

*SF Environment
Proposal to DOE – 2611-2020
Summary
Decarbonizing App-based, Last-mile Deliveries in San Francisco*

Applicant: San Francisco Department of the Environment (SF Environment)

Principal Investigator: Lowell Chu

Title: Decarbonizing App-based, Last-mile Deliveries in San Francisco

Partners: San Francisco Clean Cities Coalition, GRID Alternatives, City and County of San Francisco Local Agency Formation Commission

Project Objectives:

1. Quantify how e-bike operation improves efficiency and worker safety; increases workers earnings, reduces demand on the curb, reduces GHG emissions, VMT, and vehicle congestion.
2. Create an Online Tool to determine the value of e-bikes on earning and environmental benefits.
3. Scale the Project: The project team will facilitate and forge relationships with app-based companies and regional transportation agencies and help them to launch full-scale procurement and deployment.
4. Disseminate information to a wide audience: The project team will disseminate information about the project to a range of partners and stakeholders, including creating a model building decarbonization and grid-interactivity initiatives, to be replicated by other cities.

SF Environment and the San Francisco Clean Cities Coalition jointly propose a project to quantify and demonstrate the benefits of using electric bicycles (e-bikes) for application- (app) based deliveries, by identifying the economic and non-economic advantages of using e-bikes to make deliveries of food and consumer goods. The project will collect and use extensive data to quantify improvements in operational efficiency, increases worker safety, increases worker earnings, reduces demand on the curb, reduces greenhouse gas (GHG) emissions, vehicle miles traveled (VMT) and vehicle congestion, while creating workforce development opportunities. If the analysis and quantification results are favorable, the project will develop an online resource for users to quickly determine if e-bikes are appropriate for their needs. This project will decarbonize transportation emissions by informing effective and comprehensive clean mobility policies, pedestrian and bicycle safety, and establish a clear business case for app-based delivery companies and its workers to increase the use of e-bikes instead of driving.

Primary impacts of the project are reducing congestion on city streets, reducing greenhouse gas emissions, and creating a model for moving app-based delivery workers out of their internal combustion engine vehicles and on to electric bicycles. This project will leave lasting, long-term impacts on how app-based deliveries are made in San Francisco and other cities. Project completion will alleviate the primary market barrier to E-bike for commercial applications—first cost. Ultimately, the project’s data and Online Tool will make it easier and cheaper to select, own, and use E-bike for app-based deliveries in urban setting.

Prime Applicant: COMPANY NAME (Control #2611-2020)
Project Title: Decarbonizing App-based Deliveries in San Francisco

Principal Investigator:	Lowell Chu
Key Partners:	GRID Alternatives, Inc., SF Local Agency Formation Commission
Proposed Project Duration:	3 years

Proposed Objectives:

- Objective 1: Quantify how e-bike operation improves efficiency and worker safety; increases worker earnings; reduces demand on the curb, GHG emissions, VMT, and vehicle congestion.
- Objective 2. Develop and deploy a one-stop online resource for app-based workers to easily compare e-bikes versus cars, estimate potential increases in earnings and emissions-reduces, and facilitate near-term actions to start riding instead of driving.

Project Impact/Takeaway:

- Project Impact / Takeaway 1: The project’s biggest impact will be reductions in GHG emissions, vehicle pollution, and congestion.
- Project Impact / Takeaway 2 Scale the project, get more delivery workers out of cars, vans, and trucks and onto e-bikes. Reducing the number of delivery vehicles will help San Francisco and other cities meet climate, equity, and public health goals.

Key Deliverables/Accomplishments:

- Deliverable/Accomplishment 1: Create the business case by identifying the financial benefits of using e-bikes for commercial application.
- Deliverable Accomplishment 2: Create a plan to aggressively disseminate project outcomes and tools.

	Federal Share	Recipient Share
Total Project Cost	\$1,214,954	
Total Shares (Prime+FFRDCs+Subcontractors)	\$ 605,620	\$ 609,334
Prime	\$ 81,758	\$ 411,054
FFRDCs Total	\$ -	\$ -
Subcontractors Total	\$ 523,862	\$ 198,280

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**DE-FOA-0002611 Office of Energy Efficiency and Renewable Energy (EERE) – Fiscal Year 2022
Vehicle Technologies Office Program Wide Funding Opportunity Announcement**

**AOI #12 – Demonstration and Deployment – Open Topic
Decarbonizing App-based Deliveries in San Francisco**

Project Description: The San Francisco Environment Department (SF Environment) and the San Francisco Clean Cities Coalition (SF CCC) jointly propose a project to quantify and demonstrate the benefits of using electric bicycles (e-bikes) for application- (app) based deliveries, by identifying the economic and non-economic advantages of using e-bikes to make deliveries of food and consumer goods. The project will collect and use extensive data to quantify improvements in operational efficiency, increases worker safety, increases worker earnings, reduces demand on the curb, reduces greenhouse gas (GHG) emissions, vehicle miles traveled (VMT) and vehicle congestion, while creating workforce development opportunities. If the analysis and quantification results are favorable, the project will develop an online resource for users to quickly determine if e-bikes are appropriate for their needs. This project will decarbonize transportation emissions by informing effective and comprehensive clean mobility policies, pedestrian and bicycle safety, and establish a clear business case for app-based delivery companies and its workers to increase the use of e-bikes instead of driving.

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Lead:

- City and County of San Francisco, Department of the Environment (SF Environment)

Team Members:

- City and County of San Francisco Local Agency Formation Commission (LAFCo)
- GRID Alternatives
- App-based Delivery Company (to be named later)
- Vehicle Telemetry Company (to be named later)
- San Francisco E-bike Shop (to be named later)
- San Francisco Bicycle Safety Training Provider (to be named later)
- Online Application Developer (to be named later)

Confidentiality: All work products will be publicly available. Proprietary information provided and marked confidential by the utilities or other parties will be kept confidential. Customer-specific information, including energy consumption, unless otherwise publicly available, will be kept confidential.

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PROJECT OVERVIEW

Project Relevance to FOA and AOI Objectives - This project supports the AOI 12 objective to draw on “Clean Cities Coalition partners’ portfolio and explore novel solutions to transportation and related clean energy challenges through demonstration or deployment projects not otherwise addressed in other AOIs of the FOA.”

SF Environment administers and implements the SF CCC. This team will address the increased greenhouse gas (GHG) emissions related to the burgeoning delivery services industry by proving the benefits of adopting e-bikes to companies and workers currently using internal combustion engine vehicles. Projects of this type are crucial to urban areas in which the transportation sector is typically responsible for the bulk of GHG emissions (47% in San Francisco). This project will demonstrate one viable option for cities to decarbonize their transportation sectors.

