the UC Berkeley's Cool Climate Network to develop a CBEI for the City and County of San Francisco, California from 1990 to 2015. The study summed up the carbon footprints of all energy, transportation, food, goods, and services consumed by households and government agencies in San Francisco, regardless of where the emissions occurred. CBEIs consider full life cycle emissions, including resource extraction, production, transport, trade, use, and disposal; for most products, the majority of emissions are generated during production.

The calculations in the CBEI are based on estimates of consumer spending and corresponding emission factors for specific types of products. This view of emissions is intended to be an alternative to the traditional sector- or territorial-based inventories typically performed by cities, which count emissions from the city's physical boundaries and not beyond. Conducting an inventory through the lens of a CBEI presents opportunities to address global emissions from the life cycle of goods and services consumed within communities, regardless of whether emissions physically occur within the city's geographic boundaries.

Consumption-based inventories were developed less than 15 years ago and methods for calculating CBEIs are still evolving. The study used econometric analysis of national household survey data to uncover the main drivers of consumption for each product category (e.g., meat, furniture, vehicle usage), and then estimate consumption in San Francisco based on variation in these drivers compared to national averages. These main drivers include:

- demographics, including income, household size, race, and education
- home characteristics, such as home size, home ownership, structure type, and heating fuel
- travel behavior, including vehicle ownership, commute mode, and commute times
- geographic variables, such as population density, and weather

⁵ 2019 Sector Based GHG Emissions Inventory At-A-Glance report: https://sfenvironment.org/sites/default/files/fliers/files/2019_sfe_ee_climate_at_a_glance.pdf

- economic data, including energy prices

Based on this information, the CBEI estimated carbon footprints for every census tract in San Francisco, and for the city overall, from 1990 through 2015. Local data was included instead of modeled data wherever possible.

2015 Consumption-Based Emissions Inventory Findings

The CBEI found that average household carbon footprints in San Francisco decreased by 17% over the 25-year study period and were 21% lower than the

national average in 2015. Lower than average rates of motor vehicle usage, smaller home and household sizes, high prevalence of renters, population density, a moderate climate, and relatively low-carbon electricity all contributed to lower consumption-based emissions. These factors help to offset the countervailing effects of income and education, which tend to increase consumption and associated emissions. Despite progress at reducing emissions on a per household basis, in aggregate, the total city-wide CBEI was only 2% lower in 2015 compared to 1990 levels. This reality reflects population pressures and the challenge of reducing emissions that depend on global supply chains.

Appendix C-2: Modeling Building Operations Emissions

CLIMATE ACTION PLAN METHODOLOGY

Projections presented in the Climate Action Plan (CAP) are based on historic data, calculation methods applied in emissions inventories from 1990-present; the best available data sources (cited in Table C2); as well as the strategies and supporting actions proposed in the Plan.¹ The CAP builds in significant part upon lessons learned and tools piloted in the preparation of the [Focus 2030](#) report. Projections presented herein reflect the limitations of data available at the time of writing.

Models reflect our current understanding of how the San Francisco is expected to evolve in concert with relevant State and Federal policy advancements, and in the context of evolving international climate agreements. Further, public and private investment, as well as technology availability, capability and cost, will also change in ways that will support decarbonization. These developments are likely to accelerate emissions reduction, reduce costs, and provide other practical benefits, but the CAP conservatively focuses on impacts of the strategies proposed by and for San Francisco.

The CAP scenario summarizes the combined emission reductions from proposed strategies citywide. The majority of sector-based emissions are due to Energy Supply, Building Operations, and Transportation emissions, and modeling is focused on these sectors.

Transportation emission reductions were modeled by the San Francisco County Transportation Authority with assistance from their consultant, Cambridge Systematics (see **Appendix C-3 for the technical report**). Building Operations sectors were prepared by Department of the Environment staff with assistance from Arup.

ENERGY SUPPLY

Due to the development of renewable and low-emissions electric generation, emissions per unit of electricity supplied to San Francisco are declining rapidly. Historic emissions from the provision of electricity by PG&E, CleanPowerSF, SFPUC Hetch Hetchy Power, and Direct Access providers are documented in

past and current citywide emissions inventories. Baseline emissions per unit of electricity summarize the combination of all load-serving entities supplying electricity sources citywide as of 2018 using the Power Content Label methodology applied in the CAP and CA AB1110². Projected emissions are consistent with fulfilment of strategy ES 1, transition to 100% renewable electricity citywide by 2025.

Emissions per unit of fossil fuel consumed and emissions per unit of fuel from biogenic sources (such as renewable diesel, methane recovered from landfill and organic digestion) are consistent with published emissions inventory data.

BUILDING OPERATIONS MODEL

Projected emissions for operation of buildings were prepared utilizing a substantially enhanced version of the Climate Action for Urban Sustainability (CURB) Tool which was updated to reflect local conditions, data resources, and emissions inventories.^{3,4} Projected impacts to emissions reflect changes to the scale and energy efficiency of local building stock, mix of fuels utilized on-site, and electric grid emissions intensity. Baseline conditions were characterized, and the calculated emissions were calibrated to inventory actuals for the most recent published inventory at the time of modelling (2018). The tool projects annual emissions in horizon years 2030, 2040, and 2050, where annual emissions reflect the cumulative impact of CAP strategies. Annual emissions projected for all years other than the baseline and each horizon were calculated separately, via interpolation informed by the timing specified in the CAP for implementation of supporting actions. Projections for each horizon year are calculated at the building sector level: municipal, residential, and commercial.

The main inputs to changes in operational emissions from energy use can be summarized as:

- Fuel Switching: Changing the fuel required for an end-use changes Scope 1 direct emissions.

¹ Emissions from 1990 to the most recent year available, as well as sources and methods are presented in San Francisco's Climate Storyboard: sfenvironment.org/sf-climate-dashboard

² https://leginfo.ca.gov/faces/billCompareClient.xhtml?bill_id=201520160AB1110&showamends=false

³ World Bank (2016) *Climate Action for Urban Sustainability (CURB) Tool*, worldbank.org/en/topic/urbandevelopment/brief/the-curb-tool-climate-action-for-urban-sustainability.

⁴ See discussion of San Francisco GHG inventory methods in this section. For San Francisco GHG inventory reports as well as historic inputs and results, see: sfenvironment.org/carbonfootprint

For example, switching from a natural gas water heater to electric eliminates on-site emissions.

- **Efficiency:** Improving energy efficiency reduces fuel consumed on-site to serve an end-use (Scope 1 emissions) and reduces energy imported (Scope 2 emissions). This includes switching from an electric-resistance water heater to a heat pump water heater, which improves efficiency (units of energy required to deliver the same service).

Emissions reductions from strategies presented in the plan include estimation of the energy intensity for each major energy end-use, such as heating, cooling, fan energy, hot water, and lighting, within three building sectors: residential, municipal, and commercial. Commercial energy end uses are calculated by land use categorization: Office, Retail & Entertainment, Medical, Hotel, Production/Distribution/Repair, and Cultural/Educational. However, as noted above, Strategy ES-1 proposes transition from relatively clean electricity supplied citywide in recent years to exclusively emissions-free sources by 2025. As a result, results presented in this plan emphasize impacts to on-site fossil fuel combustion, or fuel switching.

Throughout the period modeled, the building stock is characterized by four states:

1. **Existing Buildings:** Building stock in San Francisco in the baseline year is defined as the set of existing buildings. Energy intensity and fuel saturation by end-use for existing buildings reflect the most recent available data by end-use for each category of building use and are conservatively assumed to remain constant until one of the following states applies:
2. **New Construction:** New construction is defined as buildings that are newly constructed and never previously occupied. New construction is required to meet efficiency and safety standards in effect at the time of construction. As of June 2021, new construction in San Francisco is required to be all-electric, so the CAP analysis shows new construction has no on-site fossil fuel combustion starting in 2021. Conservatively, energy intensity of new construction is assumed to remain constant, equivalent to present-day standards until 2050.

3. **Renovation:** Renovated buildings are defined as existing buildings where all energy systems throughout the building are all-electric. Renovated buildings are efficient, as they are required to comply with energy and safety codes in effect at the time of renovation.

Note that the term “efficient and all-electric” in this Plan refers to buildings and equipment with no fossil fuel use that meet current California Title 24 Energy Standards. So New Construction and Renovations are projected to be efficient and all-electric.

4. **Retrofit:** Retrofits are defined as upgrades that modify energy-related components of a portion of a building, where retrofitted components or systems eliminate on-site emissions. Retrofits reduce energy use and emissions, and improve efficiency because modifications must meet energy and safety codes in effect at the time of retrofit.
5. **Demolition:** For the CAP analysis, demolition is defined as the dismantling and removal of an entire existing building.

Key General Assumptions:

The rates of new construction, retrofit, renovation, and demolition for each sector and building use were informed by historic trends and published growth projections (see Table C1.1).

As buildings are retrofitted and renovated, the stock of existing buildings decreases in this model. To meet San Francisco’s goal of zero emissions by 2040, 100% of existing buildings must be renovated or replaced by 2040. For many reasons, including recent construction activity, retaining embodied carbon emissions in existing buildings, and policies that prioritize the preservation of historic resources, renovation is expected to remain more common than new construction.

- While modest voluntary activity is occurring, the CAP does not assume significant emissions reduction from redevelopment or retrofits until actions supporting electrification of existing buildings (BO-2) are phased-in. This is reflected as a notable reduction in natural gas emissions starting in 2025, which progresses over the next 15 years.

- Baseline electricity emissions are equivalent to 2018 and decline to near-zero by 2025.

Key Assumptions for Commercial Buildings:

Supporting action BO 2-6 would require decarbonization of larger commercial buildings by

2035. Emission reductions for large commercial building stock are adjusted to reflect the enhanced rate of activity established by this action. In the terms defined above, the retrofit and renovation of the largest existing commercial buildings will be greater than for other commercial stock.

Building Operations: GHG Impact Analysis Modeling Assumptions

| Parameter | Unit | Assumption | Source | Link(s) |
|------------------------------------|---|---|--|---|
| General | | | | |
| Population | # of people | 2016: 870,887 2030: 981,800 | Resilient SF | |
| Gross Domestic Product (GDP) | \$/capita | 2016: \$139,000,000,000 2030: \$185,941,011,638.77 | San Francisco Office of the Controller | |
| Historical GHG Emission Trends | mtCO2e | 1990: 7,957,691 2010: 6,897,645 2012: 6,360,506 2016: 5,547,488 2017: 5,127,810 | San Francisco's Communitywide Greenhouse Gas Inventory | https://data.sfgov.org/Energy-and-Environment/San-Francisco-Communitywide-Greenhouse-Gas-Invento/btm4-e4ak |
| Energy | | | | |
| <i>Electricity grid mix</i> | % | | | |
| Wind | | 2016: 7.64%; 2030: 73.1% | | |
| Large Hydro | | 2016: 31.72%; 2030: 24.80% | | |
| Photovoltaic | | 2016: 9.72%; 2030: 2.2% | | |
| Small Hydro | | 2016: 2.24%; 2030: 0% | | |
| Geothermal | | 2016: 3.74%; 2030: 0% | San Francisco Public Utilities Commission | |
| Biomass | | 2016: 2.99%; 2030: 0% | | |
| Nuclear | | 2016: 17.95%; 2030: 0% | | |
| Natural Gas | | 2016: 13.52%; 2030: 0% | | |
| Import/ others | | 2016: 10.47%; 2030: 0% | | |
| Waste | | 2016: 0%; 2030: 0% | | |
| Buildings | | | | |
| Annual Growth New Buildings | % building growth per year | | | |
| Commercial | | 2018-2030: 0.8% ; 2030-2050: 0.5% | SF Planning | http://2040.planbayarea.org/cdn/future/u_7TKELkH2s3AAiOhCyh9Q9OIWEZldYcjzi2ODCZuls/1510696833/sites/default/files/2017-11/Final_Plan_Bay_Area_2040.pdf |
| Multifamily | | 2018-2030: 0.9% ; 2030-2050: 1.5% | SF Planning | |
| Single Family | | 2018-2030: -0.03% ; 2030-2050: -0.05% | SF Planning | |
| Redevelopment Rate | % redeveloped existing buildings per year | | SF Environment. Redevelopment and retrofit rates are based on historic averages, equipment useful life, and market trends. Rates reflect the combination of: (a) Baseline to 2025: Conservative assumption of negligible electrification. (b) 2026 | |
| Large Commercial (above 50k sq ft) | | 2016-2025: ~0%; 2025-2035: 5.8% ; 2035-2050: 5% | | |

| | | | | |
|--|---|---|---|---|
| Residential & Municipal & Small Commercial (below 50k sq ft) | | 2016-2025: ~0%; 2025-2040: 1.5%; 2040-2050: 5% | onward: Retrofits (partial electrification) and redevelopment (complete electrification) reflect implementation of actions in this plan. (c) | |
| Retrofit Rate | % retrofitted existing buildings per year | 2016-2025: ~0%; 2025-2050: 3.5% | Projections for large commercial reflect separate actions supporting the elimination of on-site emissions from 90-100% of large commercial buildings by 2035. | |
| Square Footage | sq ft | | | |
| Commercial | | 235,613,069 sqft | OpenDataSF - Land Use, 2017 | https://data.sfgov.org/Housing-and-Buildings/Land-Use/us3s-fp9q |
| Residential | | 522,763,520 sq ft | | http://default.sfplanning.org/publications_reports/2016_HousingInventory.pdf |
| Percent of Large Commercial Building Stock (%) | % of building stock by sub-sector | Cultural & Educational: 55% | SF Planning Housing Stock Inventory (2016). Assumed MF units 1,000sqft and Single Family 1,875 sq ft. | |
| | | Medical: 71% | A2030 and SFE analysis of Land Use (Assessor & Planning Data combined) | |
| | | Office: 80% | | |
| | | Retail/Entertainment: 31% | | |
| | | Industrial: 42% | | |
| | | Hotel (Visitor): 85% | | |
| Energy Use Intensities (EUI) | | | | |
| Baseline EUIs | kWh/sq ft | Cultural & Educational: 17.27 Medical: 45.38 Office & Municipal: 22.34 Retail/Entertainment: 68.30 Industrial: 10.07 Hotel: 20.97 Single Family: 10.20 Multi Family: 10.42 | Commercial: California End Use Survey (CEUS) pg. 187-189 Residential: San Francisco's 2016 GHG Inventory, Residential Appliance Saturation Survey (RASS) | https://www.energy.ca.gov/2006publications/CEC-400-2006-005/CEC-400-2006-005.PDF https://data.sfgov.org/Energy-and-Environment/San-Francisco-Communitywide-Greenhouse-Gas-Invento/btm4-e4ak https://www.energy.ca.gov/appliances/rass/previous_rass.html |

| | | | | |
|-------------------------------------|----------|---|---|---|
| New Construction/Redevelopment EUIs | kWh/sqft | Cultural & Educational: 10.18 Medical: 21.77 Office & Municipal: 14.72 Retail/Entertainment: 41.13 Industrial: 8.78 Hotel: 11.33 Single Family: 3.89 Multi Family: 3.93 <i>Please refer to "Source"</i> | Commercial: California End Use Survey (CEUS) pg. 187-189 Residential: San Francisco's 2016 GHG Inventory, Residential Appliance Saturation Survey (RASS) | https://www.energy.ca.gov//2006publications/CEC-400-2006-005/CEC-400-2006-005.PDF https://data.sfgov.org/Energy-and-Environment/San-Francisco-Communitywide-Greenhouse-Gas-Invento/btm4-e4ak https://www.energy.ca.gov/appliances/rass/previous_rass.html |
| Building Fuel Ratios | | | | |
| Electricity Emissions Factor (BAU) | | 0.0000962 (mTCO ₂ e/kWh) | PG&E 2017 Electricity Emissions Factor | |

APPENDIX C-3

Climate Action Plan Transportation and Land Use – Climate Change Mitigation Analysis

October 22, 2021

prepared for

San Francisco County Transportation Authority

prepared by

Cambridge Systematics, Inc., San Francisco County Transportation Authority

Contents

| | | |
|------------|---|-----------|
| 1.0 | Introduction..... | 2 |
| 2.0 | Baseline Inventory and Forecast | 3 |
| 2.1 | Inventory Scope | 3 |
| 2.2 | Data Sources and Methodology | 4 |
| 2.3 | Greenhouse Gas Estimates | 6 |
| 3.0 | Estimation of CAP TLU Strategies | 8 |
| 3.1 | Modeling Approach | 8 |
| 3.2 | Modeling Approach and Impacts by Strategy Area | 8 |
| 3.2.1 | Clean Vehicles | 8 |
| 3.2.2 | Transit | 9 |
| 3.2.3 | Housing and Land Use..... | 9 |
| 3.2.4 | Active Transportation and Travel Demand Management..... | 11 |
| 3.2.5 | Parking Pricing | 13 |
| 3.2.6 | Road Pricing..... | 14 |
| 4.0 | Strategy Impacts..... | 15 |
| 4.1 | Greenhouse Gas Emissions | 15 |
| 4.2 | Vehicle Miles Traveled | 16 |

1.0 Introduction

This climate change mitigation analysis was prepared for the Climate Action Plan's Transportation and Land Use (CAP TLU), in collaboration with San Francisco County Transportation Authority (SFCTA), San Francisco Department of the Environment (SFE), San Francisco Municipal Transportation Agency (SFMTA) and the Planning Department. This analysis identifies the potential greenhouse gas (GHG) reduction benefits for each strategy in the chapter and, where possible, strategy adjustments to maximize overall potential GHG benefit. Based on a review of existing GHG analysis practices, best practices were applied for analyzing potential GHG reductions for each of the strategies listed below. This analysis does not evaluate the impact of individual actions. The Transportation and Land Use Strategies are:

1. Transit: With community input, build a fast and reliable transit system that is accessible to all and will be travelers' preferred way to get around.
2. Active Transportation and Transportation Demand Management (TDM): Create a complete and connected active transportation network that shift trips from driving to walking, biking, and other low-carbon modes
3. Equitable Pricing: Use equitable pricing levers to manage congestion and carbon emissions, while reinvesting revenues to further improve the multimodal transportation network.
4. Parking: Use San Francisco's parking resources more efficiently.
5. Development: Promote job growth, housing, and other development along transit corridors.
6. Land Use: Increase density, diversity of land uses, and location efficiency across San Francisco.
7. Zero-Emission Vehicles: Accelerate the adoption of zero-emissions vehicles (ZEVs) and other electric mobility options.

The assessment begins with a baseline inventory and forecast to estimate surface transportation GHG emissions for 2015 (on-road motor vehicles and rail transit) and projected emissions in 2030 and 2050. It continues with an evaluation of the CAP TLU strategies for reductions in 2030 and 2050 compared to the forecast baseline and to 2015 and 1990 levels. Emissions in 1990, set as the city and county's baseline for the future GHG reduction goals, were estimated separately in the SFE's 2012 Communitywide Greenhouse Gas Emissions Inventory. The CAP TLU goal is to achieve 1990 surface transportation emissions through the chapter's strategies.

2.0 Baseline Inventory and Forecast

2.1 Inventory Scope

The baseline inventory includes the following surface transportation modes: light duty vehicles (passenger cars, vans, sport utility vehicles, and light trucks); medium duty trucks, heavy duty trucks, buses, and rail transit. It excludes air (passenger and freight aircraft using San Francisco International Airport), and water transport (ferries, cruise, and cargo ships). It also excludes “off-road” sources such as ground support equipment at the airport or port and warehouse equipment such as cranes and forklifts.

The baseline inventory and forecast includes GHG emissions associated with vehicle miles traveled (VMT) that occur within San Francisco’s city limits. For transit agencies that provide regional service such as BART, Caltrain, and bus operators from neighboring counties, emissions are assigned based on the estimated proportion of the transit system’s operations occurring within the city’s boundaries.

The inventory is based on a bottom-up estimation of the number of vehicles and miles driven by type of vehicle, as well as fuel efficiency and the mix of fuel types for each type of vehicle. Total vehicle population, activity, and emissions are presented by transportation subsector. GHG emissions estimates are based on fuel consumption by type of fuel, with varying consumption rates and fuel type splits by activity subsector and technology/fuel type. The activity subsectors used in the inventory are shown in Table 1. The technology/fuel types include gasoline and diesel internal combustion engine (ICE), compressed natural gas (CNG), and electricity.

The transportation sector inventory in this study presents two GHG emissions estimates: a “tailpipe” estimate, which calculates only direct vehicle emissions, as well as a “lifecycle” estimate, which includes emissions from electric power generation for electric vehicles and the upstream emissions associated with the production and transportation of conventional fuels.

Table 1: Transportation Activity Subsectors in Baseline Inventory and Forecast

| Key | Subsector |
|----------|---------------------------------------|
| 1 | Light-Duty Vehicles |
| 2 | Medium and Heavy-Duty Vehicles |
| 2.1 | Medium-Duty/Single-Unit Trucks |
| 2.2 | Heavy-Duty/Combination Trucks |
| 2.3 | Buses |
| 3 | Rail |
| 3.1 | SF Muni Light Rail & Streetcar |
| 3.2 | Heavy Rail (BART) |
| 3.3 | Commuter Rail |

2.2 Data Sources and Methodology

The GHG baseline inventory and forecast relies on five key data pieces, collected by mode: vehicle population, vehicle miles traveled (within city limits), vehicle fuel efficiency, carbon intensity of fuels, and vehicle technology fraction (share of vehicles by fuel type).

Vehicle Population

On-road vehicle populations were sourced from the EMFAC¹ model for the year 2015 by mode (light duty, medium duty, heavy duty, buses). Estimates of vehicle populations were extrapolated out to 2050 based on VMT projections from model runs conducted by SFMTA for the ConnectSF study using the agency's travel demand model, known as SF-CHAMP. It was assumed that the number of miles driven vehicle remains constant in the future.

For rail lines that service San Francisco², vehicle populations were sourced from the National Transit Database³, and a fraction of the operator's vehicle population was apportioned to San Francisco based on the proportion of route-miles within the city based on General Transit Feed Specification (GTFS) data.

Vehicle Miles Traveled

For cars and trucks, daily VMT for 2015 and 2050 was sourced from ConnectSF modeling output⁴ and calibrated to annual VMT based on totals reported in the 2012 San Francisco Community-Wide GHG Inventory. VMT totals were then apportioned by mode based on percentages acquired from the EMFAC model.⁵ For public transit buses, VMT (revenue-miles) was sourced from the National Transit Database, and a fraction of the operator's revenue-miles was apportioned to San Francisco based on the proportion of route-miles within the city based on GTFS data. Transit bus VMT was then projected out to 2050 according to growth rate projections sourced from ConnectSF.

Fuel Efficiency

Estimates of fuel efficiency (in miles per gallon gasoline equivalent) for each vehicle type and fuel technology across the study period were taken from the U.S. Department of Energy, Annual Energy Outlook (AEO) 2018 Reference Case.⁶

¹ California Air Resources Board. EMFAC2017 v1.0.2 Fleet Database. <https://arb.ca.gov/emfac/fleet-db>

² SFMTA, BART, Caltrain, San Mateo County Transit District, Golden Gate Bridge, Highway, and Transportation District, and Alameda-Contra Costa Transit District were all identified as rail services operating in SF municipal boundaries.

³ Federal Transit Administration. National Transit Database. 2015 NTD Transit Agencies Profiles. <https://www.transit.dot.gov/ntd/transit-agency-profiles>

⁴ Provided by SFCTA.

⁵ California Air Resources Board. EMFAC2017 v1.0.2 Emissions Inventory. <https://arb.ca.gov/emfac/emissions-inventory>

⁶ US Energy Information Administration. Annual Energy Outlook 2018. <https://www.eia.gov/outlooks/archive/aeo18/>

Carbon Intensity of Fuels

An electricity grid emissions factor was calculated for 2015 based on the electric grid mix for the San Francisco Public Utilities Commission, as outlined in the Appendix of the San Francisco Focus 2030 report.⁷ The electricity grid emissions factor was set to be zero for 2030 and beyond, per stated city goals, and was linearly interpolated between 2015 and 2030.

Gasoline, diesel, and CNG carbon intensity was based on Energy Information Administration data on CO₂ per gallon⁸ and includes an additional 2 percent for non-CO₂ emissions. Fuel carbon intensities for the lifecycle analysis were sourced from data obtained from the California Low Carbon Fuel Standard.⁹

Vehicle Technology Fraction

For light duty vehicles, baseline vehicle technology estimates were sourced from the California Energy Commission Vehicle Population Dashboard for 2015 to 2020.¹⁰ Between 2020 and 2030, zero-emission vehicle (ZEV) shares were projected based on a CEC “mid-range” analysis.¹¹ ZEV shares were then extrapolated to 2050 based on “mid-range” projections from the National Renewable Energy Laboratory 2017 Electrification Futures Study.¹² Vehicle technology splits within “non-ZEV” fuels were kept constant throughout the projection. A fraction of the ZEVs were assumed to be plug-in hybrids (only partial ZEVs, not full ZEVs); based on AEO technology assumptions; plug-in hybrids make up about 25 percent of ZEV travel in 2030 but only 3 percent in 2050 reflecting the anticipated long-term dominance of full battery-electric technology.

For medium and heavy duty vehicles, baseline fuel technology splits were sourced from EMFAC data. ZEV technology adoption and population shares were then forecasted based on the recently approved Advanced Clean Trucks Regulation.¹³ Vehicle technology splits within “non-ZEV” fuels were kept constant throughout the projection.

Baseline rail fuel technology information was sourced from National Transit Database reporting. No technology changes are assumed for light rail and heavy rail modes.

⁷ San Francisco Department of the Environment. Focus 2030 Report. <https://sfenvironment.org/download/focus-2030-a-pathway-to-net-zero-emissions-climate-report-july-2019>

⁸ Energy Information Administration. Carbon Dioxide Emissions Coefficients. https://www.eia.gov/environment/emissions/co2_vol_mass.php

⁹ California Air Resources Board. Low Carbon Fuel Standard. <https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard>

¹⁰ California Energy Commission. Vehicle Population in California. <https://www.energy.ca.gov/data-reports>

¹¹ SF Environment staff recommended usage of the mid-range forecast per email correspondence on January 12, 2021. Source: California Energy Commission. Light-Duty Vehicle Forecast 2020 IEPR Update. <https://www.energy.ca.gov/event/workshop/2020-12/session-1-transportation-energy-demand-forecast-update-commissioner-workshop>

¹² National Renewable Energy Laboratory. Electrification Futures Study. 2017. <https://www.nrel.gov/docs/fy21osti/72330.pdf>

¹³ California Air Resources Board. Advanced Clean Trucks. <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>; ZEV Population estimates from ACT rule obtained through Mobile Source Strategy 2020 supporting documents: <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>

2.3 Greenhouse Gas Estimates

Table 2 displays the baseline “tailpipe” GHG emissions estimates from 1990 through 2050, with emission estimates for 2015 through 2050 broken out by mode. Notably, the 1990 estimate is presented only as a total since it was sourced externally from the San Francisco Environment Community-Wide Greenhouse Gas Inventory.¹⁴ The 2015 estimate from the San Francisco Environment GHG Inventory is also presented to allow for a direct comparison between the two estimates. While the San Francisco Environment inventory estimates 2015 emissions to be about four percent higher than the current analysis, VMT totals for this analysis are calibrated to match those in the San Francisco Environment inventory in order to ensure comparability. The difference in 2015 emissions estimates for the SF Environment Inventory and the current analysis is likely due to minor differences in underlying assumptions regarding vehicle fuel efficiency, emissions factors, and the distribution of VMT among the different vehicle classes.

In 2015, GHG emissions resulting from travel occurring within city limits reached nearly two million metric tons. Around three-quarters of the city’s GHG emissions come from passenger vehicles. While VMT is forecast to increase by 21 percent from 2015 to 2050 (see Section 4.2), GHG emissions are expected to fall 24 percent by 2030 and 58 percent by 2050, mostly because of continued fleet electrification coupled with improvements in fuel economy.

Table 2: Baseline Tailpipe Greenhouse Gas Emissions (MT CO₂e)

| | 1990 | 2015 | 2015 | 2030 | 2050 |
|---------------------|--------------------------|------------------|------------------|------------------|----------------|
| Subsector | SF Environment Inventory | | Current Analysis | | |
| Light Duty Vehicles | | | 1,458,758 | 1,038,425 | 475,940 |
| Medium-Duty Trucks | | | 111,416 | 105,393 | 81,044 |
| Heavy-Duty Trucks | | | 190,008 | 207,689 | 184,333 |
| Buses | | | 155,064 | 108,495 | 60,005 |
| Rail | | | 1,867 | 974 | 912 |
| Total | 2,195,670 | 2,032,993 | 1,917,113 | 1,460,975 | 802,234 |

Table 3 displays the lifecycle GHG emissions across the study period. As noted in section 2.1, the lifecycle emissions estimates include emissions from electricity generation used to power electric modes of transportation, as well as upstream energy use associated with conventional fuels. In 1990 and 2015, lifecycle emissions are roughly 42 percent higher than tailpipe emissions, whereas lifecycle emissions are about 33 percent higher than tailpipe emissions in 2030 and 2050.¹⁵ The narrowing gap between lifecycle

¹⁴ San Francisco Department of the Environment. San Francisco Community-Wide Greenhouse Gas Inventory. <https://sfenvironment.org/climate-change/downloads>

¹⁵ Lifecycle emission multipliers were sourced by comparing standard fuel emission rates for gas and diesel from the Energy Information Administration with the life cycle fuel emission factors as laid out by the California Low Carbon Fuel Standard.

and tailpipe emissions is attributable to improvements under the California Low Carbon Fuel Standard, as well as the San Francisco plan for 100 percent renewable electricity by 2030.

Table 3: Baseline Lifecycle Greenhouse Gas Emissions (MT CO₂e)

| | 1990 | 2015 | 2015 | 2030 | 2050 |
|---------------------|--------------------------|------|------------------------------|------------------|------------------|
| Subsector | SF Environment Inventory | | Current Analysis | | |
| Light Duty Vehicles | | | 2,081,089 | 1,390,220 | 636,869 |
| Medium-Duty Trucks | | | 158,408 | 141,224 | 108,568 |
| Heavy-Duty Trucks | | | 261,854 | 273,372 | 242,588 |
| Buses | | | 213,210 | 142,830 | 78,995 |
| Rail | | | 14,344 | 1,282 | 1,200 |
| Total | | | 3,125,416^a | 2,893,853 | 2,728,906 |

^a The 1990 "tailpipe" estimate was sourced from the San Francisco Environmental GHG Inventory and no fuel breakdown was provided in this inventory; thus, it is assumed that the fuel splits are equal to 2015 for the purposes of a lifecycle estimate.

3.0 Estimation of CAP TLU Strategies

3.1 Modeling Approach

In order to model the impacts of the various CAP TLU strategies, a “sketch” model was implemented in Microsoft Excel. The model incorporates general relationships between strategies and travel and emissions to allow for ranges of potential impacts to be examined. For example, if a bike lane is added, the tool will assume a default average of new bicycle trips (and reduced auto trips) per mile. The sketch model is set up to accept inputs and produce outputs for years 2030 and 2050. Outputs include total VMT, total GHG emissions, and total fuel use by type of fuel.

3.2 Modeling Approach and Impacts by Strategy Area

3.2.1 Clean Vehicles

The “Clean Vehicles” strategy models the adoption of the ZEV adoption targets as outlined in the CARB 2020 Mobile Source Strategy.¹⁶ The strategy document sets out ZEV targets for light duty, medium duty, and heavy duty vehicles to help meet the state’s newly adopted climate goals.¹⁷ Table 4 outlines the target ZEV population share for each class of vehicles according to the supporting MSS documentation. In addition to market penetration assumptions, the evaluation of clean vehicles relies on assumptions about fuel efficiency and carbon content of fuels as described for the baseline forecast. It is assumed that this strategy will mainly be achieved as a result of state policies, although city actions such as expanded home, workplace, and public charging infrastructure will play an important supporting role.

Table 4: 2020 Mobile Source Strategy Forecast ZEV Share by Mode

| Vehicle Class | 2030 ZEV Share | 2050 ZEV Share |
|-----------------------------|----------------|----------------|
| Light Duty Vehicles | 25% | 100% |
| Medium Duty Vehicles | 5% | 50% |
| Heavy Duty Vehicles | 8% | 50% |

The “Clean Vehicles” strategy also reflects a degree of “induced demand” resulting from increased electrification. Since the per-mile cost of driving is lower under electric vehicles than conventional gas-powered vehicles, it is expected that individuals will drive electric vehicles more. As a result, this analysis

¹⁶ California Air Resources Board. 2020 Mobile Source Strategy. <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>

¹⁷ State of California. Executive Department. Executive Order B-55-18 To Achieve Carbon Neutrality. <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>

assumed a 6 percent¹⁸ increase in the VMT of electric vehicles. One consideration in applying pricing policies (Section 3.2.6) might be to offset the incremental reduction in cost per mile of travel for electric vehicles.

3.2.2 Transit

Policies under the “transit” strategy were modeled using the SF-CHAMP travel demand model as part of the ConnectSF study, which included transit operational improvements (such as transit priority lanes), and local and regional transit projects identified in ConnectSF. The aggregate VMT reduction of these projects were then allocated to VMT by vehicle type and technology to estimate GHG reduction.

Table 5: Transit Strategy Data Assumptions and Methodology

| Data Point | Value | Methodology | Source |
|-----------------------------------|-------------|--|----------------------------------|
| ConnectSF Transit Projects | | | |
| VMT Reduction (million miles) | 2030: 56.5 | Auto VMT reductions provided directly from ConnectSF modeling output for the year 2050, and linearly interpolated to obtain estimate for 2030. Includes Muni Forward transit priority improvements + 110 miles of transit lanes by 2050. | ConnectSF modeling ¹⁹ |
| | 2050: 131.9 | | |

3.2.3 Housing and Land Use

Land use policies that promote compact development around transit corridors have the ability to lower greenhouse emissions through reduced regional VMT. Examples of policies referenced in the CAP include increasing heights, removing density restrictions, and streamlining approval processes to promote housing and job growth along transit corridors; allowing multi-family housing throughout the city and increasing the mixing of home-based business and residential uses; and facilitating the development of neighborhoods where people live within an easy walk or roll of their daily needs. This analysis combines CAP strategy 5 (Development) with CAP strategy 6 (Land Use) since both relate to achieving more transportation-efficient land use patterns.

The effects of these types of policies were estimated through a generalized model in the Excel tool. This model considers how total VMT might change if new residents drive at the same rate as current residents of San Francisco’s most travel-efficient (lowest VMT per capita) neighborhoods. In order to model the effects of compact housing and transit corridors, the follow process was employed:

¹⁸ This estimate was derived based on the fuel cost per-mile of electric versus gasoline vehicles, and the elasticity of VMT with respect to fuel cost as discussed in Section 3.2.6.

¹⁹ ConnectSF modeling output and VMT reductions were obtained from SFCTA.

1. Block group-level population estimates for 2017 were downloaded from the U.S. Census American Community Survey,²⁰ and 2017 VMT per capita estimates at the block group level were sourced from the Caltrans Smart Mobility Calculator,²¹ These estimates were then aggregated to the neighborhood level.
2. Neighborhoods were then categorized into tertiles based on VMT per capita – with each neighborhood being classified as “low,” “medium,” or “high” VMT per capita. “Low VMT” neighborhoods had less than 8 daily VMT per capita, “medium VMT” neighborhoods had between 8 and 10 daily VMT per capita, and “high VMT” neighborhoods had greater than 10 daily VMT per capita.
3. Population data for 2050 was taken at the neighborhood level from ConnectSF²² to calculate the expected population growth in each area. Under a “business-as-usual” scenario, VMT by neighborhood was calculated in 2050 assuming that VMT per capita in each neighborhood remained constant..
4. To estimate the effects of housing and land use policies that promote more compact, transit-oriented development, a scenario was modeled where new population growth between 2015 and 2050 was “redirected” from neighborhoods with higher VMT per capita to neighborhoods with lower VMT per capita.
5. The following assumptions were used to estimate VMT changes from a holistic housing and land use strategy:
 - By 2050, 50 percent of the population growth in “medium VMT” neighborhoods is redirected into “low VMT” neighborhoods.
 - By 2050, 60 percent of the population growth in “high VMT” neighborhoods is redirected equally into “medium VMT” and “low VMT” neighborhoods (30 percent each).

This method simulates shifting future growth into lower VMT areas within San Francisco, resulting in an incremental reduction in VMT and GHG from future baseline conditions. This method does not represent key intended aspects of land use policy such as reducing VMT of existing households through increasing neighborhood density and mixed use, and, most notably, the effect of local and regional land use policy on redirecting growth from more suburban and exurban high-VMT places around the region to low-VMT places like San Francisco. When considered at the broader regional scale, the GHG and VMT reduction benefits of these land use strategies within San Francisco could be greater than the San Francisco-only focused analysis within the Climate Action Plan.

In the absence of additional policies to direct more growth into low-VMT neighborhoods (i.e., above and beyond conditions assumed in the city’s baseline forecasts), the population of “low VMT” neighborhoods is expected to grow by 37 percent between 2015 and 2050 (~134,000 additional residents). With additional growth-directing policy measures, the population of “low VMT” neighborhoods would increase by 61 percent (roughly ~221,000 additional residents) based on the growth shift assumptions stated above. Correspondingly, in the absence of additional policies, “high VMT” neighborhoods are expected to see

²⁰ US Census Bureau. 2013-2017 ACS 5-Year Estimates. <https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2017/5-year.html>

²¹ Caltrans Smart Mobility Calculator: A Transportation, Housing, Climate Action Coordination Tool. <https://smartmobilitycalculator.netlify.app>

²² San Francisco County Transportation Authority. ConnectSF Population and Jobs. <https://connectsf-populationandjobs.sfcta.org/>

population increases of 38 percent (~136,000 additional residents). However, with additional policy measures, “high VMT” neighborhood populations would only increase by roughly 15 percent (~54,000 additional residents). Taken together, the illustrative growth shift associated with additional land use policies is estimated to reduce VMT by around 153 million miles annually by 2050.

3.2.4 Active Transportation and Travel Demand Management

The following set of policies were modeled as part of the “active transportation and TDM” strategy: new bike lanes as noted in the CAP; electric bike (e-bike) subsidies, representing other actions to make biking more accessible; Complete Streets policies to encourage more walking, biking, and transit use through street design; and employer TDM benefits. (Examples of employer TDM benefits include transit subsidies or pre-tax benefits, vanpool and rideshare programs, telework policies, and incentive/rewards programs for reducing solo vehicle trips.) Bike lanes and Complete Streets were modeled using estimates of new bikers or walkers per mile of new facility, and per dollar of subsidy for e-bikes, as developed in other studies; along with assumptions about what fraction of new bikers or walkers would have driven instead. TDM benefits were based on estimated changes in market shares of workers reached by TDM programs and the VMT reduction per affected worker as identified from evaluation studies and modeling experience from other projects.

Table 6: Active Transportation/TDM Strategy Data Assumptions and Methodology

| Data Point | Value | Methodology | Source |
|--|-----------|---|--|
| New Bike Lanes | | | |
| Miles of Lanes | 2030: 60 | Assumption | CAP Action List |
| | 2050: 120 | | |
| New bike miles traveled per facility mile (annual) | 114,844 | This estimate was developed by the project team for the Transportation and Climate Initiative (TCI) Investment Strategy Tool based on data from various sources | Transportation and Climate Initiative Tool Documentation ²³ |
| Prior drive mode share | 2030: 38% | Percent of trips to/from/within San Francisco that were “drive alone” or “shared ride” ^{Error! Bookmark not defined.} | SF-CHAMP |
| | 2050: 36% | | |
| E-bike Subsidies | | | |
| Annual Subsidy Amount | \$223,800 | Goal of offering a \$1,250 subsidy for e-bike purchase to 5% of low income households in San Francisco. Total program cost annualized between 2022 and 2050. | Total low income households sourced from SF-CHAMP. E-bike |

²³ Transportation and Climate Initiative - 2019/2020 TCI Investment Strategy Tool Documentation. Prepared for Georgetown Climate Center by Cambridge Systematics, Inc., September 2020. <https://www.transportationandclimate.org/modeling-methods-and-results>

| Data Point | Value | Methodology | Source |
|---|------------------------------|---|---|
| | | | subsidy of \$1,250 in line with previous SFMTA Proposal. ²⁴ |
| Change in auto VMT per \$ subsidy (miles) | -1.2 | Estimate developed through TCI tool (assumes e-bike subsidy of \$1,250 with a 6-year lifespan, 6 trips per week, and a trip length of 2.5 miles). | TCI (<i>ibid</i>) and ITF (2020) ²⁵ for lifespan and trips per week; trip length from SF-CHAMP (average for trips starting and ending within San Francisco). |
| Complete Streets | | | |
| Miles of Complete Streets | 50 | Assumption | CAP Action |
| Change in annual auto VMT per mile of new Complete Street | 50,999 | Estimate developed through TCI tool (for core urban neighborhoods) | TCI (<i>ibid</i>) |
| Employer TDM Benefits | | | |
| Total Daily Work Trips in San Francisco | 2030: 1.60 M 2050: 1.86 M | Estimate sourced from SFCHAMP. Estimate for 2030 was linearly interpolated from the 2015 and 2050 estimates. | SF-CHAMP |
| Average Work Trip Length (miles) | 2030: 6.8 2050: 6.5 | Estimate derived from SF-CHAMP modeling; includes only the distance within San Francisco of all work trips with work destination in the city. | SF-CHAMP ²⁶ |
| Change in drive-alone mode share w/ TDM program | -5% | Estimate of TDM program efficacy based on various evaluation studies. Represents the average mode shift for all workers at affected worksites. | Project Team based on various sources ²⁷ |

²⁴ SFCTA - Transportation Fund for Clean Air Project Information Forms For July 2020 Board Approval. https://www.sfcta.org/sites/default/files/2020-07/SFCTA_Board_TFCA20-21ProgramRecommendationENCLOSURE_2020-07-28.pdf

²⁵ International Transport Forum (ITF). (2020). "Good to Go? Assessing the Environmental Performance of New Mobility."

²⁶ SF-CHAMP modeling output provided by SFCTA.

²⁷ For example, the Washington State Commute Trip Reduction Ordinance was found to increase non-drive-alone trip rates from 34.3 to 39.1 percent (a 4.8 percentage point increase), averaged across over 1,000 affected worksites. See: Washington State Commute Trip Reduction Board, 2017 Report to the Legislature. Illustrative runs of the TRIMMS model (<https://mobilitylab.org/calculators/download-trimms-4-0/>) have also shown impacts per worksite on the order of a 5 percent vehicle trip or mode share reduction.

| Data Point | Value | Methodology | Source |
|--|-------|-------------|--------------|
| Additional % of workforce receiving TDM benefits | 50% | Assumption. | Project Team |

3.2.5 Parking Pricing

The pricing strategy represents expanding per-hour pricing for on-street parking in all locations and during all times of day. The model represents pricing by segmenting driving tours into those that parked on-street without payment and all others, and by the total direct cost of travel from bridge tolls and value tolls. For each segment, the total number of tours, vehicle trips, San Francisco VMT²⁸, average on-street parking duration, and percent of total San Francisco VMT in each segment. Then an elasticity is applied to the unpaid on-street parking tours relative to the direct cost before parking pricing. The elasticity was estimated from SF-CHAMP modeling for Congestion Pricing. Because elasticities cannot be used when the starting price is \$0, the same modeling was used to estimate a percent change in demand from \$0 to the new hourly rate. Table 7: Parking Pricing Strategy Assumptions and Methodology presents the assumptions used in the parking pricing strategy.

Table 7: Parking Pricing Strategy Assumptions and Methodology

| Data Point | Value | Methodology | Source |
|---|-----------------------|--|-----------------------------------|
| Elasticity of trips with respect to price | -0.10 ²⁹ | Developed from modeling output of the Downtown Congestion Pricing Study. | SF-CHAMP |
| Share of trips parking on-street for free, segmented by total trip cost | Various, 18% total | Estimated from travel survey data | MTC-SFCTA 2018-2019 Travel Survey |
| Average parking duration for free on-street parking, segmented by total trip cost (hours) | Various, 3.36 average | Estimated from travel survey data | MTC-SFCTA 2018-2019 Travel Survey |
| On-street parking cost | \$5.00 per hour | Twice the daily average 2019 parking meter rate | SFMTA ³⁰ |

²⁸ San Francisco VMT includes all VMT for trips with both trip ends in San Francisco, and half of the VMT for trips with one trip end in San Francisco and the other outside San Francisco.

²⁹ SF-CHAMP Congestion Pricing Model Runs, 2015 Base, 2015 inbound \$6 charge, 2015 inbound \$8 charge.

³⁰ SFMTA Citywide Meter Rate Adjustment, November 2019. https://www.sfmta.com/sites/default/files/reports-and-documents/2021/01/rate_change_2019_nov.csv

3.2.6 Road Pricing

Policies evaluated under the road pricing strategy fell into two main categories: congestion pricing, and mileage-based pricing. The mileage-based pricing strategy modeled in this assessment is based on the 2017 California Road Charge Pilot Program, which could be applied at the state level as a long-term supplement or replacement to the motor fuel tax. Mileage-based pricing was modeled using published fuel price elasticities. Congestion pricing was modeled using the SF CHAMP travel demand model. Table 8 outlines the key data methodologies and sources used in modeling the pricing strategy. The baseline cost per VMT was estimated based on fuel price and vehicle efficiency (miles per gallon) assumptions as noted elsewhere in this analysis.

Table 8: Pricing Strategy Assumptions and Methodology

| Data Point | Value | Methodology | Source |
|---|---------------------|--|---|
| Congestion Pricing | | | |
| VMT Reduction (daily) | -3.5% | Estimated from CHAMP modeling output of the Downtown Congestion Pricing Study. | SF-CHAMP |
| VMT Fee | | | |
| Added cost per VMT | \$0.02 per mile | Consistent with proposals for a California road charge to make up for lost fuel tax revenue. | CalSTA ³¹ |
| Added cost per Gasoline-powered VMT | \$0.10 per mile | Assumption | SFCTA |
| Elasticity of VMT with respect to price | -0.12 ³² | This number reflects estimates in the literature for the percent change in VMT based on the percent change in fuel price | Small and van Dender (2007) ³³ |

³¹ California State Transportation Agency (2017). California Road Charge Pilot Program.

³² This estimate from the literature implies that a 10 percent increase in fuel price results in a 1.2 percent decrease in VMT. This elasticity estimate is applied to the increase in *trip price*, based on the fuel costs of a trip. As such, these estimate is highly sensitive and subject to uncertainty.

³³ Small, Kenneth and Kurt Van Dender (2007), "Fuel Efficiency and Motor Vehicle Travel: The Declining Rebound Effect," *Energy Journal*, Vol. 28, No. 1, pp. 25-51

4.0 Strategy Impacts

4.1 Greenhouse Gas Emissions

The combination of CAP TLU strategies, labeled as the CAP TLU Scenario, is estimated to result in a 23 percent decrease in greenhouse gas emissions by 2030 compared to the 2030 baseline scenario, and a 69 percent decrease in 2050 compared to the 2050 baseline scenario. Compared to 1990 baseline emissions, the CAP TLU Scenario is estimated to reduce greenhouse gas emissions by about 49 percent by 2030 and 88.7 percent by 2050. Table 9 shows the calculated change in total metric tons as well as percentage changes. Negative values represent reductions in emissions.

Table 9: GHG Emissions and Changes from CAP TLU Scenario

| | 1990 | 2015 | 2030 | 2050 |
|--|-----------|-----------|-------------|-------------|
| Baseline (MT CO₂e) | 2,195,670 | 1,917,113 | 1,489,844 | 820,255 |
| CAP TLU Scenario (MT CO₂e) | | | 1,107,274 | 211,087 |
| CAP TLU Scenario Change from 2030/2050 Baseline | | | (382,570) | (609,168) |
| CAP TLU Scenario Change from 2030/2050 Baseline | | | -25.7% | -74.3% |
| CAP TLU Scenario Change from 1990 Baseline | | | (1,088,396) | (1,984,583) |
| CAP TLU Scenario Change from 1990 Baseline | | | -49.6% | -90.4% |

Achieving significant GHG reductions beyond the levels shown here will require even more aggressive and complete electrification of the light duty vehicle fleet, as well as a transition of medium and heavy trucks to low- or zero-carbon fuels. Given that trucks travel across jurisdictional boundaries even more than light-duty vehicles, substantially reducing emissions from this subsector will require significant involvement by the State of California and cooperation among jurisdictions within the Bay Area. Additional measures to reduce VMT can also help, but will have diminishing returns as emissions per mile traveled decrease.

Table 10 details the greenhouse gas impacts at the strategy level to show the effects of each individual strategy compared to each year's respective baseline total. For example, the "Clean Vehicles" strategy is estimated to reduce GHG emissions by about 15 percent compared to the 2030 baseline scenario, and by 65 percent compared to the 2050 baseline scenario. Notably, the "combined reduction" estimate does not equal the exact summation of the individual strategy reductions. When all strategies are implemented simultaneously, each strategy's individual effectiveness is impacted by the reductions of the other strategies. For example, the greenhouse gas reduction benefits of the "Active Transportation/TDM" strategy will be lower if more of the vehicle fleet is electrified as a result of the "Clean Vehicles" strategy. Alternatively, the

greenhouse gas reduction benefits of the “Clean Vehicles” strategy will be lower if fewer people are driving due to active transportation measures.

Table 10: GHG Change from Individual Strategies

| Strategy Focus Area | 2030 | | 2050 | |
|--------------------------|---|-----------|--------------------------|--------|
| | Change from Baseline (MT CO ₂ e) | | Change from Baseline (%) | |
| Clean Vehicles | (230,334) | (766,726) | -11.6% | -70.2% |
| Housing and Land Use | (22,896) | (22,350) | -1.2% | -2.0% |
| Transit | (19,637) | (19,169) | -1.0% | -1.8% |
| Active Transportation | (1,796) | (1,092) | -0.1% | -0.1% |
| Travel Demand Management | (10,365) | (4,825) | -0.5% | -0.4% |
| Parking Pricing | (67,274) | (36,545) | -3.4% | -3.3% |
| Road Pricing | (214,279) | (92,082) | -10.8% | -8.4% |
| Combined Reduction | (514,131) | (816,451) | -25.9% | -74.8% |

4.2 Vehicle Miles Traveled (VMT)

The CAP TLU Scenario is estimated to result in a 9.9 percent decrease in vehicles miles traveled by 2030 compared to the 2030 baseline scenario, and an 11.3 percent decrease in 2050 compared to the 2050 baseline scenario. Compared to 1990 baseline VMT, the CAP TLU Scenario is estimated to increase VMT by 7.3 percent in 2030 and by 17 percent in 2050. Notably, while the various strategies are effective at reducing VMT compared to a future without the plan’s strategies, increases in population and travel activity ultimately result in VMT increases in 2050 compared to the 1990 baseline. Table 11 shows the calculated reduction in both total miles as well as percentage reductions.

Table 11: Total Annual VMT Change from CAP TLU Scenario

| | 1990 | 2015 | 2030 | 2050 |
|---|-------|-------|--------|--------|
| Baseline (million miles) | 3,648 | 3,984 | 4,326 | 4,800 |
| CAP TLU Scenario (million miles) | | | 3,605 | 4,194 |
| CAP TLU Scenario Change from 2030/2050 Baseline | | | (721) | (606) |
| CAP TLU Scenario Change from 2030/2050 Baseline (%) | | | -16.7% | -12.6% |

| | | |
|---|-------|-------|
| CAP TLU Scenario Change from 1990 Baseline | (42) | 546 |
| CAP TLU Scenario Change from 1990 Baseline (%) | -1.2% | 15.0% |

Table 12 details the VMT impacts at the strategy level to show the impacts of each individual strategy compared to each year’s respective baseline total. For example, the “Transit” strategy is estimated to reduce VMT by 2 percent compared to the 2030 baseline scenario, and by 4.2 percent compared to the 2050 baseline scenario. Similar to the greenhouse gas totals, the VMT “combined reduction” estimate does not equal the exact summation of the individual strategy reductions, since each strategy’s individual effectiveness is impacted by the reductions of the other strategies. For example, the VMT reductions from pricing strategies will be lower if housing and land use strategies are separately reducing travel activity.

Table 12: VMT Change from Individual Strategies

| Strategy Focus Area | 2030 | 2050 | 2030 | 2050 |
|------------------------------------|--------------------------------------|---------|--------------------------|--------|
| | Change from baseline (million miles) | | Change from baseline (%) | |
| Clean Vehicles ^a | 59.8 | 259.9 | 1.4% | 5.4% |
| Housing and Land Use | (65.9) | (153.8) | -1.5% | -3.2% |
| Transit | (56.5) | (131.9) | -1.3% | -2.7% |
| Active Transportation | (5.2) | (7.5) | -0.1% | -0.2% |
| Travel Demand Management | (29.8) | (33.2) | -0.7% | -0.7% |
| Parking Pricing | (163.5) | (179.7) | -3.8% | -3.7% |
| Road Pricing | (492.3) | (371.4) | -11.4% | -7.7% |
| Combined Reduction | (720.7) | (605.7) | -16.7% | -12.6% |

^aThe Clean Vehicles strategy is currently estimated to increase VMT slightly compared to the baseline due to the “rebound effect.” This is a phenomenon in which a lower cost of driving per mile (in this case, because of the lower fuel costs of electric vehicles compared to gasoline powered vehicles) may lead people to drive more.

RACIAL AND SOCIAL EQUITY ASSESSMENT

APPENDIX D

Appendix D: Racial and Social Equity Assessment

BACKGROUND

SFE Equity Staff created a Racial and Social Equity Assessment Tool (RSEAT) to evaluate and improve the strategies in the CAP. The RSEAT is a worksheet which consists of a series of questions in five themes and 17 impact areas to address both the fair distribution of the benefits of climate action and the root causes of racial disparities. Community engagement through the [Anchor Partner Network](#) and consultation with [SF Planning's Racial and Social Equity Initiative](#) informed the development of the RSEAT. The tool includes a scale, which was developed with input from the [San Francisco Office of Racial Equity](#), to consider the level of equity achieved, distinguishing between transactional and transformational change. The scale was used to facilitate critical thinking rather than to score strategies, which would have been imprecise due to the subjective nature of self-assessment. The RSEAT also includes introductory data and information to orient the user to racial equity issues in San Francisco. The tool is included at the end of this appendix.

PROCESS

Technical Working Groups (TWGs) for each of the CAP's six sectors and other related working groups, such as the Racial Equity and Inclusion Committee for San Francisco's long-range transportation planning program ([ConnectSF](#)), completed an initial review of RSEAT worksheets before meeting with SF Environment Equity Staff to discuss findings. Strategies in the Responsible Production and Consumption, Energy Supply, and Building Operations sectors were evaluated and revised before draft Plan content was shared in public engagement. The RSEAT was applied to the Healthy Ecosystems, Housing, and Transportation and Land Use sectors after public engagement, due to SFE Equity Staff capacity shifting to completing [Phase 1 of SFE's Racial Equity Action Plan](#). The strategies in the Housing sector were explicitly designed to [dismantle San Francisco's housing inequities](#) and therefore received a less extensive review with the RSEAT than the other sectors.

When applying the RSEAT to strategies, SF Environment Equity Staff found similar issues surfaced across numerous Plan sectors. A summary of cross-sector equity issues, along with stakeholder feedback received during community engagement, were used as another mechanism to revise Plan strategies. The following section contains

descriptions of the 8 cross-sector equity issues and their related goals; proposed equity metrics for CAP strategies and systemic equity metrics that expand beyond the scope of the CAP; Climate Action response, including equity-specific details about CAP strategies and actions, and programs and plans which feed into the CAP; and recommendations to further advance racial justice.

FUTURE IMPROVEMENTS

Efforts to advance racial and social equity and diversity need to be inclusive of a wide range of identities. Future iterations of analysis tools would benefit from deeper community engagement to ensure inclusion of issues relevant to stakeholders who were not adequately represented in the RSEAT. For example, the original version of the tool did not include data or qualitative information about the local American Indian community, as SFE Racial Equity Staff engaged with [American Indian Cultural District](#) and [The Cultural Conservancy](#) toward the end of the development of the CAP. Additionally, increased engagement with and prioritization of the needs of people with disabilities would strengthen the diversity of the tool.

Furthermore, varying knowledge and experience of RSEAT users paired with the subjective nature of answering questions resulted in differences of opinion about how to address root causes. Departments are currently developing Phase 2 of their Racial Equity Action Plans, which focus on programs and service delivery, and can support the identification of high impact racial equity actions. While there are limitations that are built into the application of any desktop tools, including communities in future tool creation and use can support ground truthing information. To improve transparency, any revisions made as a result of community feedback and racial equity analysis should be communicated back to community stakeholders.