The proposed project will build on a small pilot currently being implemented by the SF Environment and the SFCCC team. Funded by the California Energy Commission (CEC), this small pilot compares earnings and performance metrics between app-based food delivery workers using e-bikes against those using cars. This pilot is small - only thirty (30) full-time, app-based delivery workers are eligible for e-bikes. Their use will be monitored and compared with eighty (80) food-deliver workers using cars over twelve (12) months, from January 2023 to January 2024.

DOE funding will expand the scope and scale of this small pilot, further demonstrating and quantifying e-bike utility beyond food deliveries and providing a compelling case for app-based workers to try e-bikes and their companies to create incentives to use them. DOE funding will also ensure that the project team has the resources to disseminate project learnings and tools.

As in other urban areas, the delivery of goods and passengers is a major cause of GHG emissions, air pollution, and congestion in San Francisco. In 2018, the SF County Transportation Authority found that transportation network company vehicles accounted for approximately 50% of the increase in congestion in the city between 2010 and 2016. Overall, these vehicles caused the greatest increase 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, which disproportionately impacts the health of communities near these corridors – increasing cancer and asthma risks.

The project will gather empirical data to understand if and how the use of commercially rated, cargo e-bikes to make local deliveries is more advantageous than using cars, vans, or pickup trucks. Analysis from the data will focus on understanding if app-based delivery workers and delivery companies generate more earnings using e-bikes, since they are spending less on vehicle expenses (maintenance, fuel, insurance costs, parking tickets) and less time looking for parking for pick up and drop off. Needing only a 120-VAC socket, an E-bike’s power source is more convenient and accessible than either pumping gas or charging an electric car.

E-bikes in commercial application remains novel and the proportion of delivery workers using e-bikes in San Francisco compared to car drivers is small. E-bikes are expensive, and few workers are aware – or skeptical – of their benefits. Subsidies and rebates alone will not provide the capital necessary to deploy e-bikes for local deliveries. Companies and their workers must realize the benefits e-bikes bring to their business models to make their uses ubiquitous.

Project End Goal. The project goal is to scale the use of e-bikes for app-based deliveries in San Francisco and other municipalities, by understanding an e-bike’s business and environmental benefits in a real-world application, making it the best vehicle choice for deliveries.

Project Approach. The project will analyze and compare the performance metrics of two hundred (200) participants: one hundred (100) delivery workers using e-bikes against one hundred (100) workers using vehicles with internal combustion engines (ICE) over a 12-month performance evaluation collection period. To ease deployment, the two hundred (200) participants will be divided into two (2) equal cohorts, with a 3-month lag between the start of cohort #1 and #2. Each cohort will have fifty (50) riders and fifty (50) drivers.

The project team will gather data and information using vehicle telemetry application (app) and surveys during an evaluation period. It will establish data collection program primarily using a smartphone-based app that collects time, location, and other quantifiable vehicle data. The vehicle telemetry app will calculate dollars earned per delivery, number of deliveries made per shift, delivery distance, and amount of time between pickups. For more qualitative data, the team will survey participants in both groups to understand, compare attitudes and level of confidence toward using e-bikes at the start-, mid-, and endpoints of the performance evaluation period.

After the evaluation period is over, the team will compile and analyze the data and synthesize the results. If the analysis shows clear e-bike advantages, the team will proceed to develop an online e-bike tool to serve app-based delivery workers. Its purpose is to provide important information about e-bikes and facilitate next steps.

Finally, the team, working through the SF CCC and other established networks, will share the findings with app-based companies, workers, local governments, and other stakeholders.

Project Outcomes.

- Build confidence among app-based delivery companies and workers to use e-bikes to make deliveries by raising awareness of their benefits to increase earnings.
- Increase in the number of app-based delivery workers using e-bikes.
- Calculated reductions in air pollution and GHG-emissions from the use of ICE vehicles making deliveries.
- Calculated reduction in vehicle congestion.
- Quantification of other e-bike benefits.
- Estimated reduction in vehicular and pedestrian accidents related to increases in ride-

hailing vehicles¹.

- Measurable increase in net and gross earnings per delivery, including tips.
- Measurable increase in customer satisfaction knowing their packages were delivered using e-bikes.
- Ongoing dissemination of project progress to other cities, app-based delivery companies and workers, and stakeholders working to decarbonize deliveries.

Project Outputs.

- Project Management Plan
- Comparison Group Methodology Summary
- Data Gathering and Analysis Plan
- Documentation of Meetings (agenda, notes, attendees)
- Participant and Customer Surveys
- E-bike Online Benefits Estimator Tool for App-based Delivery Workers (to visualize e-bike benefits and act)
- Quantification of GHG emissions reductions per delivery between riders and drivers
- Quantification of net and gross earnings between riders and drivers
- Final Project Report
- Various Presentations to Stakeholders
- Summary of accomplishments and project work report will be prepared for inclusion in the Vehicle Technologies Office annual programmatic progress report.
- Plan to disseminate lessons learned, case studies, information about the on-line resource tool to a range of stakeholders and membership organizations.

Project Impact. The project's biggest impact will be reductions in GHG emissions, vehicle pollution, and congestion. Project data could make a compelling case for additional investments in commercial e-bikes and vehicle telemetric technologies by app-based companies. The project could improve the earnings of delivery workers. Making this business case will get more delivery workers out of cars, vans, and trucks and onto e-bikes. Finally, the project will impact local governments' policies. Data could inform e-bike incentive programs and inform bicycle and traffic safety measures.

Project Team and Qualifications. Project Lead: SF Environment Department (SF Environment), Team members: SF Local Agency Formation Commission (LAFCo); SF Clean Cities Coalition (SF CCC), GRID Alternatives; services from the app-based delivery and telematics companies and an organization to provide bike safety training will be procured using the city's standard services procurement process of issuing an RFP and selecting from the applicants. The team has had myriad conversations with potential providers and there is definite interest in participating in this innovative project.

¹ John M. Barrios, Yael V. Hochberg, Livia Hanyi Yi, "The Cost of Convenience: Ridesharing and Traffic Fatalities," Section 4.1 Main Results

San Francisco is a noted leader in low-carbon mobility and climate policy. In 1973, it adopted a Transit-First Policy, which prioritizes movement of people and goods with a focus on transit, walking, and biking instead of private automobiles. This policy continues to guide efforts amidst rapid growth and change. The city has aggressively reduced its annual GHG emissions by enforcing new green building standards, investing in renewable energy, and advancing alternative fuels and transportation electrification.