SUMMARY OF FINDINGS FROM RACIAL AND SOCIAL EQUITY ASSESSMENT

Equity Goal 1: Shift financial responsibility for climate action away from the parties least responsible for climate change

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| <p>Problem Statement: Some strategies to reduce emissions use fees, fines, or financial penalties to change behavior. Flat costs disproportionately burden lower-income populations.¹ There is a severe disparity in income by race and disability in San Francisco. Behavior-change strategies often request action from individuals rather than companies, do not consider an individual's income and wealth, and look at behavior at the present, as opposed to lifetime contributions to climate change. Policies developed without engaging impacted parties can lead to unintended consequences. Some individuals may generate emissions when an alternative is not available to them, such as long commute distances due to housing unaffordability. Individuals who generate emissions due to lack of an alternative are not the most responsible. Other impacted parties include affordable housing providers, nonprofits and small businesses that serve or are owned by American Indian, Black, and other People of Color, and the disability community. Both climate change and the actions to mitigate it can be disruptive to people with disabilities, as many have fashioned an inter-connected system of supports, work-arounds and life "hacks" that are extremely fragile and cannot often withstand disruption.²</p> | |
| <p>CAP sectors involved: Building Operations Energy Supply Housing Responsible Production and Consumption Transportation and Land Use</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | <p>% eligible SFPUC customers on low-income rates; Electrical rates are affordable and reflect cost of service; # new affordable housing developments which receive information and technical support about building all-electric; % financial assistance for electrification retrofits distributed in communities with environmental justice burden as identified in EJ Communities Map;* Tons of recovered food donated to San Francisco CBOs serving residents in need; # Affordable housing sites that have removed or reduced contamination charges; % Incentives for greening project distributed to communities with environmental justice burden as identified in EJ Communities Map*</p> |
| Systemic Racial Equity Metrics | Reduced cost burdens for low-income populations |
| | Reduced income and wealth disparities by race |
| <p>Working Towards Equity Goal 1</p> | |
| Climate Action Response | New policy to decarbonize large commercial buildings will include an alternative compliance path that collects fees, with funds directed towards low-income and affordable housing support |
| | Technical assistance provided by SF Environment in decarbonization of existing buildings to include income-based fees and broad support for lower-income property owners |
| | Ensure robust engagement with stakeholders most affected by new policies to reduce emissions from building materials and construction activities, food, and "everyday" goods and consumer products |
| | Construction and demolition debris recovery transporter fees scaled by fleet hauling capacity, where commercial companies are charged more than independent haulers in smaller vehicles |
| | Extended producer responsibility strategy places a shared responsibility for end-of-life product management on producers, and other entities involved in the product chain, instead of only the general |

¹ [San Francisco Financial Justice Project](#) assesses and reforms fines and fees that have an adverse disproportionate impact on low-income people and communities of color

² Mayor's Office on Disability

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| | public. Producers become more accountable for the emissions from their goods and services, and work to redesign their operations to reduce lifecycle emissions across their supply chain |
| | Current refuse rates provide discounts to nonprofit housing organizations. |
| | Engage with community in planning for the change in electricity demand and usage due to electrification, expansion of programs and rates that provide low-income customers with renewable electricity , to ensure equitable electricity rates |
| | Research how to equitably decommission natural gas infrastructure |
| | Expand and maintain SFPUC programs , including bill assistance programs, to best meet the needs of low-income customers. Continue to ensure community engagement in the rate-setting process |
| | Provide financial assistance and education to lower income, small property owners to add housing, such as accessory dwelling units, and rehabilitate existing units that are healthy and resource efficient |
| | Income-based toll discount for regional express lanes pilot program ³ |
| | Implement Downtown Congestion Pricing Study ⁴ recommendation to charge a fee to drivers who can afford it and provide discounts and exemptions for those who can't |
| | While using pricing to balance parking supply and demand , develop programs to reduce impact on low-income, auto-dependent people and ensure net benefit to low-income individuals |
| | Pursue equity structure for increasing fees to drive , such as income-based, exception for mobility-limited, exception for neighborhoods underserved by transit |
| Recommendations for the future | Evolution of consumption-based emissions inventory and accounting methods to include lifetime emissions ⁵ |
| | Research conflicts and harmonies between green building and affordable housing , to understand impacts on housing cost, housing production, and affordable housing functions. Include lessons learned from assistance provided to affordable housing developments meeting solar and energy efficiency requirements |
| | In future refuse rate setting process , assess and improve the equity of contamination charges |
| | Pursue equity structure in changes to the Residential Parking Program and if fee structure increases, mirror the Muni Lifeline eligibility for reduced fees |
| | SF Environment and other departments involved in all-electric building policies to partner with organizations serving the disability community, to research, evaluate, and advocate for accessible appliance design ⁶ |

³ <https://mtc.legistar.com/LegislationDetail.aspx?ID=4677297&GUID=6C34D13C-2A96-41CD-9202-EB3FF7862DF7>;
<https://mtc.legistar.com/LegislationDetail.aspx?ID=4853980&GUID=B2A0125F-C6A5-410C-BBA8-35D82C227CD2>

⁴ <https://www.sfcta.org/downtown>

⁵ A Consumption-Based Emissions Inventory (CBEI) accounts for emissions created by the material extraction, production, and transport of goods and associated services flowing in and out of San Francisco.

⁶ American Foundation for the Blind: [An Overview Survey of Home Appliance Accessibility](#) and Mayor's Office on Disability: One challenge to be solved stems from the design of the controls of electric appliances. Older appliances used dials that can be modified to create a tactile interface that can be used by someone who is blind or low-vision. New digital interfaces tend to use a flat panel design that is inaccessible. San Francisco should advocate for accessible interfaces on electric home appliances, use its procurement requirements to influence the market for appliances and support innovation in the design of electric appliances for accessibility with partners such as the Lighthouse for the Blind. Artificial Intelligence products can serve as an accessibility aid through voice activation, but is not financially accessible to all. Electronics industry needs improvement in responsiveness to issues of accessibility.

Equity Goal 2: Increase opportunities for people with barriers to employment and reduce income disparities by race

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| <p>Problem Statement: Workforce development interventions are needed to ensure racial equity in the transition away from an extractive economy and provide opportunities for economically disadvantaged workers.⁷ Workers impacted by transitions in fuel and energy supply include those outside of the boundaries of San Francisco and California.⁸ BIPOC professionals experience discrimination in access to jobs and racial and ethnic diversity are not well represented in the environmental sector.⁹ Increased demand for sustainability professionals has the potential to benefit white workers, contributing to existing income and wealth disparities by race. People with disabilities are disproportionately poor and the largest unemployed group.¹⁰ Without strategic implementation, the legacy of discrimination will continue to serve as a barrier.</p> | |
| <p>CAP Sectors Involved: Building Operations Energy Supply Healthy Ecosystems Housing Responsible Production and Consumption Transportation and Land Use</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | % CleanPowerSF products and services procured from women, minority, disabled veteran, or LGBT owned business |
| Systemic Racial Equity Metrics | Reduced income and wealth disparities by race |
| | Increased City and County of San Francisco contract amounts awarded to Disadvantage Business Enterprises (DBEs) and Local Business Enterprises (LBEs); SFMTA tracking underway |
| | Increased income for people with barriers to employment |
| <p>Working Towards Equity Goal 2</p> | |
| Climate Action Response | Training through Friends of the Urban Forest, Literacy for Environmental Justice, Street Tree SF |
| | City College Evans Campus offers Automotive Hybrid & Electric Vehicle Technology Certificate |
| | Rising Sun Center for Opportunity High Road Training Partnership for building decarbonization in the Bay Area |
| | Prepare the building decarbonization workforce, with targeted support for disadvantaged workers |
| | Ensure development of clean energy resources prioritizes local job creation |
| | The City will engage American Indian tribes, cultural bearers, neighborhood organizations, local businesses, the San Francisco Unified School District and nonprofit organizations during the planning and implementation of greening projects , including for the purpose of local hiring and workforce development |
| | Opportunity for workforce development training in building deconstruction |
| SFUSD participation in the Good Food Purchasing Program (GFPP) ¹¹ aims to procure from minority-owned farms and businesses | |

⁷ [First Source Hiring Program](#) requires that developers, contractors, and employers utilize good faith efforts toward employing economically disadvantaged San Franciscan residents for entry level positions on applicable projects.

⁸ California imports 90% of the natural gas it consumes

⁹ <https://diversegreen.org/research/>

¹⁰ Mayor's Office on Disability

¹¹ In the Local Economies value category of the Good Food Purchasing Standards, more credit is given to small family- or cooperatively-owned businesses versus larger family- or cooperatively-owned businesses. Extra credit is awarded to purchases from suppliers that are categorized as Socially Disadvantaged, Beginning, Limited Resource, Veteran, Women, Minority, or Disabled. <https://goodfoodpurchasing.org/>

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| | Expand green construction training and apprenticeship programs to grow the local pool of skilled labor and reduce construction costs |
| Recommendations for the Future | Explore opportunities for OEWD to expand construction training program into landscaping and open space management, tree planting and maintenance to support healthy ecosystems |
| | City and County of San Francisco funds or identifies funding to expand CityBuild Pro for building materials reuse and carbon accounting professional services and enhance existing programs to include information on applying skills to careers in sustainability |
| | All CCSF Departments that participate in the GFPP procures from minority-owned farms and businesses |
| | Training for sustainable aviation fuel and low carbon fuels and retraining for traditional fuel workers |
| | Explore expanding messaging to shift consumption to reduce emissions to also advance racial equity, such as shopping locally <i>and at</i> BIPOC-owned businesses |
| | Explore opportunities for expanded workforce development in expansion of bike, electric vehicle charging, and transit infrastructure |
| | SFE and other CAP implementers focus outreach, technical assistance, incentives, and other resources on racial/ethnic affinity professional organizations, particularly those involved in training and increasing diversity in the environmental field, and on organizations serving the disability community |
| | SFE and other CAP implementers to investigate opportunities to partner with companies involved in Climate Action, such as electric vehicle manufacturers, which have been successful at advancing racial and disability justice |
| | Fuel and energy purchased by San Francisco have impacts outside its geographical boundary, explore opportunities to support workers impacted by the transition away from fossil fuels outside San Francisco and California |

Equity Goal 3: Reduce burden on and increase support for BIPOC-owned small businesses and nonprofits and reverse their displacement

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| <p>Problem Statement: San Francisco has experienced an increase in business closures and relocations in the last two decades.¹² Data in 2018 indicated rising vacancy rates in some neighborhood commercial districts.¹³ The impact of the COVID-19 pandemic was still present in June 2021, where small business revenue was 50% below the pre-COVID baseline.¹⁴ Smaller businesses and businesses owned by People of Color have faced challenges in accessing federal relief.¹⁵ Small businesses and nonprofits employ people in the community, provide goods and services, and protect cultural legacy and neighborhood identity. Costs of complying with sustainability measures may disproportionately burden small businesses. Policies and programs that impact small businesses do not always include culturally competent outreach and language access.</p> | |
| <p>CAP Sectors Involved: Building Operations Energy Supply Healthy Ecosystems Responsible Production and Consumption Transportation and Land Use</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | % Small businesses in communities with environmental justice burden as identified in EJ Communities Map * which receive information and technical support about refrigerants ; Tons of rescued building materials received by nonprofits and small businesses in communities with environmental justice burden as identified in EJ Communities Map ;* # Small business sites that have removed or reduced contamination charges |
| Systemic Racial Equity Metrics | Reversed displacement of nonprofits and small businesses which are BIPOC-owned and serving |
| | Reduced income and wealth disparities by race |
| <p>Working Towards Equity Goal 3</p> | |
| Climate Action Response | When designing SFPUC customer programs , consider needs of BIPOC-owned and serving small businesses |
| | Partner with OEWD to study and document if the transition to efficient and all-electric buildings poses displacement risks for BIPOC-owned and serving small businesses and propose solutions |
| | Via the Clean Energy Buildings Hub , provide outreach, education, and technical assistance to ethnic restaurants regarding culturally appropriate low-carbon cooking methods |
| | SF Environment to explore opportunities to partner with the California Product Stewardship Council (CPSC) and OEWD in supporting BIPOC-owned businesses and nonprofits in the reuse, repair, and recovery economy |
| | SFE to work with OEWD to deliver rescued building materials to small businesses and nonprofits |
| Recommendations for the Future | SF Environment and other CAP implementers to improve engagement with Black and other ethnic chambers of commerce, small businesses, and nonprofits in future policy development, delivery of technical assistance and other resources. |
| | City and County of San Francisco holistically collect data on race/ethnicity and language spoken by business owners to better understand needs and deliver targeted technical assistance and support ¹⁶ |

¹² https://default.sfplanning.org/plans-and-programs/community-planning/stabilization-strategy/cs_report_draft01.pdf

¹³ <https://oewd.org/sites/default/files/Invest%20In%20Neighborhoods/State%20of%20the%20Retail%20Sector%20-%20Final%20Report.pdf>

¹⁴ <https://sfchamber.com/resources/data-statistics/>

¹⁵ <https://www.responsiblelending.org/sites/default/files/nodes/files/research-publication/crl-cares-act2-smallbusiness-apr2020.pdf>

¹⁶ [Black-Owned Businesses in San Francisco](#) was compiled by OEWD in response to George Floyd's murder, and is not comprehensive of every business

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| | Investigate local government ability to advance telework equity |
| | When increasing types of home-based businesses allowed in residential districts , pursue opportunities to work with equity-based networks and incubators and neighborhood merchants' associations and measures to increase resources to BIPOC-owned and serving businesses. |
| | Prioritize engagement with BIPOC-owned and serving businesses when implementing changes to parking management |
| | Culturally competent engagement is needed with small businesses to understand impacts and challenges that measures to reduce waste may bring, such as technical or financial burdens on struggling businesses. Resources should be targeted to support those businesses. New policies to reduce waste should start with large businesses. Enforcement of existing policies should prioritize large businesses. |

Equity Goal 4: Repair land and property injustice

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| <p>Problem Statement: Institutional decisions rooted in white supremacy have resulted in unequal land and property ownership opportunities for American Indian, Black, and other People of Color. The Ramaytush Ohlone peoples, the original inhabitants of the area comprising the City and County of San Francisco, were forcibly removed from their homelands and subjected to the brutalities of colonialism, enslavement, genocide, discrimination, racism, gender-based violence, theft, forced assimilation, and other atrocities driven by local, federal, and global governments. Ramaytush Ohlone peoples are not a mythical population of the past, but an integral and active community in the present San Francisco Bay Area region and beyond, whose ongoing exclusion and invisibility denies their recognition as the rightful stewards of the land and contributes to the greater American Indian community’s lack of inclusion in San Francisco.¹⁷ The Indian Relocation Act, Redevelopment and Urban Renewal Act, redlining, and other racially discriminatory housing practices produced disparities still evident today— 87% of San Francisco’s redlined neighborhoods are low-income neighborhoods undergoing gentrification today.^{18 19 20 21 22} People with disabilities are disproportionately unhoused.²³</p> | |
| <p>CAP Sectors Involved: Building Operations Energy Supply Healthy Ecosystems Housing Transportation and Land Use</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | % BIPOC residents living in San Francisco, % annual incoming residents that are BIPOC, % displaced residents that are BIPOC annually; % BIPOC, low-, and moderate-income in higher resource neighborhoods ; % New affordable housing units occupied by BIPOC; # Acres of natural areas dedicated for American Indian stewardship; # Carbon sequestration farming pilot projects which include Indigenous science and/or Traditional Ecological Knowledge |
| Systemic Racial Equity Metrics | Increased land back, traditional land use, and management by local tribes and the American Indian community |
| | Reversed displacement of American Indian, Black, and other People of Color |
| | Reduced disparity in homeownership by race |
| | Reduced disparity in wealth by race |
| <p>Working Towards Equity Goal 4</p> | |
| Climate Action Response | Leverage every housing action and investment to help reverse historic racial, ethnic, and social dispossession, and enable wealth-building for affected communities |
| | Prioritize affordable housing in cultural districts and other relevant geographies with historically marginalized racial or ethnic identities to encourage their stabilization and return. |
| | Increase equitable community participation and perspectives in nature-based climate solutions , including meaningful efforts to prioritize Indigenous science and Traditional Ecological Knowledge. The City will honor Indigenous knowledge from the original stewards of these lands (Yelamu) and create strong partnerships through meaningful engagement with the Ramaytush Ohlone and the American Indian community to participate in stewardship of lands managed by San Francisco. |

¹⁷ San Mateo County [Ma Da Dil Farm](#) land stewardship return to [Ramaytush Ohlone](#), land repatriation [Sogorea Te' Land Trust](#) in East Bay Area

¹⁸ Reparations task forces are underway in San Francisco and California

¹⁹ <https://www.urbandisplacement.org/redlining>

²⁰ Schuetz, Jenny. [Rethinking homeownership incentives to improve household financial security and shrink the racial wealth divide](#). Brookings. December 9, 2020

²² Just 22% of American Indian householders, 23% of Black, and 24% of Latinx householders own their own homes compared to 36% of white householders and 48% of Asian householders. IPUMS data 2014-2018. https://commissions.sfplanning.org/cpcpackets/2020-008417CWP_011421.pdf

²³ Mayor’s Office on Disability

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| Recommendations for the Future | During time of sale residential building decarbonization policy creation , pursue equity measures which repair the impacts of housing discrimination. |
| | When developing renewable energy projects, consider historical land use and impacts on communities |
| | Expand affirmative housing ownership and other reparative measures |
| | Identify opportunities to dedicate land to the American Indian community through the 2022 Housing Element update to the General Plan, and establish partnerships around land use for traditional and ceremonial purposes |
| | When evaluating underutilized space , engage with American Indian community to identify culturally relevant land and take leadership in reprogramming land use |

Equity Goal 5: Protect low-income residential tenants from rising costs and displacement and support development of affordable housing

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| <p>Problem Statement: Building improvements, such as installing solar panels and removing natural gas, can bring benefits to tenants. There may also be negative impacts, such as landlord passthrough of capital costs that are unaffordable to tenants or prolonged renovation periods resulting in an eviction (a so-called “renoviction”). Generally only landlords are eligible to receive financial support for the building improvement. Benefits may also be determined by utility rates, who pays for utility costs, and whether overall costs increase or decrease for tenants. BIPOC residents have higher cost burdens and low-income renters make up the vast majority (82%) of the estimated 82,000 cost-burdened renters, paying more than 30% of income in rent.²⁴ During the pandemic, an estimated 15% of renters had some unpaid rent.²⁵</p> | |
| <p>CAP Sectors Involved: Building Operations Energy Supply Housing Responsible Production and Consumption</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | <p>% eligible SFPUC customers on low-income rates; Electrical rates are affordable and reflect cost of service; # new affordable housing developments which receive information and technical support about building all-electric; % BIPOC residents living in San Francisco, % annual incoming residents that are BIPOC, % displaced residents that are BIPOC annually; % and # New residential units serving vulnerable and underserved populations; % and # Existing residential units rehabilitated for vulnerable and underserved populations; % New affordable housing units occupied by BIPOC; Tons of recovered food donated to San Francisco CBOs serving residents in need; # Affordable housing sites that have removed or reduced contamination charges</p> |
| Systemic Racial Equity Metrics | Reduced housing cost burden for low-income tenants |
| | Reversed displacement of American Indian, Black, and other People of Color |
| <p>Working Towards Equity Goal 5</p> | |
| Climate Action Response | In buildings transitioning to efficient and all-electric , SF Environment to work with Rent Board, Planning, tenants organizations, and other community stabilization stakeholders to make passthroughs of capital costs more equitable and reduce renovictions of lower income tenants |
| | Expand and maintain SFPUC programs , including bill assistance programs, to best meet the needs of low-income customers. Continue to ensure community engagement in the rate-setting process |
| | Passthroughs associated with incentives for clean energy are limited |
| | Expand tenant services including education, outreach, counseling, and legal and rent assistance to keep local residents and workers housed in SF |
| | Acquisition and preservation of existing, affordable, multi-family housing and its rehabilitation |
| Recommendations for the Future | <p>SF Environment to work with affordable housing and tenant organizations to review utility costs and other impacts to tenants in all-electric buildings, investigate if expanding refuse rate discounts for nonprofit affordable housing organizations could benefit residents and/or create more affordable housing, with the potential to expand evaluation to other types of building improvements and sustainability requirements.</p> |

²⁴ https://commissions.sfplanning.org/cpcpackets/2020-008417CWP_011421.pdf

²⁵ Budget and Legislative Analyst’s Office. *Estimate of unpaid residential rent in San Francisco due to COVID-19 pandemic and related public health orders*. October 27, 2020.

Equity Goal 6: Support all mobility needs, including for those who are vehicle-reliant

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| <p>Problem Statement: Vehicles are a significant contributor to pollution in San Francisco, with higher levels of air pollutant exposure occurring in areas near freeways and major streets.²⁶ Transit and active transportation are not sufficient substitutes to vehicles for the mobility access for some individuals, including people with disabilities.²⁷ Vehicles are necessary for certain types of jobs, including construction and delivery. Neighborhoods underserved by transit²⁸ and people with disabilities may rely on paratransit,²⁹ community shuttles,³⁰ and personal vehicles to access services.</p> | |
| <p>CAP Sectors Involved: Transportation and Land Use</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | # Community-endorsed charging infrastructure projects in communities with environmental justice burden as identified in EJ Communities Map* |
| Systemic Racial Equity Metrics | Improved mobility in areas underserved by transit based on community needs, including implementation of Bayview Community Based Transportation Plan |
| | All people in SF have mobility that is comfortable, affordable, and reliable |
| | Improved air quality in high air pollutant exposure zones |
| <p>Working Towards Equity Goal 6</p> | |
| Climate Action Response | Ongoing review of increases in fares or changes in service for compliance with Title VI ³¹ |
| | Continued personal vehicle use and paratransit |
| | Create new or improve transit connections for underserved areas and improve accessibility to local and regional destinations |
| | Conduct research to find out what changes would attract more seniors and people with disabilities to choose public transit over private cars, and implement as many as feasible. To support a shift away from cars, the accessibility office at SFMTA will need more resources, as will relevant transit infrastructure, such as improved elevator maintenance. |
| | Design a pilot project to test the use of accessible bicycles, e-bicycles and e-scooters for commuting, as well as recreation, including evaluation of infrastructure to support accessible bicycles. ³² |
| | Implement a program to prioritize access and parking for people with disability parking placards. |
| | Increase awareness of affordable electric vehicle options for vehicle-reliant people |
| | Work with small businesses to identify infrastructure needs for converting fleets to electric vehicles |

²⁶ <https://www.sfdph.org/dph/EH/Air/Article38.asp>; <https://sfplanning.org/air-quality-community-risk-reduction-plan>; <https://www.sfdph.org/dph/files/EHSdocs/AirQuality/AirPollutantExposureZoneMap.pdf>

²⁷ Reduced-cost rides provided to seniors and adults with disabilities through [Essential Trips](#) program

²⁸ [Muni Service Equity Strategy](#) is an ongoing effort to improve service performance in eight neighborhoods; [Southeast Muni Expansion](#) includes new Muni bus routes, Muni bus route extensions and reroutes, and more frequent service on existing Muni bus routes in San Francisco's southeastern neighborhoods – Bayview, Hunters Point, and Visitacion Valley and SFMTA is seeking funding to implement some of transit service improvements recommended in the Bayview Community Based Transportation Plan sooner

²⁹ Compliance with Americans with Disabilities Act regulations, including paratransit and other services: <https://www.sfmta.com/units/accessible-services>

³⁰ Policy recommendation in Bayview Community Based Transportation Plan

³¹ As a designated recipient of federal funds under FTA sections 5307 and 5309, SFMTA is subject to Title VI of the Civil Rights Act of 1964

³² Mayor's Office on Disability: some of the common models of accessible bicycles are too wide for current bike lanes

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| Recommendations for the Future | Improve engagement with the disability community in the expansion of the Slow Streets program |
| | Financial and technical assistance for small businesses transitioning to electric vehicle fleets |
| | Consider income-based fee structure for public electric vehicle charging, reflecting Muni Lifeline eligibility |
| | City and County of San Francisco to investigate opportunities to support research and development of all-electric vans and other vehicles which can meet the needs of the disability community. ³³ |

³³ <https://www.theverge.com/2021/7/2/22550853/electric-vehicles-disabled-wheelchair-conversion-battery>

Equity Goal 7: Ensure equitable development and service provision, while preventing displacement

Problem Statement: Displacement and resource distribution are racial equity issues in San Francisco and the Bay Area.³⁴ Some CAP strategies will bring new services to neighborhoods, such as bike and transit access, tree canopy and parks and recreation access. Development can occur in communities which is assumed to be a benefit but does not actually meet their needs. This mismatch may occur when there is inadequate engagement and representation on decision-making bodies. Inadequate racial and ethnic representation is acute in climate action. Perspectives and contributions of BIPOC environmentalism have been underrecognized in the sustainability field, which centers whiteness. It is important to acknowledge such exclusion, and also be careful of the potential to perpetuate stereotypes. Describing access to nature, certain recreational activities, and other environmentally-oriented activities as things for white people has the potential to discourage BIPOC participation and consequently remove opportunities. People with disabilities experience barriers in society which prevent them from having control over their lives. Much of the time, the people responsible for these inadvertent barriers are not aware of them or their impact.³⁵ A history of exclusion and neglect can be improved through increased inclusion of the diverse needs of the disability community (i.e., mobility limited, blind, Deaf, developmentally disabled) and improved compliance with the Americans with Disabilities Act, at a minimum. New development and services bring displacement risks and fears. There are displacement risks and concerns attached to bringing services and benefits to more neighborhoods.³⁶ Protections are needed to ensure that current residents can afford to enjoy new services. Anti-displacement measures are similarly critical in areas rezoned to increase density. There are roles for both neighborhood-scale and citywide anti-displacement measures that build on the existing strengths, experience, and social capital of these neighborhoods.

CAP Sectors Involved: Building Operations Energy Supply Healthy Ecosystems Housing Responsible Production and Consumption Transportation and Land Use

Tracking Progress

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| <p>Proposed CAP Equity Metrics</p> | <p># Low-income customers enrolled in SFPUC customer programs; % Neighborhoods and % business districts with a community-endorsed plan for coordinated electrification; % Electrification projects in communities with environmental justice burden as identified in EJ Communities Map;[*] # Community-endorsed charging infrastructure projects in communities with environmental justice burden as identified in EJ Communities Map;[*] % BIPOC residents living in San Francisco, % annual incoming residents that are BIPOC, % displaced residents that are BIPOC annually; % and # New residential units serving vulnerable and underserved populations; % and # Existing residential units rehabilitated for vulnerable and underserved populations; % BIPOC, low-, and moderate-income in higher resource neighborhoods; % New affordable housing units occupied by BIPOC; # nature-based solutions plans and policies evaluated and improved using racial equity tools; % natural areas added or restored through community-endorsed processes in communities with environmental justice burden as identified in EJ Communities Map;[*] # Orgs representing BIPOC communities in urban forest plan development; % Trees planted in communities with environmental justice burden as identified in EJ Communities Map;[*] % Incentives for greening project distributed to communities with</p> |
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³⁴ San Francisco experienced a 17% decrease in low-income Black households between 2000-2015, primarily in historically Black neighborhoods, and the Bay Area experienced decreases in flatland neighborhoods in Oakland and Berkeley, East Palo Alto, Richmond, and Vallejo. San Francisco also experienced a decrease in low-income Asian and Latinx households in historic neighborhoods such as Chinatown, the Mission, and SoMa, and the Bay Area experienced decreases in neighborhoods in Oakland and San Jose which have historically been home to large immigrant communities. In 2015, low-income White households in San Francisco were 3 times more likely (and in the entire Bay Area 7 times more likely) to live in higher resource areas than moderate- and high-income Black households.

https://www.urbandisplacement.org/sites/default/files/images/sf_final.pdf; https://www.urbandisplacement.org/sites/default/files/images/bay_area_re-segregation_rising_housing_costs_report_2019.pdf

³⁵ Mayor’s Office on Disability

³⁶ https://www.urbandisplacement.org/sites/default/files/images/climate_and_displacement_-_lit_review_6.19.2020.pdf

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| | environmental justice burden as identified in EJ Communities Map ; [*] # Carbon sequestration farming pilot projects which include Indigenous science and/or Traditional Ecological Knowledge |
| Systemic Racial Equity Metrics | Reversed displacement of BIPOC communities |
| | Reversed health disparities by race |
| | Increased representation from BIPOC communities in decision-making roles |
| Working Towards Equity Goal 7 | |
| Climate Action Response | SFPUC ³⁷ and SF Planning ³⁸ commitments to updating engagement practices to advance equity; SFMTA commitment to equitable engagement in determining location for new transit and active transportation infrastructure |
| | Neighborhood design where people live within and easy walk or roll of their daily needs will be co-developed by City agencies and residents. |
| | Design public space and the transportation system (including roadways) to advance racial and social equity by co-developing public spaces with BIPOC community members and understanding their needs before designing the space. |
| | Design public space and the transportation system to advance disability justice by co-developing plans and projects with diverse elements of the disability community and understanding their needs before designs are complete. |
| | Include community benefits criteria for renewable energy and other contracts of \$5 million or more and thus give preference to contracts that demonstrate a commitment to community benefits and environmental justice. |
| | Programs, such as community solar , allow renters, particularly those designated by CalEnviroScreen as Disadvantaged Communities, to participate in local renewable electricity production |
| | The City will engage American Indian tribes, cultural bearers, neighborhood organizations, local businesses, the San Francisco Unified School District and nonprofit organizations during the planning and implementation of greening projects |
| | Open space, tree planting/management projects that meet community-identified needs are implemented in BIPOC, low-income, and neighborhoods underserved by greenspace |
| Recommendations for the Future | Stabilize communities receiving the City's greening projects and integrate lessons learned from green displacement prevention measures, such as the Equitable Development Plan for India Basin Waterfront Parks Renovation Project linking park creation with protections for surrounding affordable housing |
| | Improve engagement with and prioritize the needs of the disability community in park design and maintenance |

³⁷ <https://sfpuc.sharefile.com/share/view/s91adfa4672e452d9>

³⁸ https://sfplanning.org/sites/default/files/documents/admin/R-20738_Centering_Planning_on_Racial_and_Social_Equity.pdf

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| | Continually review and improve anti-displacement measures attached to implementing new services or increased density |
| | Pursue opportunities to increase affordable housing production in transit corridors with access to essential services |
| | Create ongoing long-term partnerships with community organizations, learning from recommendation in Bayview CBTP to hire an on-call CBO; work with CBOs to understand what residents need and create solutions together; do not assume something is a universal benefit; treat community members as experts about their own needs |
| | Increase resources to support the relocation or establishment of nonprofit, affordable retail, and businesses that meet community needs in new developments |
| | Improve representation for BIPOC communities in the Urban Forestry Council, Pedestrian Safety Advisory Committee , other commissions and boards with low or no representation of People of Color ³⁹ |
| | Improve engagement in all CAP Sectors and work with environmental leaders who are American Indian, Black, and other People of Color to retell history that reduces white supremacist narratives and reshapes framing of environmental movement |

³⁹ <https://sfgov.org/dosw/sites/default/files/2019%20Gender%20Analysis%20of%20Commissions%20and%20Boards.pdf> Figure 10, page 14

Equity Goal 8: Reduce racial bias and discrimination in government and community processes

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| <p>Problem Statement: Racial bias and colorism result in violence and death for Black and Brown people, at the hands of police and other enforcement officers.⁴⁰ While San Francisco has been a Sanctuary City since 1989, the impact of enforcement varies depending on immigration status.⁴¹ Black and Brown neighborhoods have long endured over-policing and can also be neighborhoods with lower ability to pay fines. Conversely, there has been an underenforcement of polluting activities in environmental justice communities,⁴² and disparities in maintenance of parks across neighborhoods.⁴³ Activities such as permitting and inspections may also be impacted by implicit and/or explicit bias. Further, lower-income residents are more likely to endure substandard housing conditions due to lack of affordable options. Bias and discrimination also persist beyond government processes. Developing affordable and supportive housing in higher resource neighborhoods will more equitably allocate resources, but BIPOC and low-income populations face prejudice and may experience disenfranchisement in neighborhoods which have historically been exclusionary. Underserved communities may have strong social cohesion, and cohesion may be impacted during relocation to high service neighborhoods.</p> | |
| <p>CAP Sectors Involved: Building Operations Energy Supply Healthy Ecosystems Housing Responsible Production and Consumption Transportation and Land Use</p> | |
| <p>Tracking Progress</p> | |
| Proposed CAP Equity Metrics | |
| Systemic Racial Equity Metrics | Reduced disproportionate arrests of Black and Brown people |
| <p>Working Towards Equity Goal 8</p> | |
| Climate Action Response | Enforcement of construction and demolition debris recovery requirements designed to be distributed equally across all Supervisorial Districts |
| | Recology conducts randomized audits for properties that fall under Resource Separation Ordinance —which generate 40 cubic yards and above, likely to be large buildings |
| | Improve rider comfort, safety, and experience on transit across age, gender, race, and ability. Example activities include community engagement, data collection, reporting, sensitivity training of fare inspectors, and expanding the Muni Transit Assistance Program. |
| Recommendations for the Future | Increase engagement with Black, Brown, undocumented, and non-English speaking communities for policies which increase or create new opportunities for enforcement and/or surveillance. Continually evaluate and revise enforcement practices so that they effectively advance racial equity. Shift enforcement of policies to reduce emissions to the largest polluters. |
| | As neighborhoods transition away from being exclusionary, equitable and transparent decision-making processes, support for new residents to participate in community decisions, and antiracism and inclusion education of existing residents are needed. Engagement with BIPOC, people with disabilities, low-income populations, residents in subsidized housing, and other new residents |

⁴⁰ Following protests in 2020, San Francisco redirected funds from law enforcement to the Black and African American community: <https://sfmayor.org/article/mayor-london-breed-announces-spending-plan-historic-reinvestment-san-franciscos-african>; <https://sf-hrc.org/sites/default/files/Reallocation%20of%20City%20Funding%20Report.pdf>

⁴¹ [Bayview Community Based Transportation Plan](#): Latinx residents have expressed concerns with bias in fare enforcement and frustration with the process of contesting tickets. For low-income residents, especially for undocumented residents that may not be willing to contest, a ticket can be a crushing burden.

⁴² <https://www.bvhp-ivan.org/>

⁴³ <https://sfgov.org/scorecards/livability/park-maintenance-scores>

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| | moving into higher resource neighborhoods, and incorporating lessons learned from related efforts (such as community housing organizations which have experience with mixed-income properties) will be critical. |
| | Evaluate building permitting and inspection processes for potential bias and research strategies to reduce implicit and explicit bias. |
| | Increase financial and technical support for low- and moderate-income building owners to legalize housing units and other properties that do not conform to existing building, fire, and planning codes. |
| | Improve maintenance of lowest-scoring parks , half of which were in the southern part of San Francisco. |
| | Research strategies to reduce bias in reporting refuse bin contamination , currently individual truck drivers have discrepancy. |
| | Shift community safety duties away from the police, and learn from Bayview CBTP , should this policy recommendation be implemented |
| | Engage with all communities on fare enforcement concerns, and increase resident capacity to contest tickets and report biased behavior from fare enforcement officers |
| | Focus parking management in higher resource neighborhoods |

RACIAL AND SOCIAL EQUITY ASSESSMENT TOOL

Background

WHY SHOULD SAN FRANCISCO PRIORITIZE EQUITY IN ITS CLIMATE PROGRAM?

While San Francisco has made progress in reducing greenhouse gas emissions, it has been falling short in other ways. Income inequality is growing, and housing insecurity, homelessness, and displacement are also worsening. These disparities, among others, are more pronounced when intersected with race. In 2017, the median household income in San Francisco was \$96,265. Households which were white alone, not of Hispanic/Latinx origin, had median income of \$121,204, which is twice the median income for Hispanic/Latinx households. Median income for Asian households was \$82,445 and Black households \$30,235.⁴⁴ Most housing cost burdened households are extremely low- and very low-income households. Black and Hispanic/Latinx renters face the highest rates of cost burden with nearly half of both groups cost burdened or severely cost burdened. Asian and Pacific Islander renters also experience elevated rates of cost burden.⁴⁵ In 2017, in San Francisco, Black residents made up 5.3 percent of the city's population, when these residents had previously made up 11 percent of the city's total population in 1990. In the time span of 25 years, the proportion of the Black population in San Francisco was reduced by half, a far more rapid decline than the rest of the Bay Area.⁴⁶

Across every social indicator, when data is disaggregated by race, the legacy of more than two hundred years of racially discriminatory government policies is evident in San Francisco. Racial disparities can be measured in unemployment, health, household income, housing and

displacement, criminal justice, police violence, homelessness, education, and composition of the City and County of San Francisco's workforce.⁴⁷

Climate change exacerbates these disparities. People of color and low-income residents are least responsible for, yet most vulnerable to the impacts of climate change. Strategies to reduce greenhouse gas emissions have the potential to exacerbate disparities if not intentionally designed for equity. With the update to San Francisco's Climate Action Plan (CAP), the intent is to go beyond traditional emissions reduction strategies and intentionally design strategies that advance racial and social equity.

LEADING WITH RACE

This assessment prioritizes equity for Black, Indigenous, and People of Color (BIPOC), low-income populations, and/or other vulnerable populations through the lens of intersectionality. The additional vulnerable populations are defined in the document as: older adults, youth, homeless or marginally housed residents, non-English speaking people, immigrants, people with disabilities, people who are socially isolated, and people with pre-existing health conditions. This assessment leads with race because society produces unequal outcomes for BIPOC, and there is an intersectionality between race and other forms of marginalization. Intersectionality refers to the interconnected nature of social categorizations as they apply to a given individual or group, regarded as creating overlapping and interdependent systems of discrimination or disadvantage. When race is intersected with any other disadvantaged social categorization the outcomes for that individual or group are worse. If not designed specifically to advance racial equity, a solution is less likely to be successful at reducing racial disparities. However, data are not always collected about race. Disparities in wealth and income by race are well

⁴⁴ American Community Survey 2017 5-Year Estimates, Table S1903.

⁴⁵ https://factfinder.census.gov/bkmk/table/1.0/en/ACS/17_5YR/S1903/0500000US06075 (Accessed 2019)

⁴⁶ San Francisco Planning Housing Needs and Trends Report 2018

⁴⁶ San Francisco Planning Community Stabilization Report 2019

⁴⁷ <https://sfgov.legistar.com/LegislationDetail.aspx?ID=3950582&GUID=9F233DC0-845B-483B-9570-ED75D67A8594>

<https://sfgov.legistar.com/View.aspx?M=F&ID=7586870&GUID=9E0222B9-7A4D-4082-8CCE-3F397520FC82>

documented in San Francisco and the Bay Area. While not identical, issues faced by low-income populations may be representative of issues faced by some communities of color. Similar to race, poverty and/or financial insecurity exacerbates the disadvantage and marginalization experienced as a result of certain other social categorizations. Poverty and racial and ethnic inequality are the two foundational issues identified in the [2019 San Francisco Health Needs Assessment](#).

LEVEL OF EQUITY

Interventions to reduce disparities and advance equity vary in scope; they can take the form of targeted benefits and specialized program design, or be designed to address the fundamental drivers of the inequity. Equity can be advanced by providing inclusive access to benefits by removing barriers and targeting investment, such as providing subsidies for green technologies to those who can't afford them. These strategies work to deliver benefits from a particular program to populations who may not have had access, and can work to protect the most vulnerable. Strategies which address the root cause of the vulnerability, inequity, and/or barrier take equity work deeper. For example, instead of only asking the question, "How can we provide the benefits of green technologies to those who can't afford them?", a root cause analysis would result in the question, "Why can't some people afford green technologies and how can we address those underlying issues (such as disparities in income and wealth accumulation)?"

ASSESSMENT PROCESS

The Racial and Social Equity Assessment Tool (RSEAT) is a worksheet to evaluate emissions reduction strategies submitted to the 2020 Climate Action Plan (CAP) for racial and social equity impacts. The assessment enables strategy developers to identify opportunities to provide benefits to all San Franciscans, mitigate negative unintended consequences for BIPOC, low-income populations, and other vulnerable populations and, where possible, address the root causes and fundamental drivers of inequity. RSEAT was developed through stakeholder engagement on residential building

decarbonization collaboratively led by SFE, [People Organizing to Demand Environmental and Economic Justice \(PODER\)](#), and [Emerald Cities San Francisco Bay Area](#), consulting literature, the [Equity Assessment Tool](#) prepared by Race Forward for the [Zero Cities Project](#) and guidance from the [Office of Racial Equity \(ORE\)](#) and the [Planning Department's Community Equity Team](#). Five Themes and supporting *Impact Areas* are addressed under RSEAT: 1) Income and wealth equality (including Just Transition for workers); 2) Housing security and community stability; 3) Inclusion and empowerment; 4) Health; and 5) Hazard and climate resilience. The *Examples of Progress* column in the tool provides more information about how to track progress on each of the *Key Statements*. Some of these *Examples* are population-level data. It is difficult to attribute changes in these indicators to any individual strategy, as there are many contributing factors to systemic problems. The complex nature of systemic problems can result in a lack of accountability, where individual initiatives determine the systemic problem to be outside of certain project scope. Each strategy in the CAP will include an equity metric, with progress measured over time. While equity metrics included in the CAP will likely pertain to equitable access, when feasible strategies should be designed to address systemic problems, in order to make progress on these pervasive issues.

ORE guided the development of a Scale to evaluate the potential of a strategy to:

- +2** Repair root causes of racial disparities; dismantle systems of oppression; structural and systemic changes such as large policy and budgetary action
- +1** Mitigate symptoms of systemic racism; interpersonal and operational changes; working within the current system to make it better such as through inclusive access to existing services
- 1** Maintain the status quo of racial disparities

-2 Perpetuate racial disparities and harm

Assessment

| Strategy: | | | | | | |
|--------------------------------------|------------------------------|--|--|--|-----------------------|--|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations | |
| 1. INCOME AND WEALTH EQUALITY | Economic Opportunity | This strategy will reduce poverty and disparities in income and wealth accumulation for Black, Indigenous, and People of Color (BIPOC), low-income populations, and/or other vulnerable populations” through the lens of intersectionality” through increased access to business opportunities and/or skilled and professional jobs. | <ul style="list-style-type: none"> - Reduced income inequality gap between racial/ethnic groups - Reduced disparities in access to banking products - Increased land and homeownership opportunities for BIPOC | -2 -1 +1 +2 N/A | | |
| | Workforce Development | This strategy will increase opportunities for people with barriers to employment. | <ul style="list-style-type: none"> - Reduced unemployment rates by race - Retained and promote living-wage jobs for entry level and limited skilled workers - Stabilized business that employs low-to moderate-income workers - Increased education and job training opportunities for low-to moderate-income individuals and families, especially those without a college education | -2 -1 +1 +2 N/A | | |

| Strategy: | | | | | |
|------------------|------------------------------------|---|--|---|------------------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| | Just Transition for Workers | This strategy supports the transition of workers from an extractive economy to a low-carbon one that maximizes benefits of climate action while minimizing hardships for workers and their communities. | <ul style="list-style-type: none"> - Job loss and gain - Improved worker health and safety - Largest polluter/ Most responsible party pays for the transition | -2 -1 +1 +2 N/A | |

| Strategy: | | | | | |
|---|-------------------------|---|--|--|-----------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| 2. HOUSING SECURITY AND COMMUNITY STABILITY | Household Affordability | This strategy will improve affordability (incl. household costs for rent/mortgage, transportation, energy) for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> - Reduced rates of housing cost burden by race - Reduced rates of low-and moderate-income households that are housing cost burdened without loss of low- and moderate-income households - Increased number of affordable housing units for low-and moderate-income residents - Reduced homeownership disparities by race - Meeting housing production and preservation targets in 2020 San Francisco Housing Affordability Strategies⁴⁸ | -2 -1 +1 +2 N/A | |

⁴⁸ Produce an annual average of 5,000 new homes a year, with at least 1,667 homes affordable at very low-, low-, and moderate-incomes. Preserve 600-700 units of existing subsidized affordable housing per year, and preserve 400 apartments serving low- and moderate-income renters annually through acquisition of rent-controlled housing (Small Sites program)

| Strategy: | | | | | |
|-----------|---------------------------|---|--|--|-----------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| | Anti-Displacement | This strategy helps BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality*** and the businesses and institutions that serve them stay in their neighborhood for the long-term. | <ul style="list-style-type: none"> - Increased percentage of the Black population; maintained or expand percentage of other racial groups that have been decreasing over time (such as Native American/American Indian and Filipino, Samoan, and Vietnamese) - Decreased number of all types of evictions, including illegal evictions and buyouts - Stabilized and reverse the loss of legacy businesses that protect cultural diversity and long-term workers - Tenants' rights education classes held - Foreclosure prevention education/resources | -2 -1 +1 +2 N/A | |
| | Access to Services | This strategy helps BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality*** access essential services. | Proximity or access to schools, grocery stores, workplaces, daycare facilities, community centers, medical facilities, parks/open space | -2 -1 +1 +2 N/A | |

| Strategy: | | | | | |
|------------------------------|-----------------------|---|---|--|-----------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| 3. INCLUSION AND EMPOWERMENT | Influence | This strategy acknowledges the expertise that BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality*** hold about the needs of their communities and includes community expertise in decision-making and implementation. | <ul style="list-style-type: none"> - Identify where the strategy lies on the spectrum of community engagement (see p.2) - Participation at stakeholder meetings, in community councils, etc (depending on where on the spectrum) - Participant surveys to understand efficacy/competency of engagement type (ie # engaged stakeholders who feel they can impact decisions, # engaged stakeholders who feel positively about the program project) | -2 -1 +1 +2 N/A | |
| | Social Capital | This strategy strengthens networks and builds capacity and knowledge for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> - Civic engagement - Awareness of and participation in government and other community-serving programs - Community knowledge of rights - People who volunteer to come together to solve community problems - Membership in community-based organizations and/or faith-based organizations - Social cohesion - Organizations and individuals who gain capacity to address community needs | -2 -1 +1 +2 N/A | |

| Strategy: | | | | | | |
|-----------|----------------------------|--|--|--|-----------------------|--|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations | |
| | Cultural Competence | This strategy is respectful of diverse cultural needs. | <ul style="list-style-type: none"> - Surveying to understand if project/program is culturally competent, process for incorporating feedback - Stabilized and reversed the loss of the city's culture and arts organizations - Stabilized and reversed the loss of legacy businesses that protect cultural diversity and long-term workers | -2 -1 +1 +2 N/A | | |
| | Equitable Benefits | The benefits of this strategy will be accessible and relevant to BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality*** and the barriers to receiving the benefits are addressed. | Program/project specific accessibility metrics disaggregated by race where possible | -2 -1 +1 +2 N/A | | |

| Strategy: | | | | | |
|------------------|-----------------------------|---|--|---|------------------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| 4. HEALTH | Chronic Disease | This strategy has co-benefits that address prevention and management of chronic disease, particularly for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> - Cardiovascular Health - Respiratory Health and asthma - Diabetes - Cancer - Obesity | <p>-2 -1 +1 +2</p> <p>N/A</p> | |
| | Communicable Disease | This strategy has co-benefits that address prevention or treatment of communicable disease, particularly for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> - Vector-Borne Disease - Communicable Disease Prevention - Communicable Disease Management | | |
| | Behavioral Health | This strategy either 1) has co-benefits that address the root causes of mental health triggers, or 2) addresses mental health care, particularly for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> - Displacement / Financial Insecurity - Violence / Trauma - Maternal and Child Health - Addiction / Substance Abuse - Social Isolation / Community Engagement - Physical Activity / Green Space - Access to Mental Health Services | <p>-2 -1 +1 +2</p> <p>N/A</p> | |

| Strategy: | | | | | |
|------------------|--------------------|--|--|---|------------------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| | Injury | This strategy has co-benefits that address injury prevention through adaptations to the built environment, particularly for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> - Road Traffic Injuries - Falls / Household Injuries - Violence - Fire - Poisoning | -2 -1 +1 +2 N/A | |

| Strategy: | | | | | |
|---|--|--|---|---|------------------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| 5. HAZARD AND CLIMATE RESILIENCE | Community Adaptation and Resilience | This strategy facilitates programs or policies to improve the ability of BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality*** to prepare for, respond to, and/or recover from a hazard event. | <ul style="list-style-type: none"> Programs or policies related to: <ul style="list-style-type: none"> - Access to Health Care Services - Access to Emergency Preparedness Programs and Emergency Response Services - Community Engagement, Social Cohesion, and - Cultural Competency - Equitable Recovery | -2 -1 +1 +2 N/A | |
| | Physical Environment Resilience | This strategy reduces risks from hazards or exposure to pollution through changes to buildings and/or infrastructure (including nature-based) for BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality.*** | <ul style="list-style-type: none"> Structural improvements related to: <ul style="list-style-type: none"> - Extreme Heat, i.e. Cool Homes/Cool Buildings, Reduces Urban Heat Island - Flooding and Extreme Storms, i.e. Housing Quality / Mold Exposure - Wildfire and Air Quality, i.e. Clean Air / Filtration - Seismic Hazards, i.e. Soft-Story Retrofit Program Reduces Service Disruption - Power Disruption, i.e. Communications Infrastructure, Recovery | -2 -1 +1 +2 N/A | |

| Strategy: | | | | | |
|-----------|--------------------------|--|---|---|-----------------------|
| Theme | Impact Area | Key Statement | Examples of Progress* | Scale (orange=current ; green=potential) | Equity Considerations |
| | Economic Recovery | This strategy supports BIPOC, low-income populations, and/or other vulnerable populations** through the lens of intersectionality*** in the economic recovery from covid-19. | <ul style="list-style-type: none"> - Employment opportunities during covid response prioritized for disadvantaged workers - Training and workforce development prioritized for disadvantaged workers under/unemployed due to covid-19 - Workers receive resources needed for safety and health on the job - Workers receive resources they need to work from home and maintain employment, expanded job types able to work from home - Prioritized financial resources for community-serving small businesses and minority-owned businesses - Prioritized financial resources for community-serving nonprofit organizations | -2 -1 +1 +2 N/A | |

* Some examples are population-level data, and are collected citywide, by zip code, census geography, and/or other geographies. It is difficult to attribute a change in these population-level data to a particular climate action, however connecting climate action to the progress made through a variety of programs is useful. The examples can be used to guide the development of the equity considerations so that recommendations feed into ongoing population-level measurement.

** In addition to the primary focus on communities of color and low-income populations, vulnerable populations are also defined in the document as: older adults, youth, homeless or marginally housed residents, non-English speaking people, immigrants, people with disabilities, people who are socially isolated, and people with pre-existing health conditions

*** Intersectionality refers to the interconnected nature of social categorizations as they apply to a given individual or group, regarded as creating overlapping and interdependent systems of discrimination or disadvantage. When race is intersected with any other disadvantaged social categorization the outcomes for that group or individual are worse.

Resources

KAPWA CONSULTING STAKEHOLDER POWER ANALYSIS TOOL

Stakeholder Power Analysis

Complete this analysis to understand the relative power dynamics between various stakeholders involved in your project and understand specific needs that can be addressed in your stakeholder strategy.

- 1) **Determine what your project question and if the project dynamic is:**
 - a. Process, decision-making oriented: X/Y Variables are Impact/Influence
 - b. Service, program oriented: X/Y Variables are Need/Access

- 2) **Create your stakeholder power analysis chart using the example below:**

(Y axis) Impacted by Decision: Impact is identified by having a positive/negative or missed opportunity to share in the benefit of a Policy or Plan.

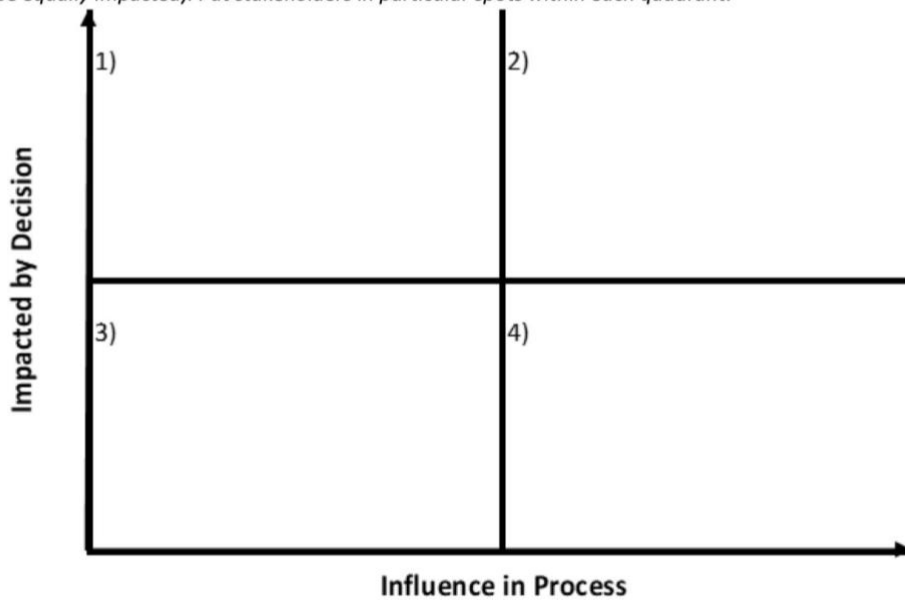
(X axis) Influence in Process: Defined by time, resources, information, familiarity with process and real or perceived ability to influence outcomes.

OR

(Y axis) Need: Level of benefit that can be realized through a program or service or vulnerability to the risks of a problem the project seeks to solve

(X axis) Opportunity/Access: Potential to be advanced (i.e. financially, professionally, in health, or in community well-being). Ability to currently participate or receive the benefits of a program.

Put stakeholders groups in the appropriate quadrant. Break down broad stakeholders groups into sub groups if there are differences in influence or impact within a category (ex. not all small businesses may be equally impacted). Put stakeholders in particular spots within each quadrant.



Key:

Quadrant 1: Highly impacted, little influence: This group should be prioritized for inclusion and equity strategies.

Quadrant 2: Highly impacted, high influence: This group will likely already be at the table. Manage their continued participation, and sharing influence with those in Quadrant 1.

Quadrant 3: Low impact, low influence: This group is not an obvious priority. However, communication should be maintained to honor transparency should they eventually shift into another quadrant.

Quadrant 4: Low impact, high influence: This group should be consulted with for their expertise and influence. Strategies should focus on leveraging power to further advance position of stakeholders in Quadrant 1.

3) Analysis questions

Question 1: Who are the stakeholders impacted by this initiative?

Question 2: Are any of the following groups of stakeholders considered within the initiative, and where do they fall? (You can identify more specific groups within each category)

- Communities of color
- Low-income populations
- Limited English Proficient communities
- Community based organizations and groups
- Interest based organizations and groups
- Churches and faith based groups
- Neighborhood coalitions or associations
- Neighborhood groups
- Property Owners
- Renters
- Business
- Business organizations (associations, chambers of commerce, business districts)
- Employees (unions, non-unionized)
- Institutions (education, health, correctional)
- Local government officials and advisory bodies
- Local government departments
- Tribal sovereign nations
- Other public agencies
- Other stakeholders _____

Question 3: Do certain stakeholder groups carry more influence/access than others in your initiative? Why?

Question 4: What community engagement strategies will you use to ensure under-represented/under-served stakeholders (Quadrant 1) have more equitable influence/access?

SFE RACIAL EQUITY PROGRAM AND POLICY SCAN TOOL

Purpose: Identify existing initiatives and ongoing program work at SF Environment with significant opportunities to advance racial equity. The initiatives and program work identified will be referenced in SFE’s Racial Equity Action Plan and will be prioritized for an in-depth racial equity assessment. **Please complete a worksheet for each major initiative or work area within your Program.** Estimated time to complete: 2 hours.

| STEP 0 - General Information | |
|--|--|
| Program Area | |
| Name of initiative, policy or ongoing program work | |
| Brief description. Include background information (why is this happening/a priority?) | |
| What dedicated financial resources are there? (staff time and/or other) | |
| STEP 1 - Desired Results/Outcomes | |
| What is the desired outcome of this initiative? Think about impact. | |
| STEP 2 - Benefits and Burdens Analysis | |
| Who is this initiative intended to serve? | |
| What data do you <i>have</i> to identify who benefits and who is burdened? (include quantitative and/or qualitative data) | |

| | |
|--|--|
| <p>What data do you still <i>need</i> to understand who benefits and who is burdened?</p> | |
| <p>Who receives the benefits? (Also consider who might benefit financially)</p> | |
| <p>What are barriers to accessing the benefits?</p> | |
| <p>Who is/could be burdened?</p> | |
| <p>What are/could be the unintended consequences?</p> | |

STEP 3 – Stakeholder Power Analysis

| | |
|--|--|
| <p>3a. Who are the stakeholders impacted by this initiative? (check all that apply)</p> | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Communities of color <input checked="" type="checkbox"/> Low-income populations <input checked="" type="checkbox"/> Unhoused populations <input checked="" type="checkbox"/> Limited English Proficient communities <input checked="" type="checkbox"/> Community based organizations and groups <input checked="" type="checkbox"/> Interest based organizations and groups <input checked="" type="checkbox"/> Churches and faith-based groups <input checked="" type="checkbox"/> Neighborhood coalitions or associations <input checked="" type="checkbox"/> Neighborhood groups—through Next Door <input checked="" type="checkbox"/> Property Owners <input checked="" type="checkbox"/> Renters <input checked="" type="checkbox"/> Businesses <input checked="" type="checkbox"/> Business organizations (associations, chambers of commerce, business districts) <input checked="" type="checkbox"/> Employees (unions, non-unionized) <input checked="" type="checkbox"/> Institutions (education, health, correctional) <input checked="" type="checkbox"/> Local government officials and advisory bodies <input checked="" type="checkbox"/> Local government departments |
|--|--|

| | |
|---|---|
| | <input checked="" type="checkbox"/> Tribal sovereign nations <input checked="" type="checkbox"/> Other public agencies <input checked="" type="checkbox"/> Other stakeholders _____ |
| 3b. Who is involved in major decisions? Do certain stakeholder groups carry more influence/access than others in your initiative? Why? | |
| 3c. Where does this initiative lie on the spectrum on community engagement? | |
| 3d. Was community engagement conducted when the initiative was started? Why or why not? | |
| 3e. Was community engagement conducted on an ongoing basis? Why or why not? | |

STEP 4 - Strategies for Racial Equity

| | |
|--|--|
| How might you remove barriers for those who have been unable to access benefits? | |
| How might you remove or mitigate burdens and unintended consequences? | |
| What community engagement strategies will you use to ensure low-income communities of color have more equitable influence/access? | |
| What tools and/or actions are available to achieve the strategies described above? | |

| STEP 5 – Racial Equity Implementation | |
|---|--|
| How can we implement these strategies? | |
| What resources might be needed? | |
| What additional data or community engagement is necessary? | |
| STEP 6 – Racial Equity Communications & Accountability | |
| How would you evaluate and report back on progress towards meeting desired racial equity outcomes? | |
| Is there a way to receive and incorporate feedback about the program? | |

FACILITATING POWER SPECTRUM OF COMMUNITY ENGAGEMENT⁴⁹

| | 0 | 1 | 2 | 3 | 4 | 5 |
|----------------------------|--|---|---|---|--|--|
| | IGNORE | INFORM | CONSULT | INVOLVE | COLLABORATE | DEFER TO |
| Stance towards community | | | | | | |
| Impact | <i>Marginalization</i> | <i>Placation</i> | <i>Tokenization</i> | <i>Voice</i> | <i>Delegated Power</i> | <i>Community Ownership</i> |
| Community Engagement Goals | Deny access to decision-making processes | Provide the community with relevant information | Gather input from the community | Ensure community needs and assets are integrated into process & inform planning | Ensure community capacity to play a leadership role in implementation of decisions | Foster democratic participation and equity through community-driven decision-making; Bridge divide between community & governance |
| Message to community | “Your voice, needs & interests do not matter” | “We will keep you informed” | “We care what you think” | “You are making us think, (and therefore act) differently about the issue” | “Your leadership and expertise are critical to how we address the issue” | “It’s time to unlock collective power and capacity for transformative solutions” |
| Activities | Closed door meetings Misinformation Systematic disenfranchisement Voter suppression | Fact sheets Open Houses Presentations Billboards Videos | Public comment Focus Groups Community Forums Surveys | Community organizing & advocacy House Meetings Interactive Workshops Polling Community forums | MOU’s with Community-Based Organizations Community Organizing Citizen Advisory Committees Open Planning Forums with Citizen Polling | Community-Driven Planning Consensus building Participatory Action Research Participatory Budgeting Cooperatives |
| Resource allocation ratios | 100% systems admin | 70-90% to systems admin 10-30% to promotions and publicity | 60-80% to systems admin 20-40% to consultation activities | 50-60% to systems admin 40-50% to community involvement | 20-50% to systems admin 50-70% to community partners | 80-100% to community partners and community-driven processes that ideally generate new value and resources that can be invested in solutions |

⁴⁹ https://www.facilitatingpower.com/spectrum_of_community_engagement_to_ownership

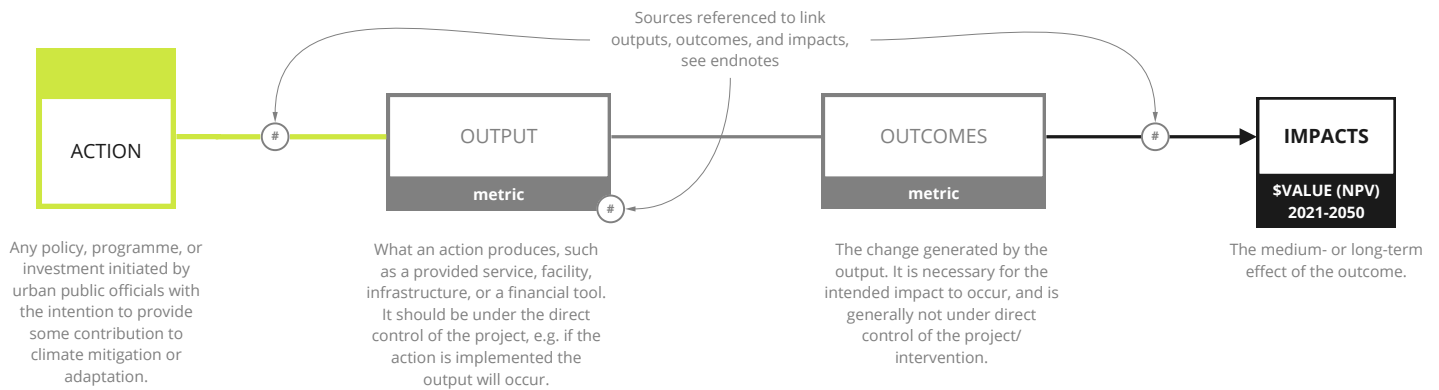
THE SOCIOECONOMIC VALUE OF CAP COMMUNITY BENEFITS

APPENDIX E

APPENDIX E: SOCIOECONOMIC VALUE OF CAP COMMUNITY BENEFITS

The goals of the Climate Action Plan (CAP) are to chart an actionable path to achieve net zero greenhouse gas (GHG) emissions by 2050, advance racial and social equity, and protect the entire San Francisco community from the impacts of climate change. Because the activities that produce GHG's and lead to climate change (primarily burning fossil fuels) also tend to also produce other negative consequences, reducing GHG's can also create other benefits, often referred to as "co-benefits" or "co-impacts." For example, reducing fossil-fuel based automobile use that generates GHG emissions also reduces other air pollutants such as nitrogen oxides (NOx), sulfur oxides (SOx), and fine particulate matter (PM) that cause health problems, which can be measured in quantifiable avoided healthcare costs. Reducing automobile use by switching travelers to active modes of transportation such as biking and walking provides even more additional benefits by improving individual health, which can be measured with even more quantifiable avoided healthcare costs.