SF Environment: SF Environment has extensive experience designing, evaluating, and validating projects. It coordinates San Francisco’s achievement of its climate and sustainability goals and has built a strong foundation to reach net-zero emissions in commercial and municipal buildings by 2040. It is responsible for designing and implementing clean transportation policies, launching innovative clean transportation solutions, and advancing public EV charging infrastructure. SF Environment has developed and implemented myriad policies designed to shift intra-city trips from personal cars to public transit, bicycling, and walking as well as to increase the saturation of publicly accessible, electric vehicle charging infrastructure throughout the city.

GRID Alternatives: The main subcontractor to the project, GRID Alternatives (GRID) is the country’s largest nonprofit providing low-carbon solutions exclusively to low-income communities, with a vision of a rapid, equitable transition to a world powered by renewable energy that includes everyone. Over the past four years, GRID has expanded its work to include other renewable energy technologies like access to EVs, e-bicycles, and battery storage – building on the unique connections to the environmental and economic justice communities served and addressing their need for affordable, clean, and reliable mobility options. In the e-bike sector, GRID is launching multiple e-bike equity programs in the SF Bay Area, including serving as the program implementer for the City of Oakland's new e-bike library funded through CARB's Clean Mobility Options program, and partnering with Waterside Workshops and the City of Berkeley to launch a two-year E-Mobility Access e-bike program as part of the Climate Equity Fund. GRID is also the subcontractor to the recently approved SF Environment contract with the CEC that includes the e-bike project this DOE project will expand upon.

PROJECT APPROACH

A. The Problem being Addressed.

This project addresses the problem of low adoption of e-bikes for deliveries in dense, areas. The low adoption is attributable to general lack of knowledge among app-based delivery workers and their companies about the financial benefits of switching from ICE vehicles to e-bikes.

As in other urban areas, the delivery of goods and passengers is a major cause of GHG emissions, air pollution, and congestion in San Francisco. In 2018, the SF County Transportation Authority found that transportation network company vehicles accounted for approximately 50% of the increase in congestion in the city between 2010 and 2016. Overall, these vehicles caused the greatest increase 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, which disproportionately impacts the health of communities near these corridors – increasing cancer and asthma risks.

This increase in congestion not only impacts air quality and GHG emissions it also effects the workers’ ability to efficiently make deliveries and increase earnings.

A 2020 UC Santa Cruz report² that studied pandemic impacts on app-based workers found that 70% of surveyed delivery workers said they would either “definitely switch or consider switching from driving to using an e-bikes.” The report also found that 25% of surveyed ride-hailing drivers said they would either “consider switching or definitely switch” to making deliveries using e-bikes. Despite interest, the study discovered that the biggest challenges are the cost of e-bikes, lack of awareness of their benefits (information failure), and concern for road safety.

Currently, e-bikes are too expensive for many app-based delivery workers. UC Santa Cruz researchers found an app-based delivery worker earned an average of \$624 per month in 2019. This low wage forces many to work multiple gigs to maintain their livelihoods. With new e-bike prices ranging from \$1,500 to \$10,000, despite the interest, even at the low end of the price spectrum, e-bikes are cost-prohibitive. Given supply-chain issues, used e-bikes are also commending high prices. As such, the large gap between earnings and costs continue to drive most app-based delivery workers to drive.

For most app-based workers, the lack of information and incentives substantially increase the risks to making mode-shift decisions. Notably, they don’t have a reliable way to estimate how e-bikes could boost their earnings to justify the investments. This information failure sustains their reliance on cars. As such, they continue to be slowed by congestion and delivery delays from searching for parking. Their earnings per delivery remain suppressed because, as compared to e-bikes, driving incur high running costs in fuel, insurance, and maintenance.

App-based delivery companies are also not fully aware of e-bikes’ potential to generate additional revenue and increase customer satisfaction. A few companies are piloting small scale pilots, but many remain agnostic to the means of deliveries. They are not providing the signals and incentives to support their delivery workers to shift to e-bikes. Like their delivery workers, app-based delivery companies need more data and information to make the shift.

Finally, UC Santa Cruz researchers found many app-based workers expressed concerns for their safety using e-bikes. In generally, bicycle safety instructions are informal and limited to online videos. Without real-world training, it’s understandable that potential riders are apprehensive. The lack of formal, on-the-road e-bike trainings is an opportunity for organizations like the SF Bicycle Coalition to provide the requisite trainings to get delivery workers confident and comfortable making deliveries using e-bikes.

² Chris Benner, Ph.d., *On-demand and On-the-edge: Ride hailing and Delivery workers in San Francisco* (UC Santa Cruz, Institute for Social Transformation, May 2020), P.4

B. Current State of the Market.

San Francisco is a pioneer in shared mobility services, such as bike and car share, ride-hailing, and electric scooters. Since 2016, there have been major concerns with the increase in daily ride-hailing and delivery trips in the city. This concern has been exacerbated by the COVID-19 pandemic, as food deliveries have increased dramatically via delivery apps. According to research firm, Second Measure, national spending on meal delivery services was up 158% year-over-year in August 2020.

Since the pandemic, 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. Researchers have linked increases in number of ride-hailing vehicles in cities to increases in traffic accidents³, since the vehicle accident rate calculation is dependent on mileage driven for a given period plus the number of vehicles. To mitigate these adverse impacts, San Francisco must reduce the number of vehicle trips and shift to sustainable modes of transportation.

It is the responsibility of local governments to understand and develop solutions that ensure positive outcomes for residents, businesses, workers, and the environment, but there is limited data to support these efforts. Fortunately, the first-of-its-kind study, commissioned by the LAFCo and conducted by UC Santa Cruz, finds that the industry is primed for mode shifting and electrification.

The North American e-bike market is expected to grow by 12.51% between 2024 and 2027.⁴ E-bikes' inherent innovations and practicality are accelerating their adoption in personal and recreational uses. Their potential for use in daily commercial remains unknown. Therefore, this project will gather operational and participant data and analyze the applicability of e-bikes in this growing sector. More interestingly, the project will assess motivations and incentives for delivery workers to shift from driving to riding. As such, the project will be transformative because it will uncover an entirely new market-sector for e-bikes. Project data can also help make the case to public agencies and local utility companies to include e-bikes in incentive programs such as California's Clean Vehicle Rebate Program.

Currently, navigating information in the e-bike market is time-consuming, with information scattered throughout dozens of websites. Unlike electric vehicles, there is current no way for one to reliably estimate financial and environmental benefits from riding e-bikes to make deliveries. Worse, there isn't a one-stop-shop for e-bike resources: where to test ride, financial assistance, etc. Based on discussions with delivery workers, one must spend "a lot of time doing your own research." Every minute spent on research is a minute not spent on delivering – earning.

³ John M. Barrios, Yael V. Hochberg, Livia Hanyi Yi, "The Cost of Convenience: Ridesharing and Traffic Fatalities," Section 4.1 Main Results

⁴ [https://www.mordorintelligence.com/industry-reports/north-america-e-bike-market#:~:text=Market%20Overview,period%20\(2022%20%2D%202027\).](https://www.mordorintelligence.com/industry-reports/north-america-e-bike-market#:~:text=Market%20Overview,period%20(2022%20%2D%202027).)

The state of the market for vehicle telemetry is mature and reliable. The use of mobile phones or smartphone devices to capture vehicle telemetry is now common. Cell phone tracking systems track the vehicle operator's smartphone device. Different than global positioning systems (GPS), cellphone tracking uses an application installed in the smartphone device to receive locational signals from the satellites. Like vehicle-installed GPS tracking systems, the more satellites a smartphone device is within range of, the more accurate the GPS coordinates will be. Nowadays, most modern mobile phones have GPS capabilities built into the hardware; this makes it easy to use GPS-based applications like finding a lost phone or getting turn-by-turn directions in real-time. Each project participant will be required to activate the vehicle telemetry application and only anonymized data – without personally identifiable information – will be evaluated by the project team.

C. Expected Change in the Market Sector.

The project team expects several changes in the market sector. In terms of technology adoption, the project's findings will increase deployment of commercial e-bikes for app-based deliveries in urban centers. As the number of delivery workers using e-bikes increase, the e-bike market will grow, and costs reduced. The demand for e-bikes will ultimately lead other manufacturers, distributors, and retailers to join the market. Additional competition will further reduce costs while improving product features, performance, and reliability. Increases in e-bike demands will also generate demands in personal safety equipment, replacement parts, accessories, and clothing. With increased number of e-bikes on the road, the need for maintenance and repairs will also increasing resulting in opportunities for workforce development.

Relatedly, the "lessons learned" will facilitate smoother e-bike incentive program implementation by identifying and mitigating potential programming issues. The project's findings will also effectuate local policies, which could result in rebates and other incentive which further effectuate the mass deployment of e-bikes for commercial application. The project team also expects to inform road and bicycle safety policies and strategies.

The data could also inform future clean mobility policies that incent the use of e-bikes to make deliveries (e.g., reduced tax liability for app-based delivery companies, or inversely, levy a tax on deliveries made using fossil fueled vehicles). Relatedly, this project will seek to hire a local bicycle shop and recruit apprentices to exclusively provide equipment upfitting, perform maintenance, and conduct necessary repairs.

D. Project Approach.

By the end of the grant period, the project would have quantified the environmental, financial, and societal benefits of using e-bikes to make deliveries in San Francisco. To that end, the project team will use a comparative analysis approach. This approach compares datasets from app-based delivery workers driving vs. riding e-bikes to identify patterns, similarities, and differences.

The project team will evaluate performance of their respective vehicles and other key indicators such as impacts on GHG emissions reduction, worker earnings, road safety, and congestion; and identifies best practices, and lays groundwork for scaling and replication. The overall approach entails:

- Deliver e-bikes, safety equipment, training, and support to 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 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; inform the development of an online e-bike benefits calculator.

The project team will use a comparison group to approximate the counterfactual: how the e-bike (treatment) group would have fared without e-bikes. The project team will collaborate with an app-based delivery company to identify features and profiles for the randomized trial. The trial consists of two hundred (200) total participants: one hundred (100) participants receiving cargo e-bikes and vehicle telemetry app on their smartphone devices and another one hundred (100) participants receiving only vehicle telemetry app on their smartphone device and using their cars, vans, or trucks. At the completion of the trial, the treatment group participants will keep the e-bikes.

Developing the Comparison and Treatment Groups. To improve the accuracy of the analysis, the project team will choose a comparison group like the treatment group. Comparison group selection includes:

1. **Identify comparison group participants**
 - a. The eligibility rules (e.g., regularly used platform for over nine (9) months, delivered over twenty (20) hours per week, five (5) deliveries per day, etc.) for participation will be developed in collaboration with app-based delivery companies, app-based delivery workers, and other stakeholders.
2. **Limit comparison pool to similar non-participants that meet program requirements.**
 - a. Build a pool of eligible participants prior to program launch and evaluate their delivery work data to uncover incomplete or missing driver-data as well as erratic delivery patterns.
 - b. Filter the pool by removing eligible participants with insufficient data (hours worked per week, deliveries per day, etc.).
 - c. Remove any remaining customers failing to meet program eligibility criteria.

3. Select Comparison Group from within Sample of Sub-Population

- a. Segment comparison group participants by delivery types and vehicle profiles. Delivery types will be segmented into food, light-duty, and mixed-cargo. For the measurement of fuel savings, segmentation is based on vehicle types (e.g., cars, vans, or trucks).
- b. Segment treatment participants by delivery types (food vs. cargo) also.

4. Create the Comparison Group

- a. Once a comparison group is created, the baseline period of the comparison group must be aligned temporally with the baseline period of the treatment group.
- b. The project team will evaluate the performance metrics and operational costs of both treatment and comparison groups each month to identify non-routine events that impact the data. The project team will investigate each non-routine event and determine appropriate treatment.
- c. The project team will calculate a difference of differences of percentage earnings between the treatment group and the comparison group.
- d. The project team will calculate GHG emissions impact per delivery trip.
- e. For developing a comparison group, a sample of non-participant customers are identified to perform accurate matching and comprise a reliable comparison group from non-participant data.

Data will be delivered in a clean readable format. Duplicated data will be thrown out. Overlaps in meter datasets will be resolved to the dataset with the largest time period.

The project team expects that there may be some attrition in both comparison and treatment groups and will establish a pool of backup group participants. Upon their introduction into analysis, the project team will match their evaluation periods and segments so that they're as similar as possible.

Data Collection and Types. The availability and quality of vehicle telemetry data are fundamental to achieving the goal and objectives. Telemetry data from e-bikes will identify when and where roads are highly trafficked. The data will be overlaid with latest accident information to identify high-risk areas and apply road-safety measures.

The project will collect relevant metadata as necessary to derive the impact of e-bike deployments. These data include participant contacts, locations, dates and times of deliveries, cargo type (food, packages), and earnings. Any, or all, of these data will be used for more granular subgroup tracking and management and could be used to facilitate future studies.