A growing body of research over the past fifteen years has begun to quantify these additional costs and benefits of climate action. The [C40 network of cities](#), of which San Francisco is an active member, has developed a framework for identifying and categorizing these co-benefits in a way that is transparent, reproducible, and avoids double-counting. [see endnote 1] It requires clearly identifying the actions being planned, the outputs that an action would create, the resultant outcomes, and the impacts (costs and benefits) those outputs could have on the population. While this approach is global in scale, local data is necessary to apply it, as the same actions applied in different places may have different outputs, outcomes, and impacts. This study uses the C40 methodology to study selected supporting actions of the San Francisco CAP to identify costs and benefits.



This quantitative approach is generally linear, in that it takes inputs specific to San Francisco (e.g. the population of the city) and the CAP (e.g. number of new acres of open space planned), and multiplies them by impact factors derived from published research. Many of the inputs are derived from the "Focus 2030" report, which was developed by the San Francisco Department of the Environment to identify pathways to the CAP goal of reaching zero emissions by 2050. [see endnote 2] The impact factors come from a range of published sources that are noted on each impact pathway and can be found in the endnotes. To the degree that some of co-benefits identified appear large, they are scaled according to the targets of the CAP, which are correspondingly large: for instance, switching up to 6% of all vehicle trips in San Francisco to bicycling, and completely eliminating natural gas usage in residential and commercial buildings. This approach was aligned with available research and was therefore limited to studying CAP actions for which there are accepted methodologies for monetizing benefits; many other CAP actions would also provide significant community benefits that cannot currently be estimated, but are nonetheless valuable. Also, the current methodologies do not account for how co-benefits might vary across the community by race, class or other factors -- this refinement of the methodology should be a priority for future study in this area.

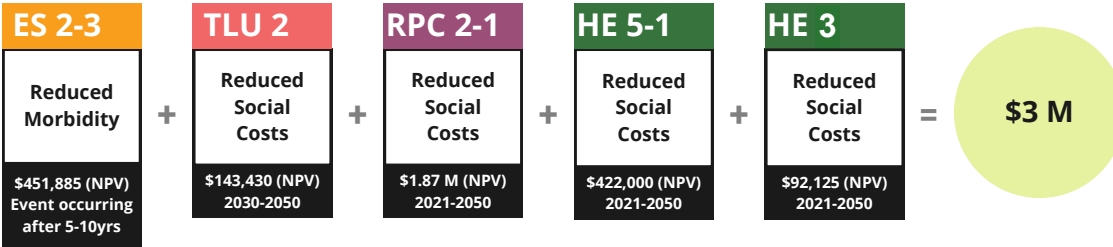
These findings show that implementing the CAP will save money, save lives, reduce illness and injury, and avoid healthcare costs to City residents and businesses. CAP actions in the Building Operations sector can reduce utility costs which will make living in San Francisco more affordable, while certain Healthy Ecosystems actions can generally have a positive effect on property values. However, like all proposed actions in the CAP, they must be implemented with a commitment to equity and inclusive decision making to ensure protections for vulnerable populations, prevent undue financial burdens on low-and-middle income families, preclude displacement and evictions, and avoid other unintended consequences. If done correctly, implementing just a subset of actions from the CAP has the potential to generate community benefits that exceed \$1 billion in value and increase the quality of life for all San Franciscans.

COMMUNITY BENEFITS SUMMARY

The community benefits of the Climate Action Plan detailed on the following pages added together total over \$2.7 Billion, especially due to the avoided deaths from eliminating natural gas use in buildings. The dollar value is expressed as net present value (2021 dollars) over the 30 year period of the CAP using a discount rate of 3%. [see endnote 1]

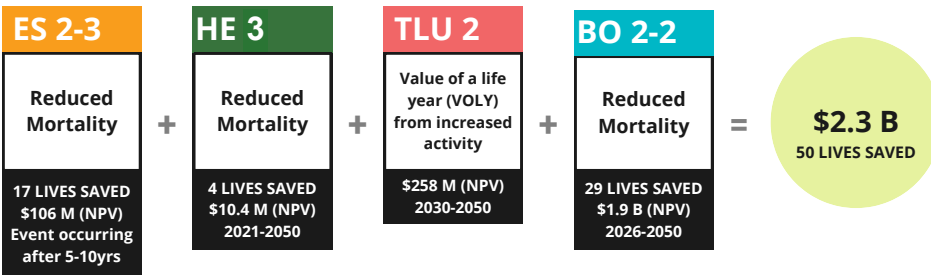
Reduced Morbidity / Reduced Social Costs

Morbidity refers to the rate of illness in a population. Social costs refer to negative impacts to society expressed in dollar terms, such as the health impacts of air pollution. The financial benefits shown here are avoided costs for health care related to treating injuries and conditions like asthma and stroke that have environmental sources.

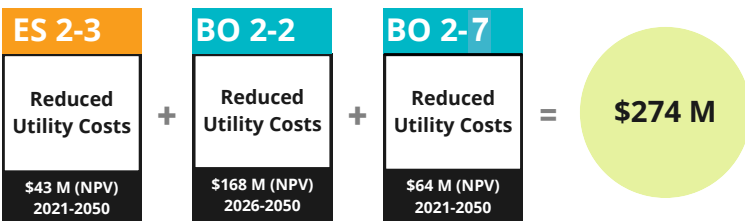


Reduced Mortality

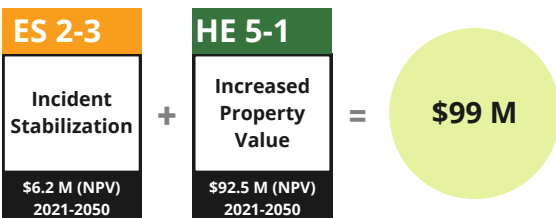
Morbidity refers to the rate of deaths in a population.



Reduced Utility Costs

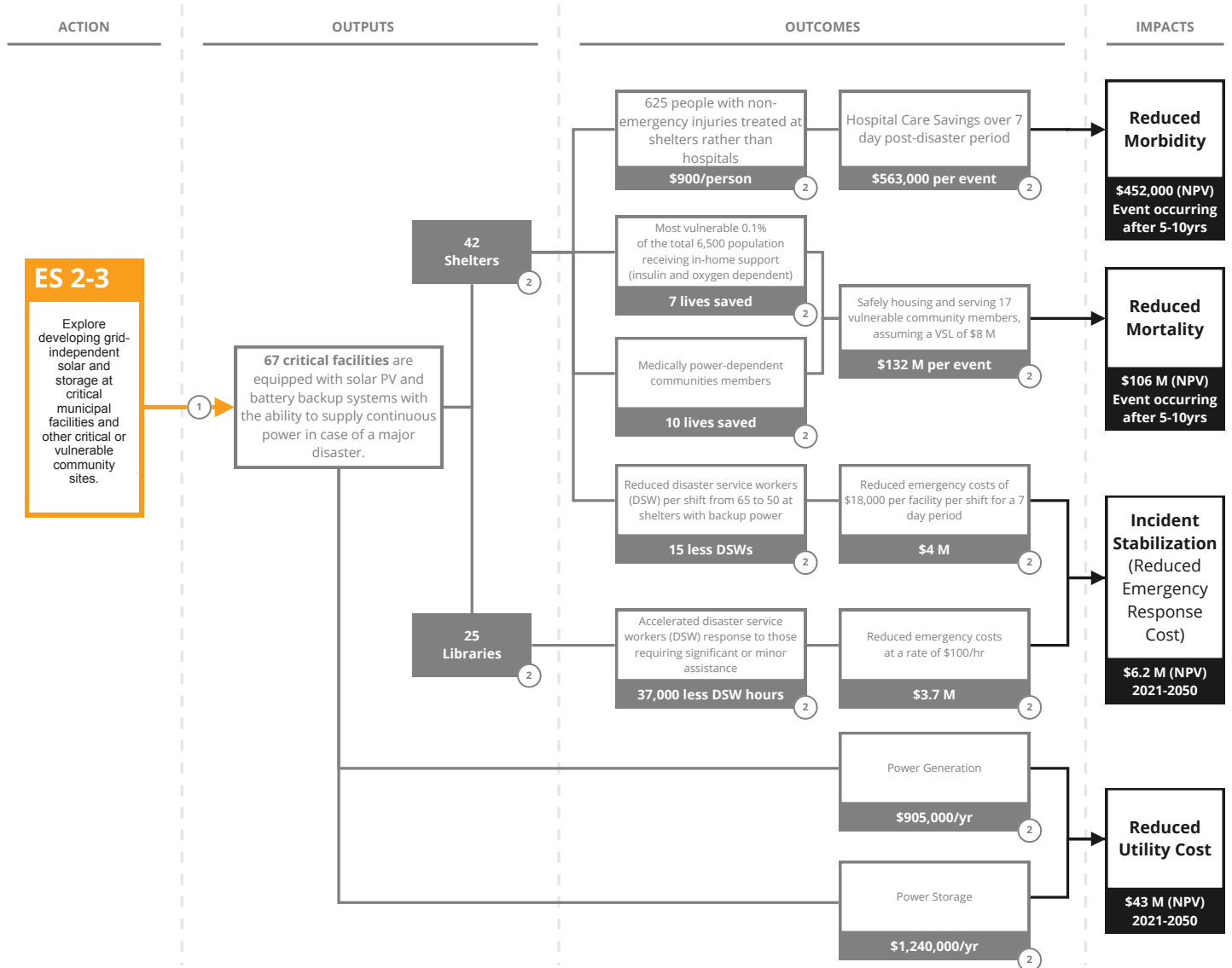


Additional Savings



ENERGY SUPPLY (ES)

ES 2: Invest in local renewable energy and energy resilience projects where safe and affordable.



Improving the availability of community buildings to serve as emergency shelters offers safe housing and service to power-dependent and vulnerable populations, avoiding the loss of life and hospital admissions for non-emergency injuries that would occur without safe housing. In addition, installing solar power and battery backup systems at these critical facilities will accelerate disaster relief response time, resulting in a less expensive disaster response. The value of the benefits due to avoided disasters is calculated assuming an event would occur between 5-10 years after installation. Outside of emergency situations, the solar power generation produces valuable clean electricity and the battery backup reduces peak demand charges and earns grid service credits. However, avoided use of diesel generators during an emergency event to supply an equivalent amount of power, and the social costs of the associated air pollution that would occur, are not included in the source calculations. See the referenced sources for more detail on the definition and selection of critical facilities studied for this co-benefit pathway (San Francisco has more than 67 critical facilities overall).

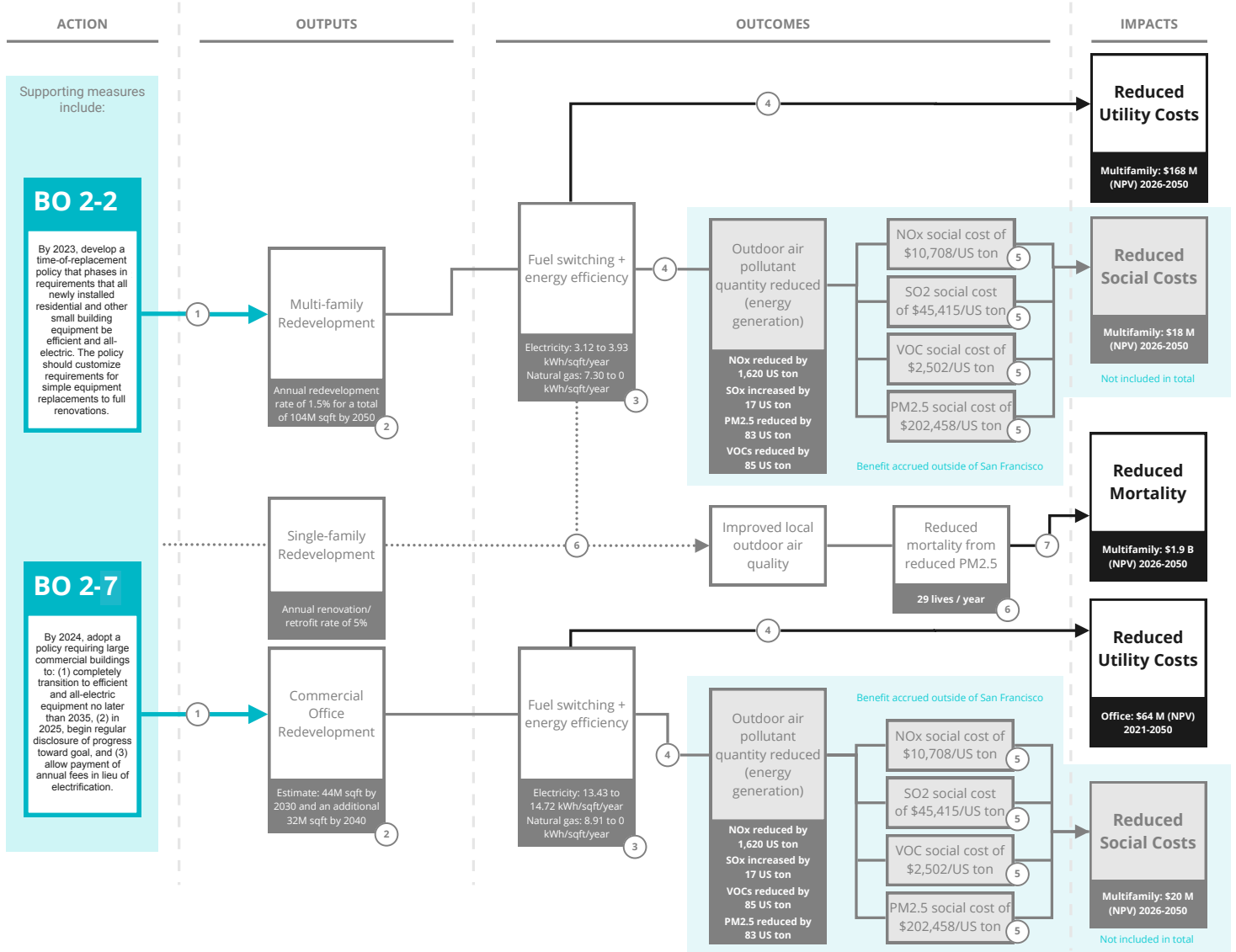
CO-BENEFITS

- Reduced Morbidity**
\$452,000 (NPV)
per 7-day post disaster period
- Reduced Mortality**
\$106 M (NPV)
17 lives saved
per major disaster
- Incident Stabilization**
\$7.7 M (NPV)
Disaster service workers' hours reduced by 37,000
- Reduced Utility Cost**
\$43 M (NPV)
ongoing savings from on-site solar and battery backup

TOTAL
\$156 M

BUILDING OPERATIONS (BO)

BO 2: Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types.



Requiring new equipment in buildings -- water heaters, furnaces, stoves, etc. -- to be all-electric will result in a phase out of natural gas appliances over time as equipment wears out or is upgraded. In addition, replacement requires equipment to meet current energy codes, which require greater energy efficiency than existing equipment typically has. The benefits of this transition include reduced utility costs for building owners and tenants and improved local air quality. Due to source limitations, utility cost savings could only be estimated for commercial office and multifamily building types (and do not include all likely cases of equipment replacement), while air quality impacts were modeled for single- and multi-family residential buildings (but not commercial or institutional buildings), resulting in a conservative underestimate of total benefits.

Reducing energy use also reduces the air pollutants that are byproducts of electricity generation from natural gas production. However, because no natural gas power plants operate within San Francisco, these additional benefits (gray boxes) accrue outside the boundaries of San Francisco; the benefits are calculated but not added to the total value.

CO-BENEFITS

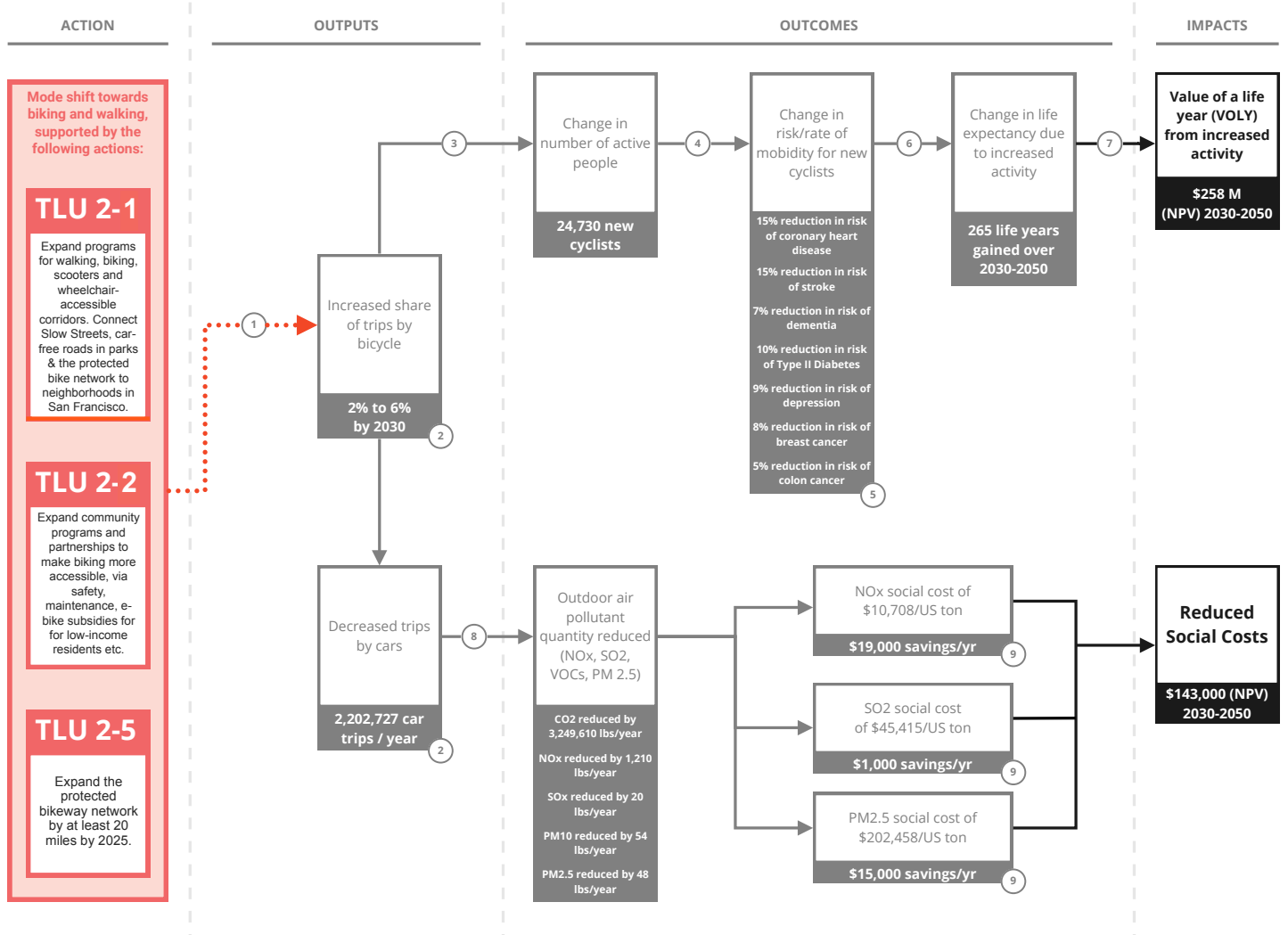
- Reduced Utility Costs**
\$231 M (NPV)
for multi-family and office redevelopment by fuel switching and increased efficiency, accruing until and including 2050*
- Reduced Mortality**
\$1.9 B (NPV)
29 lives saved from improved air quality in San Francisco (reduce PM2.5)

TOTAL
\$2.1 B

* Assumes space cooling stays unchanged and heating switches from gas to electric.

TRANSPORTATION & LAND USE (TLU)

TLU 2: Create a complete and connected active transportation network that shift trips from driving to walking, biking, and other low-carbon modes.



Achieving the CAP's Transportation sector goal of 80% of trips via sustainable modes by 2030 would result in many people switching from single occupant vehicles to biking, walking, and transit use (i.e. transportation "mode shift"). This page calculates some of the community benefits that would be associated with the active transportation mode increases (e.g. more bicycling) needed to achieve the 80% sustainable trips goal and highlights a few of the supporting actions, like expanding the existing protected bicycle lane network within the city. There is no concrete link between the specific supporting actions and the mode shift; the methodology here relies on the CAP goals to determine the magnitude of the mode shift and then monetizes some of the health and social benefits of this shift; it does not attempt to quantify the link between the specific CAP strategies and the mode shift. Because the mode shift goal is set for 2030 in the CAP, the benefits are evaluated starting in 2030 up to the goal year 2050.

There are significant health benefits associated with the increased physical activity due to more people using active transportation: reducing mortality and mitigating the risk of diabetes mellitus, ischemic heart disease, ischemic stroke, Alzheimer disease and other dementias, depression, breast cancer, and colon cancer. These health benefits also lead to directly avoided healthcare costs for the people being active. In addition, the transportation mode shift would improve air quality in San Francisco through reducing other pollutants like CO₂, NO_x, SO₂, PM₁₀ and PM_{2.5}, which in turn would have health benefits for the larger San Francisco community and lead to additional avoided healthcare costs. This study did not estimate the impact that decreasing the number of vehicles on the road and increasing the number of protected bike lanes would have on the number of vehicle crashes and related costs.

CO-BENEFITS

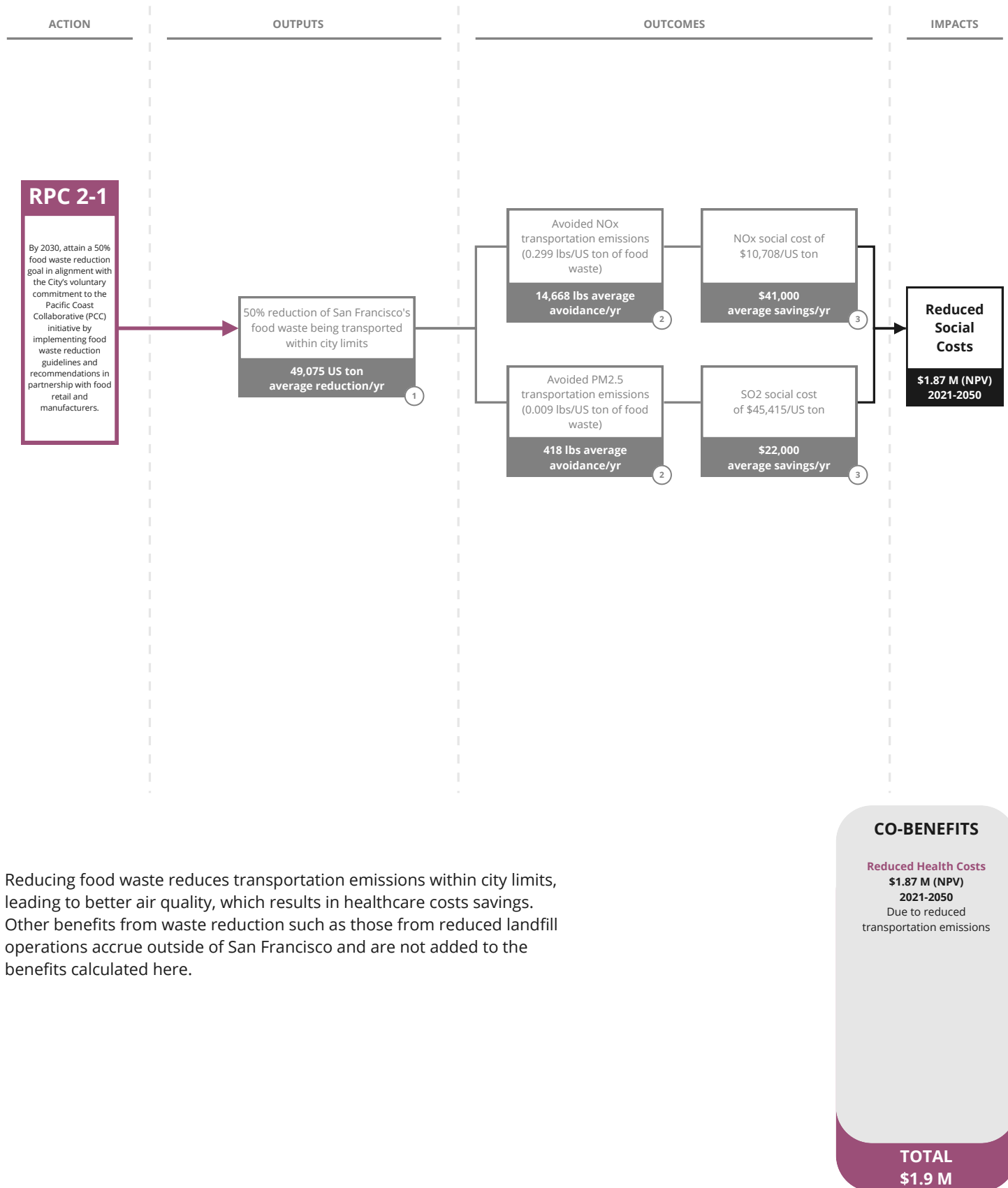
Savings over project life (VOLY) due to increased activity
 \$258 M
 The mode shift towards active transport leads to significant health outcomes for new cyclists

Reduced social costs due to reduced emissions
 \$143,000
 Fewer cars on the road means reduced air pollution

TOTAL
 \$258 M

RESPONSIBLE PRODUCTION AND CONSUMPTION (RPC)

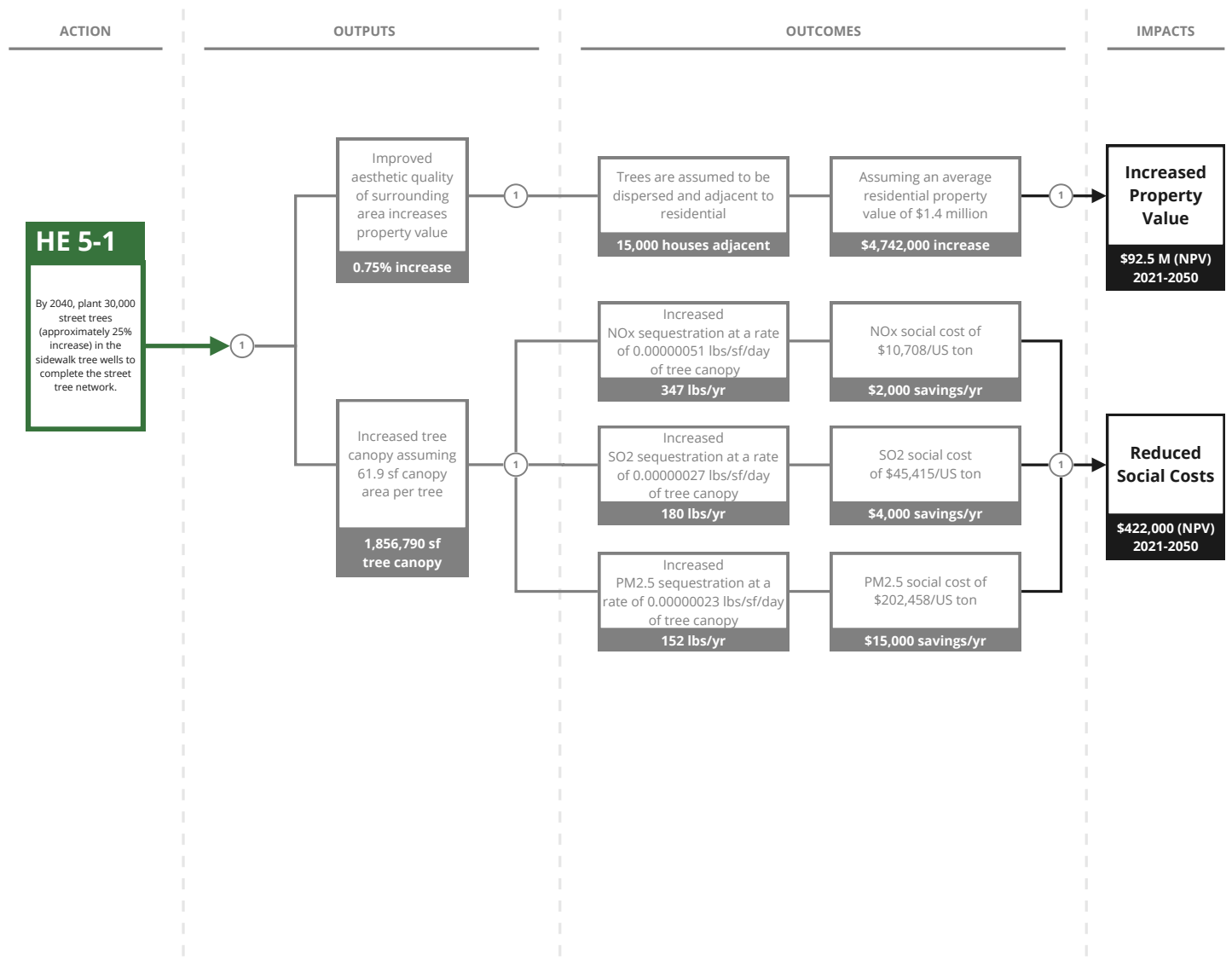
RPC 2: Reduce the carbon footprint of the food system by reducing waste, promoting climate friendly diets, and getting excess food to communities in need.