The table below provides a summary of the data collected.

Data Type	Data Name	Units
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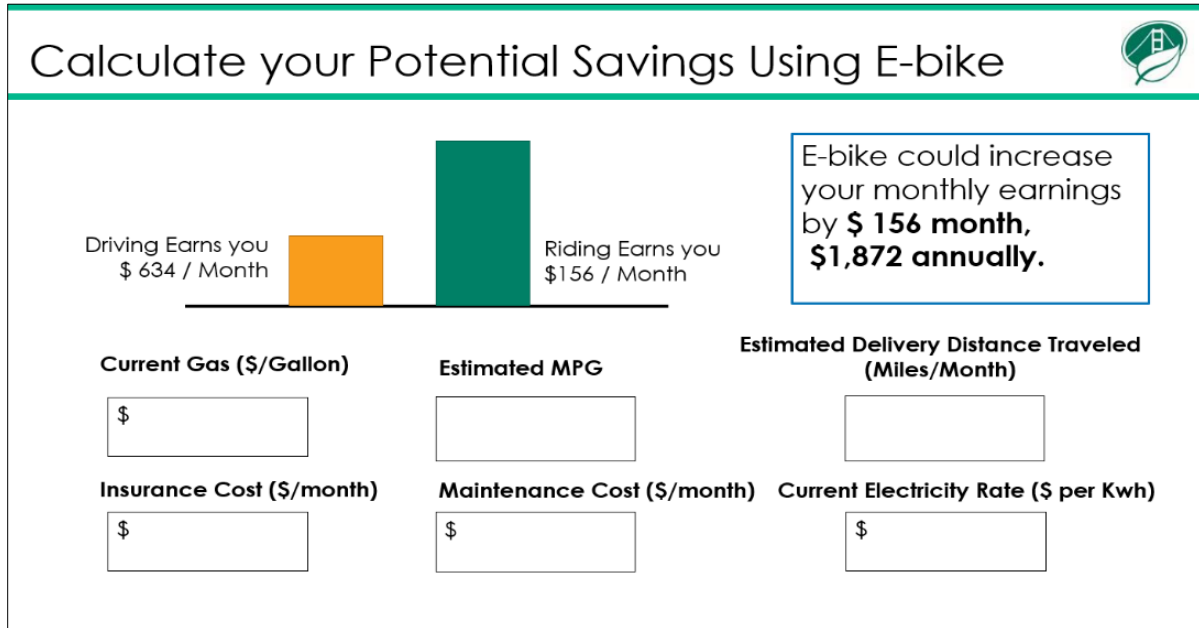
Vehicle	Vehicle Miles Traveled per Day	VMT / Day
Vehicle	Average Miles Traveled and Time per Delivery	Miles & Time / Delivery
Vehicle	Average Speed	Miles per Hour
Vehicle	Average Power Consumption	Kilowatt hour
Vehicle	Average Acceleration and Deceleration Rates	Ft/sec ²
Vehicle	Dwell Time per Day	Mins
Vehicle	Vehicle Deadhead Miles Traveled per Day	VDMT / Day
Operator	Operator Height & Weight	Ft / Lbs
Operator	Calories Consumed per Day	Kc (kilocalorie)
Operator	Number of Stops per Day	No.
Operator	E-bike Fuel Cost	\$ per kWh / Miles Traveled
Operator	ICE Vehicle Fuel Cost	\$ per Gallon / Miles Traveled
Operator	Monthly Maintenance Cost	\$ / month
Operator	Monthly Operation Cost of E-bike / Car	\$ / month
Operator	Monthly Other Expenses e.g., parking tickets, insurance, etc.	\$ / month
Operator	Busiest Times & Days	-
Operator	Net and Gross Earnings per Shift including Tips	\$
Geo	Highly trafficked Routes	-

Data Security. Data security and customer privacy are paramount for effective, trustworthy customer programs. The project team will implement rigorous data security procedures and protocols at every step of data transfer, analysis, and reporting for handling telemetry data and delivery information. The team's data partner (to be named later) will have data tools and systems built on modern industry standards. They will have undergone the auditing process to achieve System and Organization Controls (SOC) 2 compliance, which ensures best-in-class security and data management practices that meet the required "trust service principles" as defined by the American Institute of Certified Public Accountants.

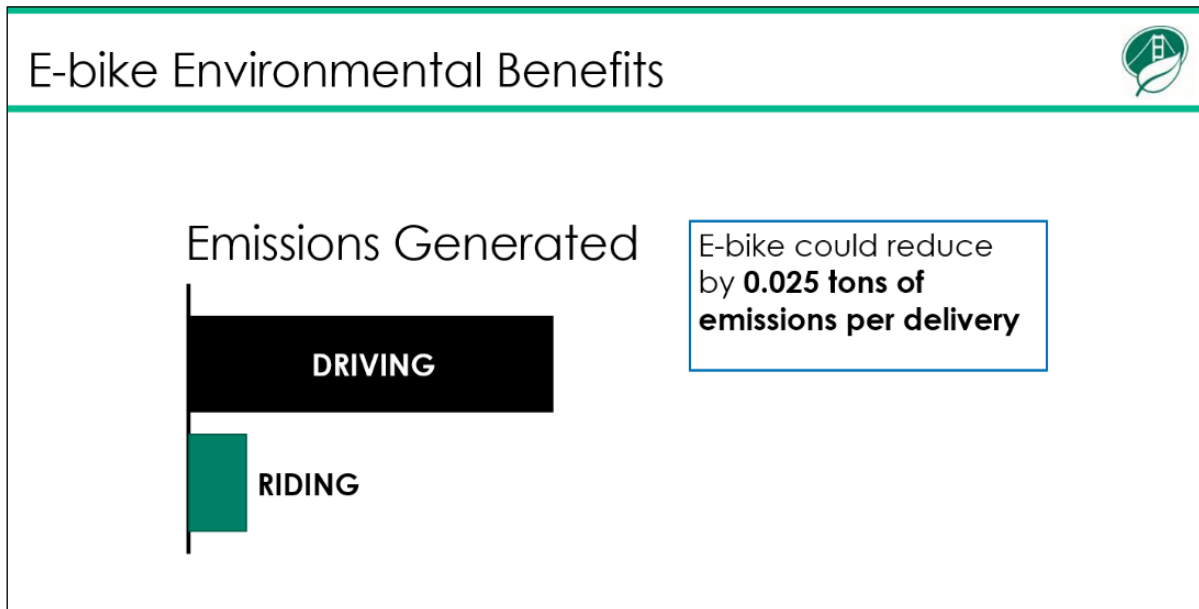
E-bike Specifications. The project will specify cargo-type e-bikes, such as the Bergamont E-Cargoville. With its lightweight, agile design, and low center of gravity, this type of cargo e-bike is perfect for the novice riders and daily commercial use. Each e-bike has a minimum payload capacity of 200-lbs and choices to configure the cargo area to suit the payloads. Each e-bike will have a 750W motor, multi-speeds, dual disc brakes, and long-range battery packs to climb and descent the steepest San Francisco hill with ease and safety.