Reducing food waste reduces transportation emissions within city limits, leading to better air quality, which results in healthcare costs savings. Other benefits from waste reduction such as those from reduced landfill operations accrue outside of San Francisco and are not added to the benefits calculated here.

HEALTHY ECOSYSTEMS (HE)

HE 5: Maximize trees and other urban greening throughout the public realm.



Planting 30,000 street trees will increase tree canopy, which will remove particulate matter that pollutes the air, resulting in reduced healthcare costs. Street trees also increase the property values of adjacent parcels, an effect which can accrue to property owners as well as tenants staying in higher quality spaces. Because of the existing and worsening wealth and income inequity in San Francisco, measures that increase property value should be evaluated for potential impact on displacement and income inequality.

The increased property value reported is the average of the estimated range of \$20 M - \$165 M, which is driven by the range of percent property value increase due to trees and the range of the number of houses that would be impacted by the action.

CO-BENEFITS

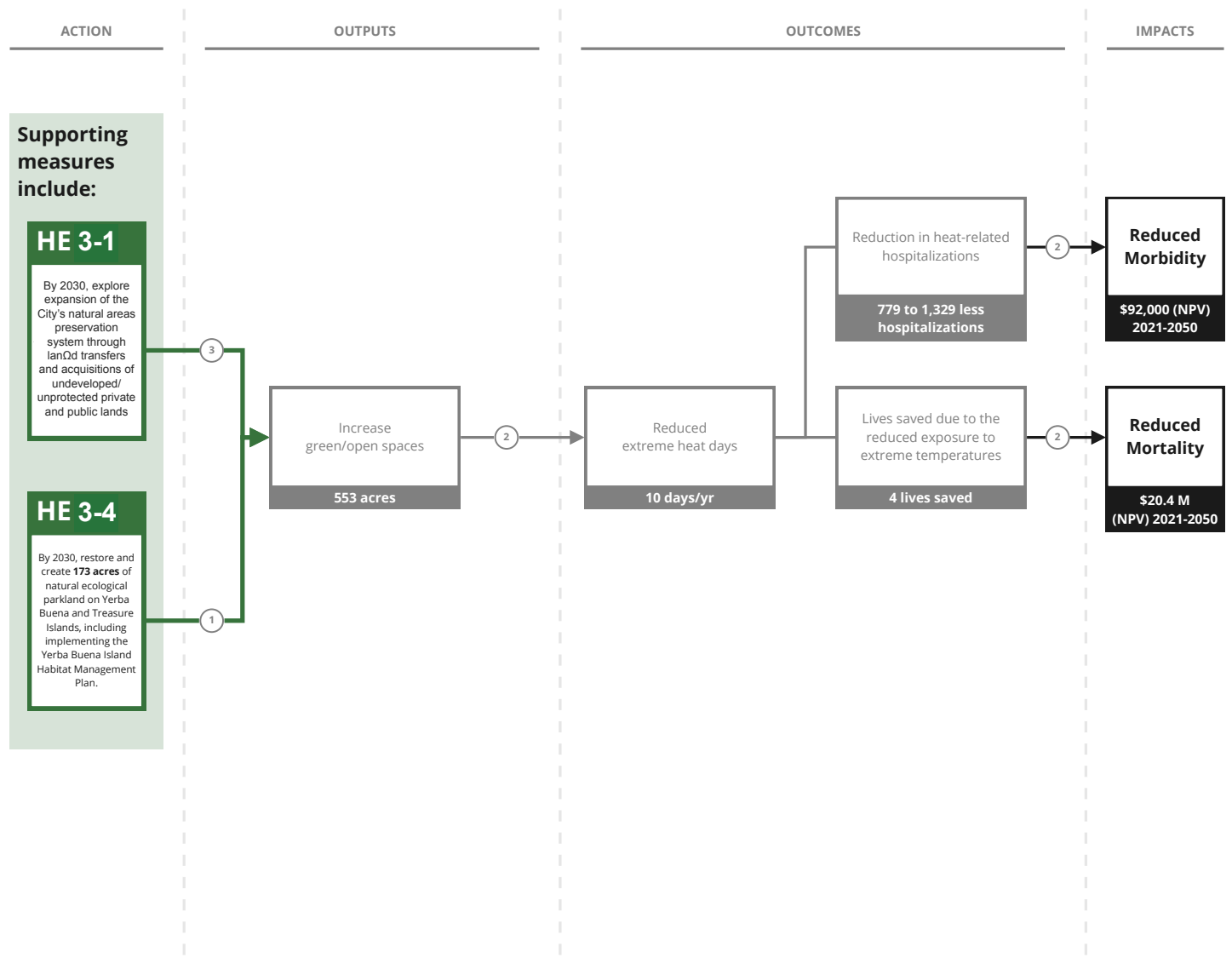
Increased Property Values
\$92.5 M (NPV)
2021-2050

Reduced Health Costs
\$422,000 (NPV)
2021-2050

TOTAL
\$93 M

HEALTHY ECOSYSTEMS (HE)

HE 7: Restore and enhance parks, natural lands and large open spaces.



Increasing San Francisco's green spaces reduces the number of extreme temperature days per year, ultimately reducing the number of heat-related hospitalizations and deaths. This effect is relatively small in San Francisco due to the City's very moderate climate; other cities with more extreme heat days would see a larger impact per acre of green space. Benefits were modeled using the C40 Cities estimation tool, which factors in the impacts of climate change. The intensity of climate change scenarios from moderate to severe gives a corresponding range of heat-related hospitalizations depending on the intensity of CO2 increase (i.e. which representative concentration pathways is used to estimate climate change.) This study used all 4 climate change scenarios (RCP values) in the C40 tool and averaged the results.

CO-BENEFITS

Reduced Morbidity
\$92,000 (NPV)
 due to decreased heat-related hospitalizations between 2021-2050

Reduced Mortality
\$20.4 M (NPV)
 4 lives saved between 2021-2050

TOTAL
\$20.5 M

ENDNOTES

| Ref | Notes | Source |
|-----------------------------------|--|---|
| INTRODUCTION | | |
| 1 | C40 Cities Co-benefits Framework | "Urban Climate Action Impacts Framework: A Framework for Describing and Measuring the Wider Impacts of Urban Climate Action," C40 Cities / Ramboll, 2020, https://www.c40.org/research |
| 2 | Focus 2030: A Pathway to Net Zero Emissions | "Focus 2030: A Pathway to Net Zero Emissions," City of San Francisco, Department of the Environment, July 2019: 1-44, https://sfenvironment.org/sites/default/files/fliers/files/sfe_focus_2030_report_july2019.pdf |
| COMMUNITY BENEFITS SUMMARY | | |
| 1 | Net present value: the value of a future amount of money in today's dollars, recognizing that money received in the future is not worth as much as an equal amount received today | |
| ES 2-3 | | |
| 1 | Critical facilities: Number of critical facilities equipped with solar PV and battery backup modeled in the San Francisco Resilient Solar and Storage Roadmap. | "Resilient Solar and Storage Roadmap, City of San Francisco, Department of the Environment, 2017: 1-76, https://sfenvironment.org/sites/default/files/fliers/files/sfe_ee_solar_storage_roadmap.pdf |
| 2 | Co-benefits: Estimation of benefits including reduced morbidity, mortality, emergency costs, and utility costs studied in the Solar and Energy Storage for Resiliency report. | "Solar and Energy Storage for Resiliency," City of San Francisco, Department of the Environment, 2018: 1-48, https://sfenvironment.org/sites/default/files/fliers/files/sfe_en_solar_resilient_cost_benefit_analysis.pdf |
| BO 2-2 & 2-7 | | |
| 1 | Building Areas: Square footages for multi-family and commercial office redevelopment are from SF "Focus 2030" report supporting calculations. | "Focus 2030: A Pathway to Net Zero Emissions," City of San Francisco, Department of the Environment, July 2019: 1-44, https://sfenvironment.org/sites/default/files/fliers/files/sfe_focus_2030_report_july2019.pdf |
| 2 | Renovation Rate & Timescale: This calculation is based on a phased retrofit scenario, where 1.5% of the existing multi-family building stock is renovated each year such that all building systems are replaced with efficient, all-electric equals. This is conservative because it does not account for the benefits accrued from retrofits of existing building stock where only some natural gas systems are replaced or improved (e.g., natural gas boiler replaced with electric water heater, but furnace still on natural gas). To align with other benefit calculations, this calculation counts benefits accrued between 2026 to 2050. | |
| 3 | Energy Use & Fuel Share Shift: The impact of a transition from business as usual (BAU) energy use intensity (EUI) to redevelopment EUI for multi-family and commercial office respectively was modeled. The EUI rates were drawn from the SF "Focus 2030" report. | "Focus 2030: A Pathway to Net Zero Emissions," City of San Francisco, Department of the Environment, July 2019: 36, https://sfenvironment.org/sites/default/files/fliers/files/sfe_focus_2030_report_july2019.pdf |
| 4 | Air Pollution & Energy Costs: Pollutant reduction per fuel type is simulated through Autocase; reduction draws on National Emissions Inventory in the U.S (EPA, 2014). This air pollution is the by-product of energy generation. Energy costs are also applied from Autocase, based on information from the U.S. Energy Information Administration. | Autocase, 2021. https://autocase.com/ |
| 5 | Social Costs per Air Pollutants: Social costs are applied through Autocase. Autocase uses a location-specific factor, derived from available research publication and regression tools, to estimate financial impacts on: local occupant health, visibility, crop health and damages to properties. This is not included in the final sum because benefits accrue outside of the City and County of San Francisco. | Autocase, 2021. https://autocase.com/ |
| 6 | Local Air Pollution: Combustion appliances (e.g. natural gas stoves) emit a variety of air pollutants. These are emitted within the home and then eventually flow outdoors and are linked to negative health consequences. This calculation uses the 2020 UCLA study of electrification of domestic appliances, which reports the mortality associated with the <i>outdoor</i> air pollution from domestic appliances for California counties. The value for reduced mortality in San Francisco in a single year as consequence of reduced outdoor PM2.5 was applied across years 2026 to 2030. The UCLA study assumed full electrification of the existing residential building stock in one year, to be more realistic this calculation used a scenario where 5% of existing equipment (corresponding to an average 20 year service life) is replaced with all-electric new equipment starting in 2026. Note that additional health benefits, most notably 1) the health impacts of <i>indoor</i> exposure to combustion products from gas appliances, and 2) reduced morbidity from respiratory diseases, were not included in the co-benefits value calculated due to limits on the calculations in the source study. | "Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California," UCLA Fielding School of Public Health Department of Environmental Health Sciences, April 2020: 57, https://ceeh.ph.ucla.edu/effects-residential-gas-appliances-indoor-and-outdoor-air-quality-and-public-health-california |
| 7 | Reduce Mortality based on VSL: The value of a statistical life (VSL) used in this calculation was \$8 M. The financial discount rate used was 3%. | |
| TLU 2 | | |
| 1 | Mode Shift: Estimation of benefits based on assuming that the combined TLU supporting actions achieve a bike share mode split of 6% of total trips by 2030, with benefits accruing to 2050. The 6% factor was taken as the halfway point between the current mode split of 2% and the CAP goal of 10%. | |
| 2 | Reduced Car Trips / Year: This is based on the assumption that 3% of single-occupant vehicle trips and 1% of private carpool vehicle trips transition to cycling annually. | |
| 3 | Number of Trips / Cyclist: This assumes that, on average, each cyclist bikes 200 trips per year (for example, 10 trips per week for 20 weeks). | |
| 4 | Trip Length and Duration: This assumes an average trip length of 4 miles and duration of 25 minutes (for a speed of approximately 9.5 mph). It is assumed people are likely to walk rather than bicycle for trips shorter than 0.62 miles (1 km). | |
| 5 | Health Risk Reductions: Morbidity relative risk reduction factors for the various conditions listed are applied through C40 Walking and Cycling Benefits Tool and are sourced from the Integrated Transport and Health Impact Model (ITHIM). The percentages listed in the flow chart result from these values and the estimated minutes of activity per year for the new cyclists. | "Walking and Cycling Benefits Tool," C40 Cities, 2021 https://www.c40.org/benefits |
| 6 | Change in Life Expectancy: The change in life expectancy, reported in years gained over the time period evaluated, was calculated through C40 Walking and Cycling Benefits Tool. | "Walking and Cycling Benefits Tool," C40 Cities, 2021 https://www.c40.org/benefits |
| 7 | Value of Life Year: \$80,000 was used for the value of a life year (VOLY), per the C40 Walking and Cycling Benefits Tool. This provides a lower financial value for social value of health impacts than the \$8M per death averted used in other calculations. Given the large range of uncertainty in this calculation in particular, the lower estimate was more conservative. | |
| 8 | Reduced Air Pollution: The reduction in air pollution from the trips that transition from cars to biking was calculated through C40 Walking and Cycling Benefits Tool. | "Walking and Cycling Benefits Tool," C40 Cities, 2021 https://www.c40.org/benefits |
| 9 | Social Costs per Air Pollutants: Social costs are applied from Autocase. Autocase uses a location-specific factor, derived from available research publication and regression tools, to estimate financial impacts on: local occupant health, visibility, crop health and damages to properties. | Autocase, 2021. https://autocase.com/ |
| RPC 2-1 | | |
| 1 | Food Waste Reduction: A 50% food waste reduction by 2030 would result in an annual average reduction of 49,075 in food waste. | "Focus 2030: A Pathway to Net Zero Emissions," City of San Francisco, Department of the Environment, (July 2019): 1-44, https://sfenvironment.org/sites/default/files/fliers/files/sfe_focus_2030_report_july2019.pdf |
| 2 | Avoided Transportation Emission Factors: Avoided food waste reduces the total amount of landfill waste and results in a reduction in transportation emissions. NOx is reduced by 0.299 lbs. and PM2.5 is reduced by 0.009 lbs. per US ton of food waste reduced. | "Food Waste Prevention and Rescue Program: Quantification Methodology," California Department of Resources Recycling and Recovery (September 2020): 1-14, https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/calrecycle_finalfiscalcalc_19-20.xlsx |
| 3 | Social Costs per Air Pollutants: Social costs are applied through Autocase. Autocase uses a location-specific factor, derived from available research publication and regression tools, to estimate financial impacts on: local occupant health, visibility, crop health and damages to properties. | Autocase, 2021. https://autocase.com/ |
| HE 5-1 | | |
| 1 | Increased Property Value & Reduced Social Costs: Planting 30,000 street trees will increase aesthetic quality and overall tree canopy resulting in increased property value and increased air pollutant sequestration. | Autocase custom report, see Appendix |
| HE 3-1 | | |
| 1 | Natural Ecological Parkland: The Yerba Buena Island: Habitat Management Plan provides recommendations for ecological parkland restoration. | "Yerba Buena Island: Habitat Management Plan," Treasure Island Community Development, 2001 https://sf-treasureisland.org/sites/default/files/110307-HMP.pdf |
| 2 | Reduced Extreme Heat Days: C40 Cities Heat Resilient Cities Benefits tool is used to determine the reduction in extreme heat days and calculate the impacts. | "Heat Resilient Cities Benefits Tool," C40 Cities, 2020 https://www.c40.org/benefits |
| 3 | Undeveloped / Unprotected Private and Public Lands: see the San Francisco Unprotected Lands - Interactive Web Map | https://sf.gov.maps.arcgis.com/apps/PublicInformation/index.html?appid=b34952c23aec417fb629a0e3ac05c702 |

CAP JOB CREATION POTENTIAL

APPENDIX F



APPENDIX F: Employment Impacts Analysis of San Francisco’s Climate Action Plan: Methodology and Assumptions

This memo describes the approach used to estimate jobs corresponding to key actions in the San Francisco Climate Action Plan (CAP). All jobs reported are “direct” jobs. Including indirect jobs (supply chain) and induced jobs (created from the spending of labor income) would increase the employment impact by 30 - 50%.

Summary

Many of the new jobs created and supported by San Francisco’s CAP are related to the construction industry. Quality apprenticeship readiness programs that provide support services for trainees to access career-track training and employment opportunities, along with registered apprenticeships are excellent training pathways that can continue to improve access and inclusion in the construction trades for underserved and under-represented workers.

Efficient and All Electric Buildings

BO 2: Eliminate Fossil Fuel Use in Existing Buildings

To estimate jobs related to the decarbonization of existing buildings, Inclusive Economics used its building decarbonization jobs model. The model is based on the following inputs and sources. Total costs are translated into jobs using [IMPLAN](#)¹ multipliers, customized by type of work and building sector.

1. San Francisco Building Stock Summary

San Francisco building stock data was obtained from the San Francisco Department of the Environment. This data is shown in Table 1 and Table 2.

TABLE 1. RESIDENTIAL BUILDINGS

| Sector | Description | Number of Units | Number of Buildings |
|--------------------|------------------------------------|-----------------|---------------------|
| Single Family | detached, townhouses, mobile homes | 124,111 | 124,111 |
| Small Multi-Family | <50,000 sq ft | 118,000 | 31,500 |

¹ IMPLAN, which is short for “impact analysis for planning,” is a company that was originally created by academics to serve the needs of the United States Forest Service. Since then, it has been transformed to serve as a solution-provider for organizations interested in understanding their economy.



| | | | |
|--------------------|---------------|---------|-------|
| Large Multi-Family | >50,000 sq ft | 153,000 | 5,300 |
|--------------------|---------------|---------|-------|

TABLE 2. NON-RESIDENTIAL BUILDINGS

| Sector | Description | Million Sq Ft | Number of Buildings |
|----------------|---------------|---------------|---------------------|
| Small & Medium | <50,000 sq ft | 69 | 15,423 |
| Large | >50,000 sq ft | 215 | 1,795 |

2. Market Analysis, Including Gas Saturation

Present-day gas saturation data for building end uses (i.e. appliances or equipment) was obtained from the Residential Appliance Saturation Survey (RASS)². Results from the 2019 RASS and 2020 CEUS were not yet available at the time this analysis was conducted. Gas saturation by end use is summarized in Table 3.

TABLE 3. MARKET POTENTIAL

| Sector | Type | Efficiency Improvements Assumed | Fossil Fuel Water Heating | Fossil Fuel Space Heating | Fossil Fuel Cooking | Fossil Fuel Clothes Drying | Panel/Service Upgrade Assumed |
|-----------------|--------------------|---------------------------------|---------------------------|---------------------------|---------------------|----------------------------|-------------------------------|
| Residential | Single Family | 95% | 96% | 92% | 75% | 44% | 20% |
| Residential | Small Multi-Family | 95% | 90% | 86% | 61% | 17% | 40% |
| Residential | Large Multi-Family | 95% | 43% | 53% | 35% | 9% | 40% |
| Non-Residential | Small & Medium | 95% | 56% | 56% | 34% | 0% | 45% |
| Non-Residential | Large | 75% | 49% | 67% | 8% | 0% | 45% |

3. Investment Costs and Distribution of Costs

Efficiency and electrification costs were obtained from a wide range of sources including published literature, case studies, construction cost estimators, and interviews with industry professionals. In addition to total upfront costs, analysts gathered information on the marginal costs of replacing gas with electric appliances. The residential cost estimates are provided in Table 4 and the non-residential costs are provided in Table 5. The analysis then looked at how costs were distributed, not only between equipment, labor, and overhead, but also to account for different types of work, corresponding to different trades.

TABLE 4. GROSS INVESTMENT COSTS, RESIDENTIAL SECTOR

| | Single Family | | | Small Multi-Family | | | Large Multi-Family | | |
|-------------------|---------------|----------|----------|--------------------|----------|----------|--------------------|---------|----------|
| | low | high | Per unit | low | high | Per unit | low | high | Per unit |
| Efficiency 15-30% | \$8,200 | \$12,200 | unit | \$7,200 | \$10,200 | unit | \$6,600 | \$9,200 | unit |

² 2018 RASS was conducted by DNV-GL and Commercial End Use Survey (CEUS) conducted by Itron, under the direction of the California Energy Commission.



| | | | | | | | | | |
|---------------------------------------|----------|----------|------|----------|----------|----------|-----------|-----------|----------|
| Space Heating/Cooling Electrification | \$19,500 | \$20,500 | unit | \$9,000 | \$11,000 | unit | \$11,600 | \$12,200 | unit |
| Water Heating Electrification | \$3,000 | \$3,100 | unit | \$1,180 | \$2,740 | unit | \$890 | \$1,180 | unit |
| Dryer Electrification | \$1,000 | \$1,800 | unit | \$1,300 | \$2,600 | building | \$1,300 | \$2,600 | building |
| Cooking Electrification | \$1,400 | \$2,900 | unit | \$1,400 | \$2,900 | unit | \$1,400 | \$2,900 | unit |
| Gas Disconnection | \$400 | \$600 | unit | \$600 | \$800 | building | \$600 | \$800 | building |
| Panel upgrades | \$4,400 | \$4,500 | unit | \$11,540 | \$89,600 | building | \$179,200 | \$281,000 | building |

TABLE 5. GROSS INVESTMENT COSTS, NON-RESIDENTIAL SECTOR

| | Small | | | Large | | |
|---------------------------------------|----------|----------|------------------------|----------|-----------|------------------------|
| | low | high | Per | low | high | Per |
| Efficiency 15-30% | \$9 | \$12 | sq ft | \$13 | \$16 | sq ft |
| Space Heating/Cooling Electrification | \$4 | \$11 | sq ft | \$19 | \$28 | sq ft |
| Water Heating Electrification | \$1 | \$1 | sq ft | \$0 | \$1 | sq ft |
| Misc. Electrification | \$2 | \$2 | sq ft | \$2 | \$2 | sq ft |
| Cooking Electrification | \$16 | \$20 | sq ft of kitchen space | \$16 | \$20 | sq ft of kitchen space |
| Gas Disconnection | \$800 | \$1,000 | building | \$1,200 | \$1,600 | building |
| Panel upgrades | \$20,000 | \$40,000 | building | \$68,000 | \$128,000 | building |

4. Employment Multipliers

Off-the-shelf economic models do not work well for building decarbonization. While IMPLAN includes 542 different industries, there are only two industries that cover building retrofit work: one for commercial building repairs and one for residential building repairs. Building decarbonization activities are similar to building repairs but differ in important ways. For example, the distribution of costs for building electrification are more capital intensive than a typical building repair, and the wages can vary significantly depending on the sector and type of work. For this reason, we used construction cost estimators and an extensive literature review to determine the distribution of costs and customize jobs/\$ million multipliers. These multipliers range from 5.4 to 8.8 jobs per million dollars in construction spend, after accounting for capital investments.

5. San Francisco Building Decarbonization Scenarios

For this analysis, costs and jobs associated with retrofitting existing buildings for energy efficiency were estimated along with end use electrification. The efficiency scenario aims for 15-30% energy savings from energy efficiency measures like air sealing, duct



sealing, ceiling insulation, water insulation, floor insulation, lighting retrofits and plug load efficiency, as well as advanced lighting controls. The electrification scenario includes the replacement of gas with high-efficiency electric appliances for the following end uses: space heating and cooling, water heating, clothes drying, and cooking. It assumes that the cost-effective efficiency actions are taken prior to electrification in order to “right size” replacement equipment. The analysis also accounted for jobs associated with gas disconnections and electric panel and service upgrades.

6. Results

Investments in building decarbonization could support significant job growth in San Francisco. Building decarbonization will require both efficiency and electrification; these are not alternative pathways.

In Table 6, the total “job years” are shown in the right-most column. A job year is one full time job for one year. A job year could provide half-time work for two people or full-time work for one person. In this context, a job year is equal to 1800 work hours. The middle column represents this data as work that could support individual workers full time over a 30-year career. The middle column is equal to 30 job years. More than half of this work would be for large buildings, which is relevant because of the better quality and compensation of those jobs relative to the small commercial and residential sector.

TABLE 6. SAN FRANCISCO BUILDING DECARBONIZATION JOB POTENTIAL

| | 30-year FTE careers | Total “Job Years” |
|--|----------------------------|--------------------------|
| Energy Efficiency Jobs | 930 – 1240 | 28,000 – 37,000 |
| Electrification Jobs | 1150 – 1660 | 34,000 – 50,000 |
| Total Building Decarbonization Jobs | 2080– 2900 | 62,000 – 87,000 |

Renewable Energy

ES 2: Invest in local renewable energy and energy resilience projects.

- To determine the employment impact of local renewable energy development in San Francisco, the analysis used the most recent cost benchmark study from the National Renewable Energy Laboratory, which at the time of this analysis was the U.S. Solar



Photovoltaic System Cost Benchmark: Q1 2018.³ Researchers followed an analysis-by-parts approach using a California IMPLAN model, which allows for the allocation of costs across different industries. This is useful because the closest IMPLAN industries for municipal solar are non-residential building repairs and new power and communication structure construction, neither of which account for the higher capital costs of solar PV systems.

Continued solar PV development on San Francisco's municipal buildings would support 24 – 47 job years, assuming 2-3 projects per year. Adding energy storage batteries to these projects would create additional jobs for local electricians.

Housing

Sector Goal: Build at least 5,000 new housing units per year with maximum affordability, including not less than 30% affordable units, and with an emphasis on retaining and rehabilitating existing housing.

- To determine the employment impact of new affordable housing units in San Francisco, the analysis relied on high-level cost estimates from the City and the IMPLAN industry for construction of new multifamily residential structures. Building at least 5,000 housing units per year could support up to 30,000 San Francisco workers annually.

Transportation and Land Use

To determine the employment impact of new transportation investments, the analysis used high-level cost estimates from the City with the relevant IMPLAN industries, which included the construction of new highways and streets; construction of other new nonresidential structures; maintenance and repair construction of highways, streets, bridges, and tunnels; and local government passenger transit.

TLU 1-1: Fund and implement the recommendations of the ConnectSF Transit Corridors Study and Muni Forward Plan, including taking steps to...advance major transit capital projects, including a new Westside Subway along 19th Avenue and Geary, the Caltrain Downtown Extension, Central Subway extension, and the Link21 new transbay tube.

- If implemented over 10-15 years, transit improvements could support 3,100 – 4,700 jobs annually for local workers.

³ National Renewable Energy Laboratory. 2019. <https://www.nrel.gov/docs/fy19osti/72399.pdf>



TLU 1-6: By 2025, implement 50 miles of Muni Forward transit priority improvements, including 30 miles of new transit-only lanes. to increase reliability, frequency and safety for riders.

- Implementing 50 miles of Muni Forward projects could support 50 – 60 jobs per year through 2025 for San Francisco workers.
- Implementing 30 miles of transit only lanes could support an average of 470-580 jobs per year for San Francisco workers.

TLU 2-4: Expand the protected bikeway network by at least 20 miles by 2025.

- Expanding the protected bikeway network by 20 miles would support 4-5 local FTE jobs per year through 2025.

TLU 3-1: By 2022, develop recommendations for programs and policies that will advance equity (e.g., provide discounts and exemptions for low-income individuals), reduce vehicle traffic, and increase transit service to downtown. For example, complete the Downtown San Francisco Congestion Pricing Study recommendations, and by 2026, study and implement the appropriate pricing policies.

- The Congestion Pricing Program is designed so that the costs of the program would be covered by revenues from the program itself. The revenues would also go to operating additional transit service and investing in infrastructure improvements. These capital improvements could support up to 900 job years, so if distributed across six years, this program would support 150 FTE jobs per year, plus additional operations and maintenance jobs over the life of the program.

TLU 7-2: Expand publicly available EV charging across the city that is financially and geographically accessible to low-income households and renters.

- To determine the jobs association with EV infrastructure, the analysis used estimates of the numbers of charging ports by type from the City and job calculations from a recent EV charging infrastructure workforce study conducted for the Electric Transportation Community Development Corporation.⁴ The installation of 8,200 public level 2 chargers and 218 new level 3 fast chargers would require about 280 FTE workers per year for 3 years. 60 of these annual jobs would require certified electricians and electrical apprentices.