Online Resource Tool Overview. If the data analysis shows sizable advantages to using e-bikes for app-based deliveries, the project team will advance the development of an online e-bike

resource tool. Developed specifically for app-based delivery workers, the Tool’s purpose is to provide users with information to make informed decisions about e-bike deliveries. To that end, the Online Tool will have two (2) primary components: **1) Benefits/Savings Calculator**, which asks a user for basic inputs and returns easy-to-understand benefits and savings, and **2) Resource Hub**, which provides range of resources that lead to e-bike related actions.



The screenshot is a preliminary draft of the calculator user interface:




The Online Tool will also provide basic environmental benefits in GHG emissions reduced.

The Resource Hub will be a one-stop resource for users to select the type of e-bike most appropriate for their work and routes. It will directly connect the user to resources to purchase, lease, or test-ride the selected e-bike(s) through local e-bike distributors and retailers. Additionally, it will have links to online performance and safety resources (online videos from the SF Bicycle Coalition), and links to app-based delivery companies who are hiring delivery workers.

E-bike Selector Guide

Specs:

- **650W Motor**
- **3 speeds**
- **Dual Disc Brakes**
- **Cargo Area**



ABC Cargo Bike

You can start using this e-bike today: [LINK](#)

What do you deliver?

What is the maximum payload weight?

What's your experience with using E-bike?

On average, how far do you delivery?

E. Community Stakeholder Engagement.

This project was inspired and designed in collaboration with GRID Alternatives Bay Area, app-based food delivery companies, LAFCo and UC Santa Cruz, and other local government agencies. SF Environment has met with app-based delivery companies to discuss goals, objectives, and timelines for the project, and several have already expressed interests in participating. These companies will support participant recruitment, data collection and sharing, and facilitating with sustaining the project after the grant period. Ultimately, the app-based delivery companies are willing to support the mass deployment of e-bikes if the resulting data supports the business decision. The project team will conduct in-language (Chinese and Spanish) to recruit app-based workers to join the project.

The project intends to empower and enhance app-based workers. Project design has been primarily informed and advised by UC Santa Cruz's 2020 research into pandemic's impacts on app-based workers. The research surveyed ride-hailing and food and grocery-delivery workers in San Francisco across six (6) different apps. It underscored the financial vulnerability of workers in the gig economy—and the coronavirus has made their plight much worse. At least 78% of the surveyed workforce are people of color, and 56% are immigrants, coming from dozens of different countries. 71% of respondents work more than 30 hours a week, including 50% who work more than 40 hours, and 30% who work more than 50 hours. This project is driven by the researcher's recommendation to create programs and policies that support the use of e-bikes to boost earnings and reap environmental benefits.

The project will engage with delivery workers through in-language (Chinese, Spanish) surveys and personal interviews. Project team will conduct surveys with e-bike riders at the start of the deployment and at 6- and 12-month intervals. The surveys will be designed to identify the pros and cons of using e-bikes, assess improvements in confidence, and solicit recommendations to refine the project. Respondents will receive a gift-cards to compensate for their time.

During implementation, project partner GRID will work with a San Francisco community-based organization (CBO) to raise awareness of this project within delivery worker forums and online communities. The CBO will be credible, trusted messengers of their communities so the potential participants will be confident about the legitimacy of the project and their eventual participation.

F. Deliverables and Outcomes.

Deliverables:

- Project Management Plan
- Comparison Group Methodology Summary
- Data Gathering and Analysis Plan
- Documentation of Meetings (agenda, notes, attendees)
- Participant and Customer Surveys
- Online E-bike Tool for App-based Delivery Workers
- Final Project Report
- Summary of accomplishments and project work report will be prepared for inclusion in the Vehicle Technologies Office annual programmatic progress report.
- Plan to disseminate lessons learned, case studies, information about the on-line resource tool to a range of stakeholders including the Urban Sustainability Directors Network, Pacific Coast Collaborative, C-40 and others and at conferences and other convenings.

Outcomes

- Build confidence among app-based delivery companies and workers to use e-bikes to make deliveries by raising awareness of their benefits to increase earnings.
- Increase in the number of app-based delivery workers using e-bikes.
- Calculated reductions in air pollution and GHG-emissions from the use of ICE vehicles making deliveries.
- Calculated reduction in vehicle congestion.
- Quantification of other e-bike benefits.
- Estimated reduction in vehicular and pedestrian accidents from the use of ICE vehicles.
- Measurable % increase in earnings per delivery.
- Measurable increase in customer satisfaction knowing their packages were delivered using e-bikes.
- Plans to scale the project in San Francisco and support other jurisdictions seeking to adopt the model.
- Dissemination of knowledge and learnings to other jurisdictions and stakeholders.

Training Riders. Participants in the treatment group will receive e-bike performance and road safety training. After successful enrollment, each participant must undergo four (4) hours of paid e-bike training provided by the SF Bicycle Coalition. Each training session will consist of an hour-long classroom safety and operations instructions. Class training is followed by two (2) hours of on-the-road safety training with an instructor. The instructors will review cargo e-bike operation, how to balance load safely, charging, theft prevention, safe road operation including in fog and light rain, and how to optimize vehicle operation and cargo loading to achieve maximum efficiency.

Each participant will learn how and when to initialize the telemetry app on their cellphone. The instructor will review what data is being gathered, emphasize that no personally identifiable information will be shared, and how their data will inform future policies and programs.

At the end of the training, each participant will receive cycling helmets, rain ponchos, and instructions on what to do in emergency and breakdowns. Liability and personal insurance policies for each e-bike and participant will be included in the package.

Training E-bike Maintenance Workers. The project will contract with a San Francisco bicycle shop to assemble, road-test, upfit, maintain and repair all the cargo e-bikes. The project team will contractually require the bicycle shop to use at least two (2) apprentice-level technicians to work alongside a journeyman-level technician. The shop-staff must attend all training sessions as required by the e-bike manufacturer and document the amount of time apprentice-level spent on the project.