⁴ Energy and Environmental Research Associates, LLC. June 8, 2021. "Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure Installation." <https://etcommunity.org/assets/files/Workforce-ProjectionstoSupportBatteryElectricVehicleChargingInfrastructureInstallation-Final202106082.pdf>

FUNDING AND FINANCING CLIMATE ACTION IN SAN FRANCISCO

APPENDIX G

Appendix G: Funding and Financing Climate Action in San Francisco

Prepared by ARUP for San Francisco Department of Environment

V1.4 – 11.10.21

1 Introduction

The San Francisco Climate Action Plan (CAP) identifies goals, strategies, and actions across six sectors to reach zero net greenhouse gas (GHG) emissions by 2040 while advancing racial and economic justice. To achieve these goals, implementation funding – for capital projects, program and policy development activities, and expanded stakeholder engagement, just to name a few examples – must both be secured over time *and* greatly increased. This memo provides a high-level overview of issues the City faces when considering how to fund climate action and recommends next steps. It is structured as follows:

- Section 1.1 provides an overview of the funding and financing challenges that cities face when implementing their CAPs.
- Section 1.2 describes San Francisco’s existing revenue sources.
- Section 2 offers an overview of potential funding sources that may encourage behavior changes towards cleaner energy and/or more sustainable consumption patterns.
- Section 3 presents the different financing mechanisms available to leverage funding sources and expedite project and program delivery.
- Section 4 discusses the next steps to generate a funding and financing plan in the short and medium term to support the CAP implementation.

Note that San Francisco’s [10-year Capital Plan](#), and its [5-Year Financial Plan](#), which are primary tools the City uses to fund new and ongoing infrastructure, public health and safety, community development, and other core functions, were not included in the analysis for this appendix, but will be closely considered in any following, in-depth study (as called for in **Sec 4.2: Conclusions and Recommendations**).

1.1 CAP Funding and Financing Challenges

Funding and financing are of primary consideration for the implementation of any project. Typically, large projects or programs (multiple projects) tend to rely on various funding sources such as local, regional, state, and federal.

To accelerate project or program delivery, funding sources are used to secure financing.

- *Funding* is defined as the public spending or the revenue that pays for the development and maintenance of an infrastructure asset; it is money that does not have to be paid back.
- *Financing* is defined as the structure and related instruments used to secure future funding sources; it is money that is borrowed to develop a project and that is later paid back from the project and other revenue sources, typically with interest.

Much urban infrastructure is funded from multiple public sources through a “piecemeal” combination of local, state, and federal programs. Knowing which sources of funding can be used for which projects and how to access them will be critical to move forward with the implementation of the CAP.

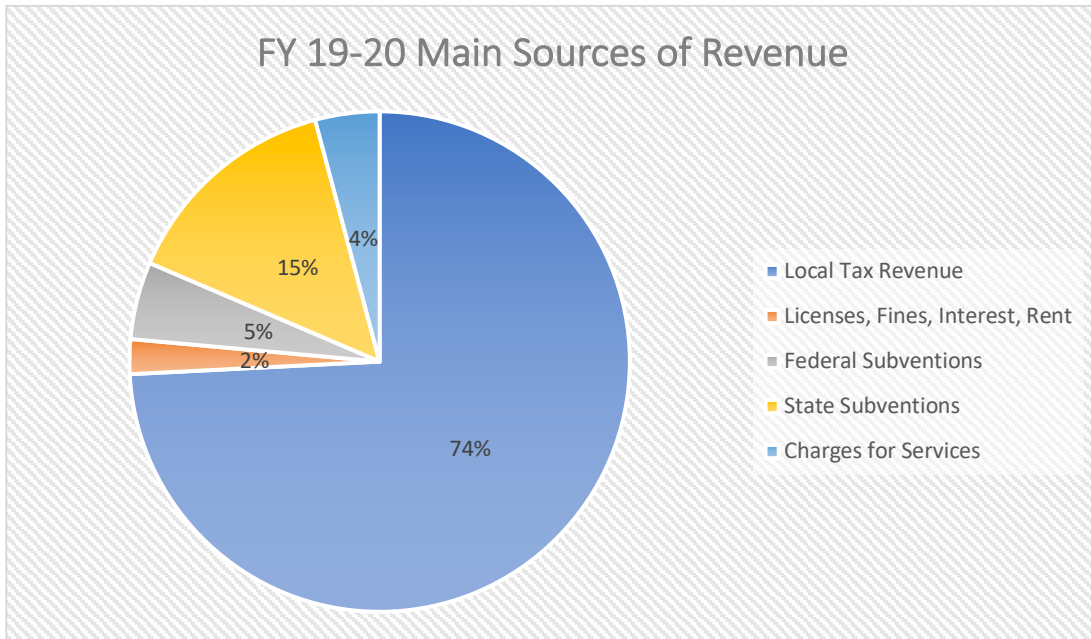
Climate Action Plans typically include actions that take place across short, medium, and long-term time horizons, and thus face multiple challenges when trying to secure funding, including:

- Large costs of program implementation.
- Time horizons are mismatched: plans and projects that cities are currently implementing and paying for do not extend climate benefits beyond their existing scopes and timeframes, even though climate change impacts, such as sea level rise, are expected to accelerate and worsen over the same time period. Additionally, it is generally more difficult to secure funds for medium-and long-term projects since most capital funding sources are made available for projects that can start immediately, not at some point in the more distant future.
- Most climate actions do not have a return-on-investment which can attract traditional sources of private capital, putting pressure on scarce existing public funding sources.
- The multiple sectors addressed in the CAP creates internal competition for limited resources.
- There is currently a shortage of robust federal or state funding frameworks to support city climate action and resilience efforts. While California's recent and [historic \\$15 billion funding package](#) provides an important infusion of funding and could serve as a new model moving forward, much more is needed to fully support CAP implementation.
- Some climate action and climate resilience innovations are still in their initial stages of development and as such, are considered by capital providers to be high-risk investments.
- All CAP implementation must also consider and incorporate adequate equity measures to ensure existing disparities for disadvantaged communities such as BIPOC and low-income residents are not exacerbated. These non-negotiable steps may add complexity to decision-making and governance issues and have cost implications.

1.2 Overview of City of San Francisco's Revenue Sources

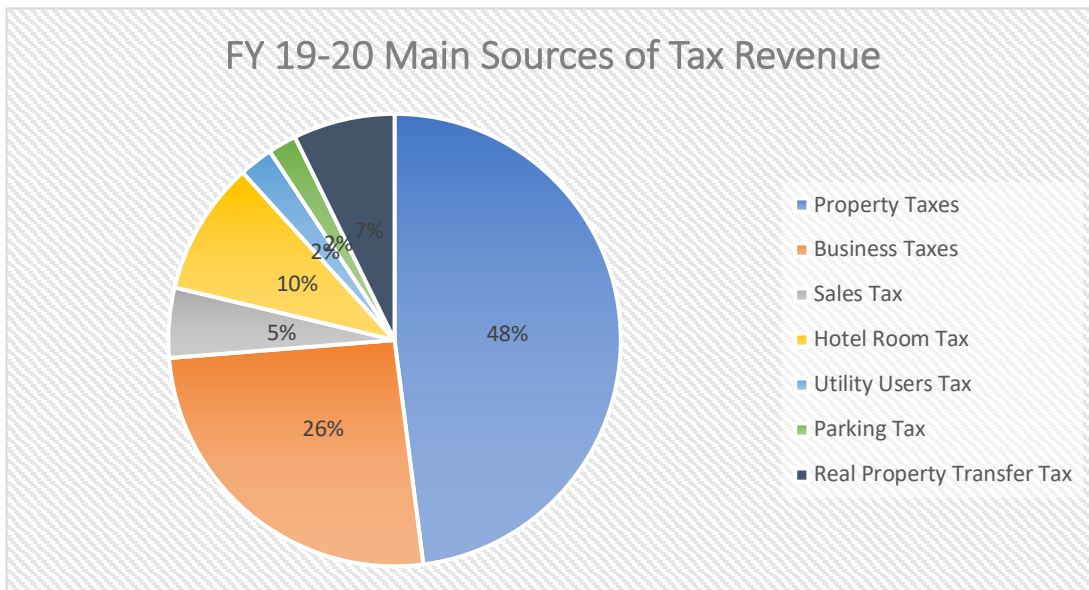
Based on 2019-2020 data from the City of San Francisco, near 75% of the City's revenue comes from local tax revenue, followed by state subventions and federal subventions, representing 15% and 5%, respectively, of total revenue. The rest comes from service charges and licenses and fines, interest, and rents.

Figure 1 City of San Francisco FY 19-20 Main Sources of Revenue



Within the local tax revenue, three taxes comprise over 80% of the total tax revenue: property taxes contribute with near 50%, followed by business taxes with 26% and the hotel room tax with 10%. Tax revenues are the primary source of the operating revenue for the City, they represented \$4.2 billion out of the budgeted \$5.7 billion for the General Fund for FY 2019-2020.

Figure 2 City of San Francisco FY 19-20 Main Sources of Tax Revenue



2 Funding Mechanisms

Table 1 below describes existing funding mechanisms and provides examples and/or precedents of the funding opportunities and challenges of each mechanism to support the CAP. Policy makers face multiple trade-offs when establishing which mechanism to put in place including:

- The mechanism’s ability to generate robust revenue that is reliable and can be counted on in future years.
- The mechanism’s economic burden on low-income communities.
- The political cost to implement the measure.
- The mechanism’s ability to support implementation of various CAP strategies and supporting actions.

Table 1 Funding Mechanisms Matrix

| Mechanism | Description | Potential Challenges | Examples and/or Precedents in SF | Applicable CAP Strategies |
|------------------------------|---|---|--|--|
| Utility Tax/Users Fee | Cities and states collect impact fees, user fees, regulatory fees, etc. Fees are typically connected to a certain activity or service. A Utility Users Tax is a tax levied on consumption of utilities, including natural gas, electricity, and water, by non-residential customers; generated revenues would clearly have the ability to fund multiple types of decarbonization efforts. | <ul style="list-style-type: none"> • Increased cost for all non-residential utility payers or users which, without strategies to mitigate impacts, may result in a disproportionate burden on small businesses and other members of low-income communities. • Requires partnership with energy utilities. • City’s ability to repay debt on a bond issuance. | <p>San Francisco has a utility user tax that was budgeted to generate \$98.7M in FY2019-20.</p> <p>California’s SB 1383 recovery fees – SB 1383 is a statewide effort to reduce emissions of short-lived climate pollutants.</p> | <p>Utility fees may support Energy Supply and Building Operations actions.</p> <p>Transportation fees may support Transportation and Land use actions.</p> <p>Solid waste fees may support Responsible Production and Consumption actions.</p> |

| | | | | |
|--|---|---|---|--|
| <p>Property Taxes/ Parcel Tax</p> | <p>Property tax increases can be used to pay for infrastructure projects derived from climate action priorities. Cities would issue general obligation (GO) bonds backed by property tax revenue to access the revenue sooner. Parcel tax is defined as a form of property tax assessed at a rate based on the characteristics of a parcel – or unit of property.</p> | <ul style="list-style-type: none"> • Requires 2/3 voter approval. • Increased cost for property owner. • External risks - such as a major earthquake or similar large event - to the City's ability to repay debt on a bond issuance¹. • Presents significant equity challenges. E.g., levying flat fee per parcel regardless of income. | <p>In Miami a property tax increase was used to issue a \$198M GO bond for resilience investments.</p> <p>San Francisco along with the other Bay Area counties approved a \$500M parcel tax increase over 20 years to issue \$425M GO bonds to restore Bay's wetlands.</p> | <p>Projects that may result in an increase in property values could be funded by an increase in property taxes; for example Transportation & Land Use and Healthy Ecosystems strategies.</p> |
| <p>Sales Tax</p> | <p>Sales tax is a tax that is imposed on sales of certain goods and services. Sales tax can generate a significant amount of funding but requires voter's approval.</p> | <ul style="list-style-type: none"> • Requires 2/3 voter approval. • May impose a disproportionate economic burden on low-income communities. However, this can be mitigated by excluding "necessity goods and services." • Revenue fluctuations may occur in function of the economic cycles. | <p>In 2018 Portland voters approved a "Clean Energy Surcharge" of 1% on the retail sales within Portland of certain large retailers to support The Portland Clean Energy Community Benefits Fund. Annual revenue expected from the tax is between \$50 million and \$70 million. The fund allocates resources to job training and green infrastructure, prioritizing communities of color and low-income neighborhoods.</p> | <p>A sales tax increase in San Francisco could fund a range of CAP strategies.</p> |

¹ San Francisco's General Obligation credit is currently rated AAA/AAA/AA+ which is considered to be very strong and is based on the city's ability to levy the tax base on an unlimited basis.

| | | | | |
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| | | | <p>In 2020 Denver voters approved a supplemental sales tax of 0.25%. The tax would raise an estimated \$36 million in its first year, which would have to be spent creating jobs in the areas of renewable and clean energy technology and management of natural resources; and on solar power, battery storage and other renewable energy technologies.</p> | |
| <p>Gas Tax</p> | <p>Gas tax is a type of sales tax imposed on sale of motor gasoline fuels. U.S. has a federal gas tax of 18.3 cents per gallon. Local governments can levy gas taxes too.</p> | <ul style="list-style-type: none"> • If proposed as a general tax, requires 51% voter approval. If it is a special tax (i.e. has an expenditure plan), then would require 2/3 voter approval. • Can disproportionately affect low-income communities who tend to own less energy efficient vehicles, unless strategies to mitigate impacts are incorporated into policy design. • As the fleet becomes more fuel efficient the | <p>State Gas Tax already exists in California (\$0.50/gallon) - \$0.3 gas tax increase has been introduced under SB1 in 2020. Generated revenue is mainly used to repair and maintain the state's roads and bridges.</p> | <p>Gas tax can primarily fund Transportation-focused strategies and actions.</p> |

| | | | | |
|--|--|---|--|--|
| | | revenue from the gas tax will go down. | | |
| Development Opportunities | Link relevant CAP actions and projects with real estate development projects to generate public-private partnerships that generate new sources of funding that can deliver climate mitigation or resilience measures and benefits. | <ul style="list-style-type: none"> Unclear risk allocation between public and private parties | Hoboken NJ - Stormwater Project/Resiliency Park project includes a deal with a developer, Bijou, to provide the community benefits of a park, public gymnasium, affordable housing, and flood resiliency measures. The project also includes residential building, retail space, and a parking garage. | Depending on the type of a development project, developers can contribute to funding some Housing, Transportation, Healthy Ecosystems, and Building Operations sector actions. |
| Community Facility District (CFD) | CFD is a special tax district provided in State Law that funds public improvements and on-going services within an identified area. Parks, streets, sewer improvements, and public safety services are some of the public improvements and services that may be financed by a CFD. | <ul style="list-style-type: none"> Creation of special district requires formal approval by petition or vote. Requires 2/3 voter approval <i>within the proposed district boundaries</i>. If there are fewer than 12 registered voters within the proposed boundaries, the vote may pass by the current landowners. | San Francisco's 450-acre development on Treasure Island will have buildings and streets elevated 3 feet above current 100-year flood elevations. The City plans to use a special-district model, a Community Facilities District, to collect taxes to pay for future sea level rise adaptation. | CFDs, SADs, and EIFDs can be used a range of CAP strategies. However, similar to property tax, the specific mitigation measures must be applicable within the district. |
| Special Assessment District (SAD) | Property owners pay an additional fee to fund specific improvements or services within the boundaries of the special | <ul style="list-style-type: none"> Requires voter approval Increases the cost of home ownership. | Transbay Transit Center: the City of San Francisco established a Communities Facilities District (a form of special assessment district) | |

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|---|---|--|--|--|
| | <p>assessment district. The special assessment's purpose must be determined prior to the district's creation and the amount that each property owner pays must be directly proportional to the benefit the property will receive from the proposed improvement.</p> | | <p>over the entire redevelopment site to pay for core capital projects and other public infrastructure improvements.</p> | |
| <p>Enhanced Infrastructure Financing District (EIFD)</p> | <p>EIFDs are similar to tax increment financing the former redevelopment financing tool used in California, EIFD's impose no geographic limitations on where it can be used. Eligible projects include: infrastructure construction and maintenance, housing development, economic development, transportation infrastructure, sewage treatment, and climate adaptation projects, among other uses. Assembly Bill 733 (2017) allows for EIFDs to fund climate change adaptation projects, including but not limited to projects that address conditions that impact</p> | <ul style="list-style-type: none"> Requires agreement among taxing authorities to consent transferring their share of the property tax increment to the EIFD (school districts are excluded). No public vote is required to establish an authority, yet a 55% vote is required to issue bonds. | <p>Although no currently-formed EIFD is funding climate adaptation or resilience specific projects, some EIFDs are funding sustainability and restoration projects. For example, the proposed City of Redondo Beach/County of Los Angeles EIFD includes urban greening and wetland restoration in its proposed projects. The Redondo Beach EIFD aims to revert its now-closed AES Power Plant's 50-acre site into open space and park development, wetland restoration, and private development.</p> | |

| | | | | |
|----------------------|---|---|---|---|
| | <p>public health (such as decreased air and water quality, temperatures higher than average, etc.) and extreme weather events (such as sea level rise, heat waves, wildfires, etc.).</p> | | | |
| <p>Grants</p> | <p>Federal, state, utility, regional and local grant programs as well as philanthropic grant funding are available for specific purposes. Government grants do not require repayment, however often they require either matching funds from the City, staff time to administer the grants (including post-award compliance reporting), or both.</p> | <ul style="list-style-type: none"> • Identifying and taking advantage of niched funding • Grants are often for very specific purposes that may not align with needs • Grants are typically one-time sources and thus are not a reliable source of on-going funding • Since many grants are competitive, it cannot be assumed to be available as needed. | <p>CalRecycle Food Waste Prevention and Rescue Grants: the purpose of the grant program is to lower emissions by establishing new or expanding existing food waste prevention projects in California to reduce the amount of food being disposed in landfills. This grant is part of California Climate Investments and is funded with cap-and-trade dollars.</p> | <p>Grants can fund a range of Climate Action Plan strategies.</p> |

Table 2 below outlines some potential new funding mechanisms that have yet not been implemented in San Francisco but could be effective in shifting market actor behavior towards cleaner energy, low-carbon transportation options, and sustainable consumption patterns.

Table 2 Potential New Funding Mechanisms Matrix

| Mechanism | Description | Potential Challenges | Examples and/or Precedents in SF | Applicable CAP Strategies |
|---|--|---|--|---|
| Carbon Tax | <p>Government sets a price that entities must pay for each ton of greenhouse gas emissions they emit. Two broad forms:</p> <ol style="list-style-type: none"> 1) Emissions tax - based on the quantity an entity produces 2) Tax on goods or services that are greenhouse gas-intensive, such as gasoline. | <ul style="list-style-type: none"> • Innovative tax that has not yet been implemented in the U.S.; it will require a few years to develop. • Requires voter approval. • If not formulated correctly, this tax can negatively impact disadvantaged communities. | <p>British Columbia imposed North America's first broad-based carbon tax in 2008. The tax applies to the purchase and use of fossil fuels and covers approximately 70% of provincial greenhouse gas emissions. As implemented, carbon taxes paid by constituents were offset by lower income taxes, corporate taxes or business taxes. Currently, the tax is \$45 per ton CO2.</p> | |
| Climate Action Plan Tax (form of carbon tax) | <p>Tax dedicated to addressing climate change mitigation. Generated funding can be used to fund policies, programs, direct advising services and rebates to homes and businesses.</p> | <ul style="list-style-type: none"> • Innovative tax that has not yet been implemented – will require a few years to develop. • Requires voter approval. • If not formulated correctly, this tax can negatively impact disadvantaged communities | <p>Originally passed in 2006 and extended in 2015 to continue through March 31, 2023, the City of Boulder implemented nation's first voter-approved tax dedicated to addressing climate change. Carbon charge generates \$1.8M annually. The tax is levied on residents and businesses based on the amount of electricity consumed. Tax rates are different depending</p> | <p>This tax can be applicable to all CAP strategies. Alternatively, the tax revenue can have a nexus for a specific measure in function of the revenue generated.</p> |

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| | | | <p>on the sector. Annual average costs:</p> <ul style="list-style-type: none"> • Residential: \$21 • Commercial: \$94 • Industrial: \$9,600 <p>The tax funds a program that requires rental properties to undergo retrofits, thereby reducing renters' energy burden and improving the quality of rental properties.</p> <p>In November 2020, the City of Albany, California, obtained the voter approval to impose a 9.5% blanket utility service tax on all residents except for designated low-income residents. The utility service tax that will ultimately fund general city services, including disaster and emergency preparedness, emissions reduction projects and emergency response and environmental sustainability programs.</p> | |
| <p>Food Tax</p> | <p>Food tax - a levy imposed on food producers according to the carbon footprint of their products.</p> | <ul style="list-style-type: none"> • Innovative tax that has not yet been implemented; it will | <p>No precedents yet. UK Health Alliance on Climate Change has called for the implementation of the food</p> | <p>This tax can be applicable to all CAP strategies. Alternatively, the tax revenue can have a nexus for a specific measure (Responsible</p> |

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| | <p>This tax would be similar to the sugar tax on soft drinks.</p> | <p>require a few years to develop.</p> <ul style="list-style-type: none"> • Requires voter approval. • If not formulated correctly, this tax can negatively impact disadvantaged communities. | <p>tax in 2020 unless the food industry takes voluntary action to reduce the climate impact of food by 2025. It is currently unclear how exactly the tax would work and be calculated as the government has not responded to the proposition.</p> | <p>Production and Consumption actions).</p> |
| <p>Climate Commitment Act or Cap-and-Invest Bill</p> | <p>Caps emissions from large polluters, and then lowers that cap every year to force them to continually reduce their fossil fuel output. The program and its revenues will fund net-zero emissions initiatives.</p> | <ul style="list-style-type: none"> • Innovative tax that has not yet been implemented – might require several years to develop • Requires significant level of political will | <p>Climate Commitment Act was passed in the State of Washington in 2021. The bill aims to adopt a comprehensive program that caps and reduces emissions from large emitters. Any company that wants to go over the limit must buy allowances to pollute.</p> | <p>This tax can be applicable to all CAP strategies. Alternatively, the tax revenue can have a nexus for a specific measure.</p> |
| <p>Downtown Congestion Pricing</p> | <p>Congestion pricing involves charging a fee to drive into downtown during weekday rush hours to reduce vehicle delays, increase safety, clean the local air and address climate change, and advance equity for historically underinvested communities.</p> | <ul style="list-style-type: none"> • Congestion pricing policy must be designed in an equitable manner so as not to negatively impact equity priority communities. • Congestion pricing will require authorization from the state, as well as environmental and other approvals. Anticipate needing at | <p>The San Francisco County Transportation Authority (SFCTA) is currently studying how a fee to drive downtown during busy hours could help alleviate congestion when the economy recovers. The study is using public feedback and technical analysis to shape a fair and effective congestion pricing recommendation for San Francisco. It will combine</p> | <p>Fee revenue generated by such a program can have a strong nexus for transportation strategies</p> |

| | | | | |
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| | | <p>least five years to implement.</p> | <p>the congestion fee with discounts and incentives to make the system fair and encourage the use of sustainable transportation modes like transit, walking, and biking. Substantial public outreach has been completed, and a new round of outreach is planned in 2022.</p> | |
|--|--|---------------------------------------|--|--|

3 Financing Mechanisms

Table 3 provides an overview of the City’s General Obligation bond schedule. The primary challenge in introducing new bonds is that the schedule is pre-defined and it is difficult to add new propositions to the rotation. However, some of the proposed programs are directly linked to CAP actions such as the Affordable Housing, Waterfront Safety, Parks and Open Space programs.

Table 3 General Obligation Bond Schedule

| Election | Proposed Program | Amount (in \$ millions) |
|---------------|--|-------------------------|
| June 2022 | Transportation | 400 |
| November 2023 | Public Health | 188 |
| November 2024 | Affordable Housing | 160 |
| November 2026 | Waterfront Safety | 130 |
| November 2027 | Earthquake Safety and Emergency Response | 217 |
| November 2028 | Parks and Open Space | 151 |

| | | |
|---------------|---------------|--------------|
| November 2031 | Public Health | TBD |
| TOTAL | | 1,245 |

Recent climate change-related taxes and measures that passed in San Francisco from 2018 to 2021:

- Embarcadero Seawall Improvement Bonds – this proposition was passed in 2018, authorizing the City and County of San Francisco to issue up to \$425 million in bonds at an estimated tax rate of \$0.013 per \$100 of assessed value to fund repairs and improvements to the Embarcadero Seawall and Embarcadero infrastructure and utilities for earthquake and flood safety.
- Revenue Bonds for Power Facilities Excluding Fossil Fuels and Nuclear Energy Charter Amendment – this proposition was passed in 2018, authorizing the San Francisco Public Utilities Commission (SFPUC) to issue revenue bonds for power facilities with two-thirds approval from the San Francisco Board of Supervisors. The proposition was designed to prohibit the PUC from funding power plants run by fossil fuels or nuclear energy.

The Table 4 describes financing mechanisms and provides examples and/or precedents of the funding opportunities in San Francisco.

Table 4 Financing Mechanisms Matrix

| Mechanism | Description | Potential Challenges | Example/Precedents in SF | Applicable CAP Strategies |
|--------------------------------------|--|--|--|--|
| General Obligation (GO) Bonds | GO bonds are secured by voter approved ad valorem property taxes. They are used to pay for projects that provide taxpayer benefits; in some cases, projects that are unable to raise their own revenue (libraries, parks), and in other cases for projects that can (hospitals, affordable housing). | <ul style="list-style-type: none"> • Requires 2/3 voter approval. • The City Charter imposes a limit on the amount of general obligation bonds the City can have outstanding at any given time, which is 3% of the assessed value of all taxable property in the City. | In June 2016, voters in a 9-county area, including SF, approved Measure AA by more than the state-required 65%--a regionwide local tax to fund nature-based flood protection through wetlands, habitat restoration, and pollution-removal projects. A \$425M general obligation bond was issued to restore wetlands & \$500M | GO bonds can be applicable to any CAP strategy, but it should be noted that bonds issued for private infrastructure cost the City considerably more in interest payments than bonds for publicly owned infrastructure. Source of repayment will be key in allocating GO Bonds. |

| | | | | |
|--|--|--|---|--|
| | | | <p>parcel tax is being used to repay it.</p> | |
| <p>Revenue Bonds</p> | <p>Revenue bonds are used to pay for projects such as major improvements to an airport, water system, garage or other large facilities which generate revenue. They are generally repaid from revenues generated by the bond-financed projects (transportation fees, water rates, etc.). There are different types of revenue bonds: lease revenue bonds, special tax revenue bonds, and general airport revenue [bonds?].</p> | <ul style="list-style-type: none"> Once bonding authority is granted, individual bond issuances can be approved by the BOS. Repayment of the bond is from the revenue generated by the project or issuer. | <p>Proposition A, approved by San Francisco voters in 2018, granted SFPUC authority to issue revenue bonds to pay for new power facilities with a two-thirds vote of the Board of Supervisors and the support of the Mayor.</p> | <p>Asset-based bonds will primarily be applicable to Building Operations and Transportation and Land Use sector strategies. Revenue bonds could support Energy Supply actions.</p> |
| <p>Certificates of Participation (COPs)</p> | <p>COPs are a form of security that evidences an undivided fractional interest in an underlying lease or installment sale agreement, entitling the COP owner to a proportionate share of lease or installment sale payments made by a government agency pursuant to a lease (or an installment sale) agreement. For all intents and purposes, COPs function like bonds.</p> | <ul style="list-style-type: none"> No voter's approval needed while complying with California debt limitation laws such as Proposition 13 The SF 10-Year Capital Plan has a policy of limiting COPs to not more than 3% of discretionary General Fund revenue. | <p>Can be used to support several projects:</p> <ul style="list-style-type: none"> Energy projects Water and wastewater projects Public buildings Solid waste facilities | <p>COP can support several CAP strategies (Energy Supply, Building Operations, Responsible Production and Consumption).</p> |

| | | | | |
|----------------------------|--|--|--|--|
| <p>Energy Loans</p> | <p>Energy loans fund projects by enabling qualified entities to borrow money from lenders and pay it off (with interest, in most cases) over time; borrowers are typically an individual or company.</p> | <ul style="list-style-type: none"> • Applicable to specific type of energy efficiency and decarbonization projects. • Borrowers are required to be a utility customer, and more typically, the designated property owner at the service premise (i.e. there is still limited availability of these types of loans for renters) | <ul style="list-style-type: none"> • On Bill Financing (OBF) programs currently being offered within investor-owned utility services areas provide 0% interest loans that can be paid back with energy savings. | <p>Today these are primarily used to fund energy efficiency retrofit projects that support Building Operations strategies.</p> |
|----------------------------|--|--|--|--|

Note about “Green Bonds”: Certificates of Participation (COPs), GO bonds, and revenue bonds all may be designated as green bonds if it can be demonstrated that they support climate and environmental goals. In some cases, green bond issuances may require voter approval, but in other cases e.g. SFPUC revenue bonds for renewable energy facilities, they do not. Since issuing its first designated green bond in 2015, the SFPUC has sold more than \$2.5 billion in certified green bonds to finance capital projects for all three of its enterprise utilities: water, wastewater, and power. Bonds and other potential sources of financing labelled green can support a range of CAP strategies at potentially lower costs through increased investor demand for green- and ESG-labeled debt².

² ESG stands for Environmental, Social, and Governance. Investors can apply these non-financial factors as part of their analysis process to identify material risks and growth opportunities. Climate risks and opportunities figure prominently in the evaluation process.