G. Innovation.

This project innovates the business models of app-based delivery workers. It seeks to shift traditional vehicles of deliveries away from cars, vans, and pickups to e-bikes. It also seeks to alter how app-based delivery gather critical information to make decisions on their business models and resources to facilitate those decisions.

H. Scalable, Replicable in Other Communities.

The project will provide much needed data and best practice recommendations to jurisdictional authorities and app-based delivery workers and companies to develop their own mode shift, emissions reduction, and load building programs that are necessary to meeting national climate goals. Finally, this project has the potential to increase delivery 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 bicycle safety concerns.

I. Justice 40 Considerations

Achieving equity and justice in transportation electrification will require a long-term commitment, ample resources, and the adoption of models outside of traditional norms. A model of transportation equity that includes justice will be focused on the root causes of inequities and

understanding how power creates injustice. This model is committed to redistributing power and ensuring that disadvantaged and marginalized community members are given tools and opportunities to make informed decisions about their transportation options and have access resources. Transportation equity that is committed to justice applies a systems framework analysis and stakeholder engagement techniques to understand how inequities came to exist, and how to ensure that future programs and policies do not repeat past harms.

Studies and surveys of app-based delivery workers reveals that workers face economic insecurity at high rates, often have high overhead costs with having to provide their own vehicle, gas, and car maintenance, and at times end of up with less than minimum wage. Independent contractors like app-based delivery workers don't get the same workplace benefits as employees, such as overtime pay, sick leave, and health and safety protections. Low-wage workers may also be relying on older, more polluting vehicles to make deliveries, adding to the environmental impact of their work.

This project will recruit participants from disadvantaged communities and will remove upfront costs for e-bike adoption for participants, support in asset building and increased earnings due to lower operational costs of an e-bike. App-based delivery workers that were once profoundly impacted by the expense of car repairs and other costs of owning and operating a single-occupancy vehicle, will experience in real time the impacts of e-bikes. 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.

The Project Team is well positioned to engage with Communities of Concern. For over 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 now been designated by CalEnviroScreen 4.0 as disadvantaged communities (DAC). As a trusted institution in these neighborhoods, SF Environment has robust relationships and has worked with well over a hundred CBOs through its environmental justice, toxics reduction, urban greening, and energy efficiency programs. It is also extensively involved in resiliency planning in the city's DACs. It will leverage this network as it moves forward on the e-bike pilot project.

GRID Alternatives exclusively works to advance renewable energy solutions and clean mobility options for environmental economics justice communities. The Bay Area team collaborates with the Clean Cities Coalition and others on the Bay Area Air Quality Management District's "Clean Cars 4 All" and the California Air Resources Board's "Clean Vehicle Assistance Program" that provides access to EVs for underserved populations. GRID helps residents understand the availability and benefits of having an EV. SF Environment recently received over \$2M from the CEC to implement portions of the EV Blueprint, which includes developing a charging hub in Bayview Hunters Point. This hub will be vital to providing a charging infrastructure that serves participants in the e-bike project.

Finally, SF Environment has made a powerful commitment to racial equity and inclusion. It started the work in 2015 and since then, its commitment has only increased. It participates in the Government Alliance for Racial Equity, has formally adopted a racial equity plan, which includes:

- Increasing diversity of department equity workforce, particularly in leadership roles, through retention and hiring processes.
- Hiring of position(s) based on available approved city budget to lead department internal and external racial equity work.
- Advocating for additional resources and allocating funding to implement and support ongoing racial equity action plan work.
- Restructuring department-wide performance plans and incorporation of racial equity goals into all employee plans.

All proposed policies and programs are viewed through its Racial Equity Scan, which ensures that all stakeholders are included, assesses whether there will be burdens resulting from the policy or program, and creates solutions to these burdens. These racial equity tools will be used to assess all components of this project.

In addition, SF Environment led the effort to craft the city's most recent Climate Action Plan, which involved extensive community participation. The tool it created, the Racial and Social Equity Assessment Tool was used to review and improve equity outcomes of climate actions. It has been adopted by other municipalities. As actions are being implemented, there is continued engagement with all affected communities to follow through on the Plan's commitment to advancing equity.

As a member of the SF Environment team, the SFCCC participates in this work. It works with DOE to secure interns and focuses on ensuring that these interns come from those who are under-represented in STEM fields. The majority of SFCCC interns have been women.

3. Market Transformation Plan

A. Long – term impacts

This project will leave lasting, long-term impacts on how app-based deliveries are made in San Francisco and other cities. Project completion will alleviate the primary market barrier to E-bike for commercial applications—first cost. Ultimately, the project's data and Online Tool will make it easier and cheaper to select, own, and use E-bike for app-based deliveries in urban setting.

E-bikes' innovations and practicality are accelerating their recreational adoption across the world. As applied to urban deliveries, E-bikes bypass traffic jams, take shortcuts through streets closed to through traffic, and ride to the customers' doors. Yet, their potential for use in local, app-based deliveries remains unknown.

The project team will assess motivations and incentives for app-based delivery workers to shift from driving to riding e-bikes. It will uncover an entirely new market-sector for e-bikes, which can

improve worker satisfaction and earnings while reducing VMT, congestion, accidents GHG emissions and air pollution.

Data from the project can also help make the case to public agencies and utilities to include e-bikes in incentive programs such as California Clean Vehicle Rebate Program which will reduce first costs. The Online Tool will also help delivery workers quickly make decisions about e-bikes and take the next steps to using them.

B. Dissemination

Broad dissemination of learnings, valuable insights, best practices, and outcomes throughout the project period are important to enable other communities to replicate project successes. All project partners are connected to various stakeholders that will be interested in this project. SF Environment promotes the City's work to a broad audience of clean transportation professionals, utilities program administrators, the business community and other community stakeholders.

During the grant period, the SF CCC will disseminate project learnings, insights, best practices, and outcomes by incorporating these activities into its annual workplans. The SF CCC will collaborate with the project team to present the project and findings to app-based delivery companies, regional transportation commission, authorities, and agencies, the state's sustainable energy and transportation councils, state ride-hailing regulators, local utilities, and other governmental entities with mode-shift goals. The SFCCC will highlight how this type of project will advance and accelerate local climate action plans and transportation goals.

SF Environment is a formal member of the Urban Sustainability Directors Network, the C40, Carbon Neutral Cities Alliance, and a frequent collaborator with the International Council on Clean Transportation. It is a member of the Bay Area Electric Vehicle Council and the Business Council on Climate Change, whose members have historically been interested in innovative fleet operations. SF Environment will share with their members, researchers, and advisers.