4 Funding Pathways

4.1 Funding Pathways

This section shows possible funding and financing pathways to implement nine high-impact and capital-intensive CAP strategies, which are:

- Energy Supply (ES 2): Invest in local renewable energy and energy resilience projects.
- Building Operations (BO 2): Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types.
- Transportation and Land Use (TLU 1): Build a fast and reliable transit system that will be everyone's preferred way to get around
- Transportation and Land Use (TLU 2): Create a complete and connected active transportation network that shifts trips from automobiles to walking, biking and other active transportation modes.
- Transportation and Land Use (TLU 7): Where motor vehicle use or travel is necessary, accelerate the adoption of zero-emissions vehicles (ZEV's) and other electric mobility options.
- Housing (H 4): Expand subsidized housing opportunities for low, moderate, and middle-income families.
- Healthy Ecosystems (HE 4): Optimize management of the City's entire urban forest system.
- Healthy Ecosystems (HE 7): Conduct carbon sequestration farming pilot projects and research.

Finance and planning staff from key city agencies were engaged to provide information and insight to discuss potential funding sources to support CAP implementation and help identify strategies that may overlap with agency goals over the coming years. The overall conclusion is that there are opportunities to align CAP strategies with existing project and planning priorities, but there is a significant funding gap to implement everything that has been identified in the CAP. Currently much of the city's major capital planning efforts focus on infrastructure needs such as basic maintenance and earthquake safety. To Implement CAP strategies in a timely matter, the City must secure dedicated, additive revenue streams for years to come.

Cities are increasingly recognizing the need to address climate change in an equitable manner. Some cities such as Denver and Boulder, CO, Portland, OR, Long Beach, CA, and Albany, CA, are creating dedicated funding streams that intend to distribute funds with a strong equity focus. For example, Denver is committing to invest 50% of the revenue generated in low-income communities, while Boulder and Portland focus the majority of the programming to support low-income and minority communities. While the new revenue

generated by the sales tax increase in Denver will aid in CAP Implementation, this is still short from the estimated \$200 million needed annually to meet emission-reduction goals. Therefore, Denver is expecting to put a new energy tax on their 2021 ballot. Under the current proposal, households and businesses would only be taxed above an energy-use threshold and low-income residents would be exempted.

Federal funding, including the Biden Administration’s proposed infrastructure funding bill, can provide essential financial support for local climate action, but cities will still need to identify and secure other local long term revenue streams given that many of the CAP’s most impactful strategies are long-term implementation efforts which will require steady and ongoing funding.

Table 5. Dedicated Taxes to Support Equitable Climate Action

| | Type of Tax | Year of Approval | Equity considerations | Annual Revenue Estimated |
|----------------|-----------------------------------|------------------|--|--------------------------|
| Boulder, CO | Energy tax consumption based | 2006 | The program generates revenue that is used to offset costs to retrofit rented apartment buildings to reduce energy consumption and energy bills. | \$1.8M |
| Portland, OR | Large retailers gross receipt tax | 2018 | The tax excludes certain qualified groceries, medicines, prescription drugs, and health care services. | \$40M-\$60M |
| Denver, CO | Sales tax | 2020 | The tax excludes goods considered essential such as food, water, medicine, or feminine hygiene products. | \$40M |
| Long Beach, CA | Tax on oil production | 2020 | Tax is on barrel production, so no direct equity impacts. | \$1.6M |
| Albany, CA | Energy tax | 2020 | Low-income households are excluded from paying the tax. | \$1.6M |

Funding sources can either be used directly or can be used to secure financing, but the critical path for timely CAP implementation is to identify and use funding sources to leverage into much more capital to greatly accelerate delivery of CAP projects.

At the same time, the City could take a “global approach” to fund the CAP, which could include actions such as increasing existing taxes (sales tax, business tax, or other) and/or creating new taxes (energy tax, carbon tax) as some cities are already doing.

Potential funding and financing pathways for key CAP strategies and supporting actions are described next.

4.1.1 ES 2: Invest in local renewable energy and energy resilience projects where safe and affordable, and BO 2: Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types.”

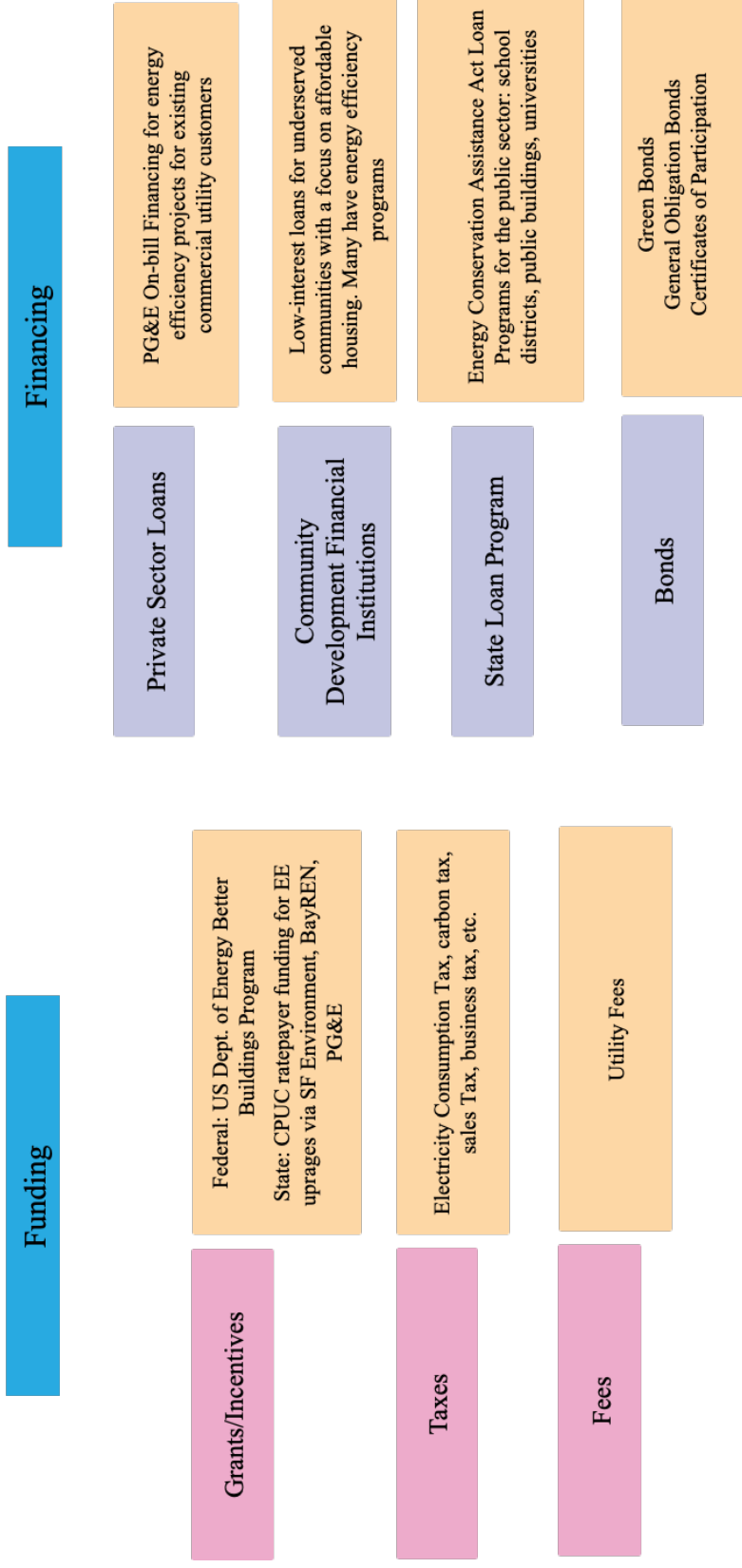
SFPUC has access to various funding streams and has a capital budget of \$1B. Currently 80% of the projects are financed through revenue bonds and some are financed through federal/local bonds. SFPUC leverages ratepayer revenue to pay for revenue bonds. Recently, the “Revenue Bonds for Power Facilities Excluding Fossil Fuels and Nuclear Energy” Charter Amendment was passed by the BOS and allows more liberal debt issuance. Additionally, SFPUC has been leveraging green bonds issuance since 2015. SFPUC has routinely been able to secure lower rates with green bonds issuance through increased investor demand for green-labeled debt.

SFPUC currently administers the CleanPowerSF program which offers 100% renewable electricity to residents and businesses. However, at times SFPUC incurs financial losses as electricity must be sold at the same rates as PG&E, which leads to the need to subsidize the program with available reserves.

Current funding options for building decarbonization retrofits called for by BO 2 are currently limited but are likely to grow in the coming years as the state and regional agencies expand efforts to close funding gaps. One existing option for commercial customers is PG&E’s On-Bill Financing (OBF) loan program. OBF loans range between \$5,000 and \$4,000,000 per premise, with loan terms of up to 120 months at 0% interest. Monthly retrofit savings are calculated in advance to be equal to or greater than monthly loan payments. Additionally, the Bay Area Regional Energy Network (BayREN) currently offers cash rebates for installing electric appliances like heat pumps.

Figure 3 shows a sample of current funding and financing pathways for strategies ES 2 and BO 2. In the future, the City could consider implementing an energy tax like Boulder, CO and Albany, CA; or a carbon tax like British Columbia; or modifying the existing utility-users tax to generate new funding for Energy Supply and Building Operations strategies. Another promising new financing strategy for building decarbonization is to use what is referred to as “tariffed on-bill financing” which is being explored at the state level under the emerging [TECH \(Technology and Equipment for Clean Heating\)](#) program; TECH will soon also be offering significant new financial rebates and incentives for low-emissions building equipment. Alternatives exist to mitigate the impact on low-income communities, as shown in Table 2 previously.

Figure 3. Scan of Funding and Financing Mechanisms: Energy Supply and Building Operations strategies (not a comprehensive list of all sources available)

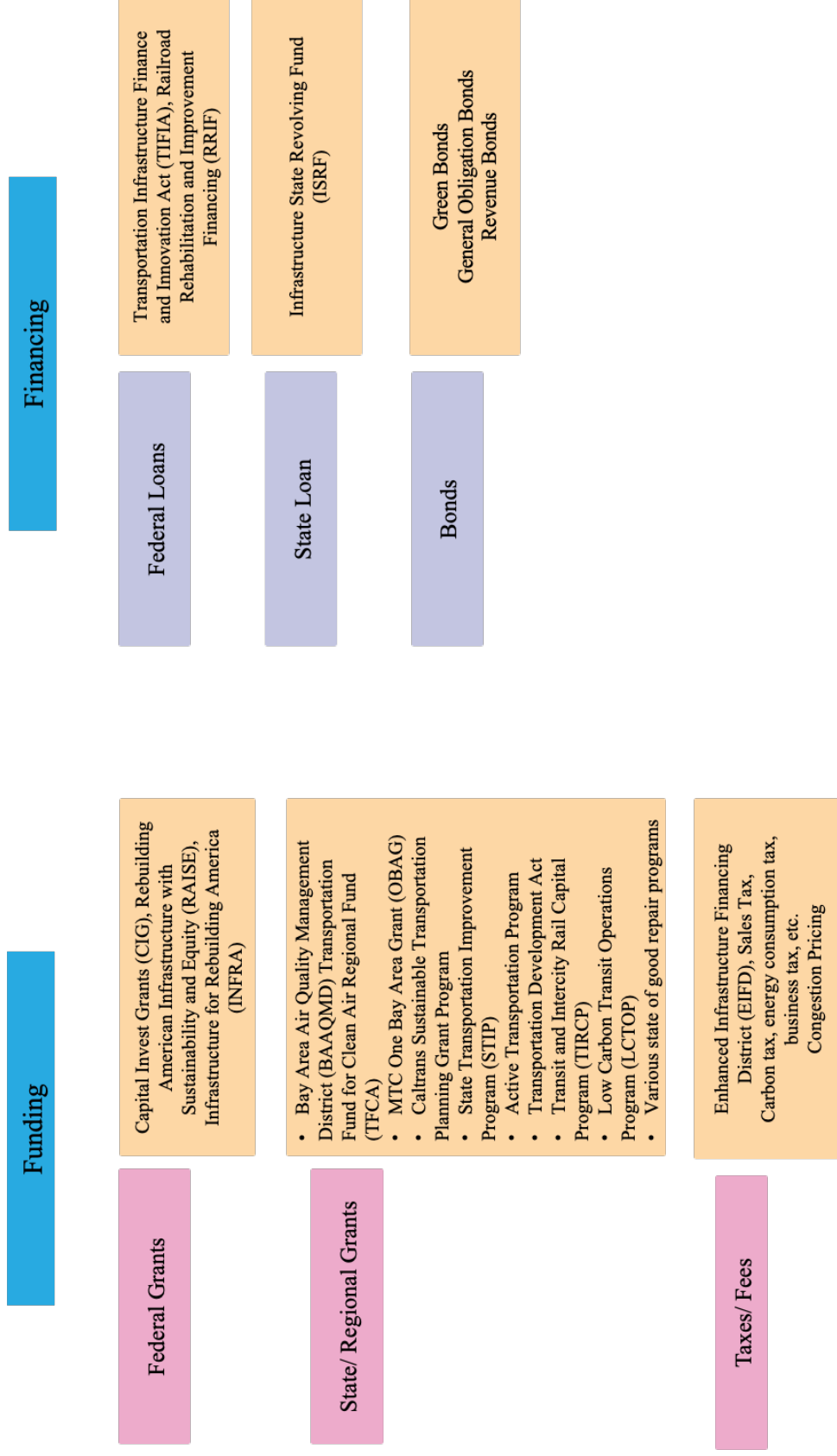


4.1.2 **TLU 1: Build a fast and reliable transit system that will be everyone's preferred way to get around. & TLU 2: Create a complete and connected active transportation network that shifts trips from automobiles to walking, biking, and other active transportation modes.**

Based on discussions with SFCTA and SFMTA, there is currently insufficient funding to fully implement the TLU strategies. Rough order of magnitude costs by 2030 to implement various TLU strategies range from less than \$1 million each, to upwards of \$1 billion for others. Currently, the City is investing hundreds of millions of dollars toward building transit and improving walking and biking

infrastructure. Identifying new local transportation revenues is important - for example, by raising existing taxes or creating new ones - but just as important is continuing to leverage both new and existing local money to attract state and federal investments. The City must expand advocacy for funding at the state and federal levels for local transportation and land use projects that will advance climate and equity goals.

Figure 4. Scan of Funding and Financing Mechanisms: Transportation (not a comprehensive list of all sources available, does not address land use strategies)



4.1.3 TLU 7: Where motor vehicle use or travel is necessary, accelerate the adoption of zero-emissions vehicles (ZEVs) and other electric mobility options.

SF Environment clean transportation program staff provided rough order of magnitude (ROM) estimate costs for strategy TLU 7 and its supporting actions. Funding sources are anticipated to vary for the different supporting actions. Currently, new electric mobility projects are funded through six public sector sources: California Air Resources Board (CARB) grants, California Energy Commission (CEC) grants, Department of Energy (DOE) grants, Bay Area Air Quality Management District (BAAQMD) grants, Low Carbon Fuel Standard (LCFS) funds and Volkswagen (VW) Settlement funds.

Details regarding specific TLU 7 supporting actions are included below:

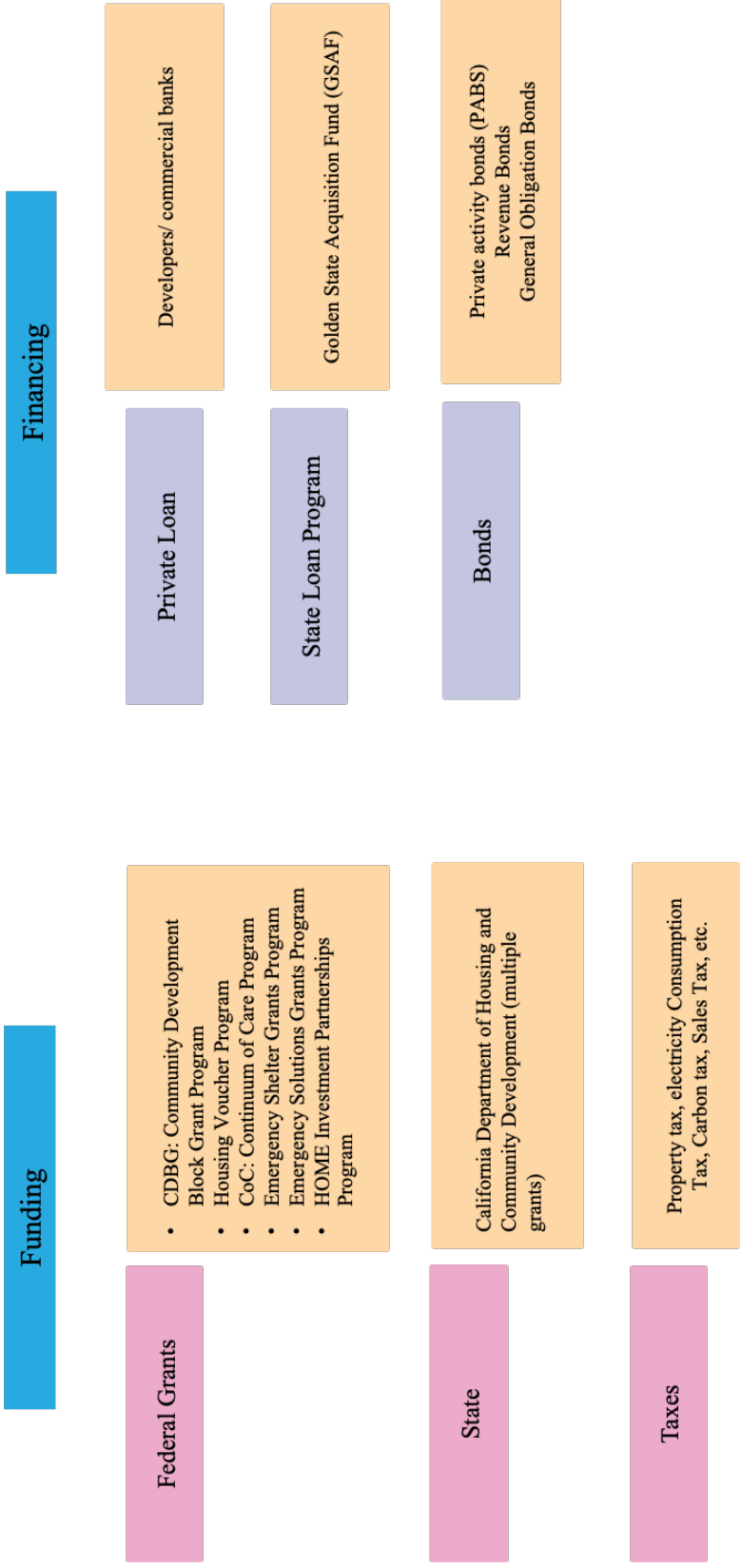
- TLU 7-1: DOE's Clean Cities grants can be utilized to fund a portion of the cost required to implement the supporting action, but additional funding is needed to expand its implementation.
- TLU 7-2: the 2022 evaluation framework for the development of curbside charging pilots has been completed. As of November 2021, CEC has provisionally awarded \$2.5 million in grant funding to SF Environment to implement a number of clean transportation projects, including: one to build a DC fast-charging hub serving a Disadvantaged Community within the city, and another will support the provision of an "EV Ombudsperson" to facilitate project application, permitting and reviews for EV charging locations.
- TLU 7-3: SFE has secured \$200,000 in funding from the CEC to create a plan to support medium-and-heavy duty charging infrastructure.
- TLU 7-4: San Francisco International Airport will lead engagement efforts and identify funding to establish the standard. Transportation Network Companies may potentially be interested in supporting this action by providing outreach and financial resources.
- TLU 7-5: ROM estimate to implement the action is \$560,000. As of November 2021, CEC has provisionally awarded \$2.5 million in grant funding to SF Environment to implement several clean vehicle projects, including an electric bicycle program for last-mile food delivery services.
- As for action TLU 7-6, there is no specific funding strategy in place. SF Environment will track availability of applicable grant opportunities and noted that the market for zero-emission construction equipment is in the very early stages and will not be viable for pilot projects for a number of years.

4.1.4 H 4: Expand subsidized housing opportunities for low, moderate, and middle-income families.

Based on the discussion with the Planning Department's housing team, the CAP's Housing strategies were developed in alignment with the policies from the City and the Mayor's office, as well as citywide racial and social equity priorities. Currently, there is a \$9 billion funding gap to achieve CAP's housing strategies and a \$13 billion gap if [Regional Housing Needs Allocation \(RHNA\) goals](#) are to be met. Affordable housing requires government, state, and local subsidies. The City's current Capital Plan accounts for all the production and preservation needs for affordable housing; includes all sources and uses for the next few years. Proposition C, a gross receipts tax initiative to fund homelessness services, which would generate \$300 million annually was passed in 2018. However, due to legal disputes this measure has not been included in the Capital Plan. Most recently, on April 28, 2021, the California Supreme Court declined to hear an appeal of the ruling on Prop C, allowing the City to continue collecting the tax and to spend the revenue from the tax. The \$300M per year will be a new funding source to support expansion of subsidized housing.

The state is preparing to issue a new bond next year, which will be a key capital source. The City remains hopeful that the new federal Infrastructure Bill will bring in additional funding and expand the housing choice voucher program. However, local permanent sources such as increasing existing taxes or creating new ones should be considered to help bridge the gap.

Figure 5. Scan of Funding and Financing Mechanisms for Housing strategies (not a comprehensive list of all sources available)



4.1.5 HE 4: Optimize management of the city's entire urban forest system & HE 7: Conduct carbon sequestration farming pilot projects and research.

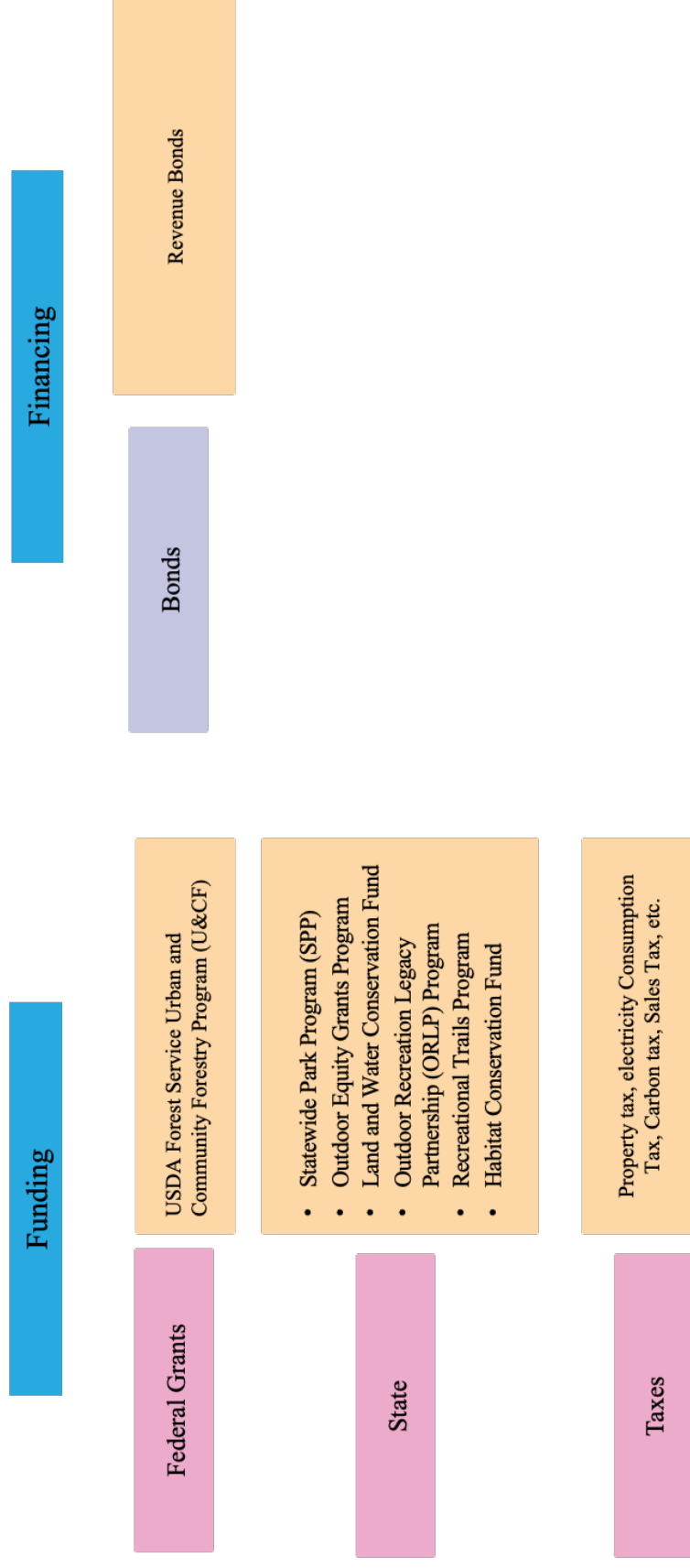
Staff from SF Environment's biodiversity program and the Recreation & Parks Department (RPD) provided context and background regarding available funding for urban forestry and carbon sequestration pilot projects and research.

In 1975, the Open Space Acquisition and Park Renovation Program ("Open Space Program", or OSP) was established under Proposition J to set aside a portion of the City's property tax revenue for this purpose. Since then, voters have approved the extension of the program. In 2000 voters approved Proposition C which extends the program through 2031 and authorizes the issuance of revenue bonds for capital improvements, secured by the OSP, and allows the RPD Commission to manage all aspects of those improvements. In 2016, voters approved Proposition B which extended the OSP an additional 15 years to 2046. General Obligation Bonds approved by

voters in 2008 and 2012 both included funding for urban forestry. The 2020 Health and Recovery Bond also included an allocation for parks, open space, and related sustainability projects.

RPD’s annual budget is made up from equal parts of OSP, earned revenue, and the General Fund (GF). Staffing for the Department’s forestry programs is supporting by all three sources. RPD’s smaller capital projects, deferred maintenance, and operational activities are funded through the GF capital baseline. Annually, a portion of the GF capital baseline is allocated to forestry work; presently all forestry capital is being paid through GF. Larger capital projects, i.e., those on the scale of \$2M-20M and which include things such as such as greening and forestation projects, are never fully funded from the General Fund; however, General Fund may be used to close funding gaps. Additionally, there are several state grants available for greening, restoration, and forestry projects. The Biden Administration’s proposed Infrastructure Bill is expected to include dedicated funding for urban and community forestry projects. Additional funding sources could be secured by increasing existing taxes (property tax, business tax, sales tax), or by creating new ones (carbon tax, electricity consumption tax).

Figure 6. Scan of Funding and Financing Mechanisms for Healthy Ecosystems strategies (not a comprehensive list of all sources available)



Note on City staffing and related administrative support (to develop policies, conduct stakeholder engagement, etc.)

In addition to the challenges of direct funding gaps for implementing CAP strategies and actions, the City must also identify resources and funding for staffing and administrative support. Ongoing efforts require adequate staffing, new policies and programs must be developed, stakeholders need be engaged, and many types of technical analysis must be performed to ensure impactful and equitable outcomes. In implementing its Climate Action Plan Tax, the City of Boulder explicitly earmarked resources to support staff to develop and administer climate programs. San Francisco must also consider this when identifying funding resources for the CAP.

4.2 Conclusions and Recommendations

To realize CAP outcomes in a timely manner, federal, state, and local funding sources need to be mobilized and leveraged to the fullest extent possible; limited duration grants and existing department budgets will not be enough to fully fund implementation of the CAP. The City must consider and take steps to secure funding by using tools such as: increasing existing taxes (sales tax, property tax, business tax, etc.), creating new ones (carbon or energy tax), or a combination. Equitable, affordable, and accessible financing also must be made available for climate projects. The City acknowledges upfront that increasing existing or creating new taxes may raise serious equity concerns, so it should commit to progressive approaches that will mitigate economic impacts on low-income households and other vulnerable groups. At the same time, there are instances where taxes may inherently *support* equity; for example, taxes such as a billionaire's income tax, capital gains tax, and/or inheritance tax can reduce inequality by raising significant revenue for equitable climate projects and programs.

Recommendations for next steps:

1. Create an interdepartmental climate finance working group to assess the economic, social, political, and administrative viability of securing new funding sources and identify targeted funding solutions for CAP implementation across the six sectors.
2. Develop a detailed cost estimate for implementing CAP actions – currently the CAP has only identified strategies and actions needed to meet the City's climate goals, along with and ROM costs
3. Identify all opportunities to fund CAP strategies from existing funding sources and approved measures. Accounting for how much of CAP is already funded through City's current revenue streams, activities, and bonds is imperative to move forward.
4. Assess which CAP strategies are not funded or partially funded to identify funding gaps.
5. Investigate a new tax (carbon tax, food tax) and/or increase existing taxes (sales tax, property tax) as a major contributor to reducing funding gaps.
6. Seek out and apply for relevant federal, state, and local grant opportunities which can serve as important seed funding for implementing CAP strategies or other supporting activities such as community engagement or technical analysis.



TO: Angela Calvillo, Clerk of the Board of Supervisors
FROM: Debbie Raphael
San Francisco Department of Environment Director
DATE: 3/16/2022
SUBJECT: Grant Accept and Expend
GRANT TITLE: Accept and Expend Grant— Electric Vehicle Ready
Community Blueprint Phase 2 – Blueprint Implementation \$2.3 million

Attached please find the original and 1 copy of each of the following:

- Proposed grant resolution, original signed by Department
- Grant information form, including disability checklist
- Budget and Budget Justification
- Grant application
- Agreement / Award Letter
- Ethics Form 126 (if applicable)
- Contracts, Leases/Agreements (if applicable)
- Other (Explain):

Special Timeline Requirements: To begin grant funding deliverables by early April in accordance with CEC funding.

Departmental representative to receive a copy of the adopted resolution:
Joseph Sweiss, joseph.sweiss@sfgov.org

Name: Joseph Sweiss Phone: 202-763-2384

Interoffice Mail Address: 1155 Market St, 3rd Floor, San Francisco CA 94103

Certified copy required Yes

No