C. Project Sustainability

To ensure long-term, market transforming impacts, the project team will rely on the SF CCC to:

- Continue to facilitate stakeholder engagement. Deploying e-bikes and the Online Tool in the real-world will require new business relationships among users, app-based delivery companies, and customers. Therefore, the project team will help build stakeholder relationships to accelerate the market and unite these stakeholders to advance and accelerate e-bike deployment.
- Provide technical assistance to stakeholders. After the grant funding period, the SF CCC will continue to provide its expertise on commercial e-bike applications, and guide future deployments.
- Conduct policy and regulatory analysis. As a department of the City and County of San Francisco, the project team can provide in-depth policy and regulatory analysis on clean mobility topics related to state fleet mandates, local e-bike incentives, and road-safety policies.
- Maintain and update the Online Tool. After the grant period, the SF CCC will assume the

maintenance and update of the Online Tool. The SFCCC will continue to collaborate with app-based delivery companies to refine the Online Tool and seek funding to sustain.

- Support workforce development. Through the SFCCC and in collaboration with community stakeholders, the SFCCC will identify workforce needs and develop appropriate curricula, workshops, guidelines, and online training tools.

Finally, once a financial case is made for using e-bikes for app-based deliveries, it will be easier for workers and their companies to provide financing and rebates,

4. Workplan (35% app 10.5 pages)

A. Project Objectives (in-depth description in SOPO)

The overarching goal of the project is shift app-based workers from driving to riding e-bikes. To achieve the goal, the project will empirically prove that e-bikes provide more financial and environmental benefits than using cars, vans, or trucks to make deliveries. The project will unlock the full capabilities of modern commercial e-bikes by comparing their performance with their counterparts in cars and provide a data-based solution to decarbonizing the transportation sector. With supporting data, the project team will develop the Online Tool for users to gather information on e-bikes and take the next steps to ride them.

Project Objectives are:

1. Quantify how e-bike operation improves efficiency and worker safety; increases workers earnings, reduces demand on the curb, reduces GHG emissions, VMT, and vehicle congestion.
2. Collect Data and Validate Performance: Each participant's vehicle metrics will be evaluated for their net GHG emissions reductions, including both the reduction in natural fossil fuels as well as the expected marginal GHG emissions increases associated with higher electricity consumption from charging the e-bikes.
3. Quantify how e-bike operation makes customers (those receiving deliveries) feel better about their choices and purchases.
4. Create an Online Tool to determine the value of e-bikes on earning and environmental benefits.
5. Develop a formal program to teach bike safety program specifically for app-based delivery workers This comprehensive course will be based the curriculum of the League of American Bicyclists, expanded to specifically review topics for commercial e-bike applications. Topics covered will include but not limited to rules of the road, biking in city traffic, handling intersections, avoiding collisions, balancing cargo for optimal weight distribution, operating in inclement weather, and efficient route planning to optimize battery range.
6. Document Benefits: The project team will assess both the GHG emissions reduction and business benefits associated with e-bikes as well as other non-business and non-environmental benefits.
7. Verify Benefits: The project team will pull together data to show that value streams

associated with using e-bikes for app-based deliveries and create a feasible pathway to recruit more uses and that the measured benefits can motivate new policies and incentives programs.

8. Scale the Project: The project team will facilitate and forge relationships with app-based companies and regional transportation agencies and help them to launch full-scale procurement and deployment.
9. Disseminate information to a wide audience: The project team will disseminate information about the project to a range of partners and stakeholders, including creating a model for delivery decarbonization initiatives, to be replicated by other cities.

B. Technical Scope Summary:

In the first Budget Period, the project team will use the existing implementation and administration infrastructure from the CEC grant to expand scope and scale. The scope will have phases: ramp-up, recruitment, deployment, data collection, analysis, Online Tool development and close-out.

The team will compare the performance metrics and resulting benefits between driving and riding e-bikes in the second budget period. The technical scope consists of performance evaluation by tracking and monitoring data from both treatment and comparison groups. Participants in both groups will have similar profiles and usage patterns to ensure high accuracy from the comparison.

The project team will manage the comparison trial over a period of twelve (12) months. Upon completion, the project team will compile and analyze the data. The project team will determine the advantages, benefits, and savings from e-bikes, as compared to driving. The resultants will be used to inform the algorithms of the Online Tool during the third Budget Period.

C. WBS and Task Description Summary: (In depth descriptions in the SOPO)

Tasks Include: 1) Participant confirming enrollment in both treatment and comparison groups, 2) measure & verify GHG emissions reductions in treatment group, 3) monitoring and measurement of performance metrics and conduct participant surveys, 4) determine savings; benefits, 5) develop and deploy the Online Tool, 6) Final Analysis and Report, and 7) Project dissemination

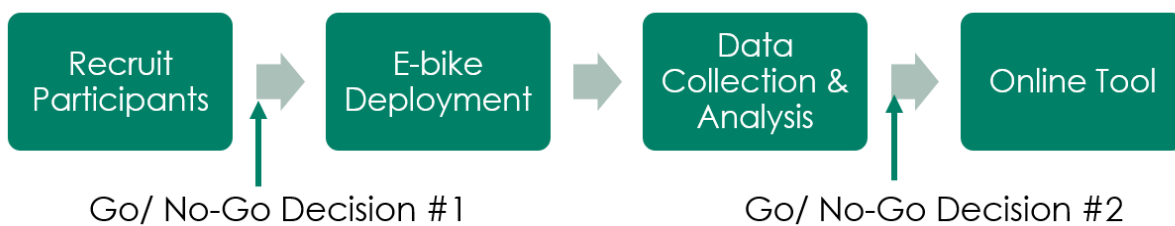
D. Milestones & Schedule:

Component	Activity Description	Milestone	Duration	Lead	Support
E-bikes for App-Based Delivery Workers	Use standard processes (issuing RFPs, etc) to secure entities to build the online resource tool, provide support for E-bike maintenance, and provide safety trainings	Contracts issued and signed	M-1-2	SFE	SFE Admin
	Refine Project Approach and implementation plan with key partners	Final Implementation Plan	M 1-3	SFE	GRID, Data-Collection, 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, Data-Collection, LAFCo
	Recruit e-bike riders and car drivers for monitoring	Outreach list from LAFCo study	M 4	SFE	Data-Collection, GRID, LAFCo, App-based Companies, CBO
	Provide Cohort #1 riders with e-bike safety training course	Training Completion	M4	SFE	Safety Training Partner
	Launch "Cohort #1 (50 participants) and begin the 12-month data collection period	Participant kick off meeting Safety Training	M 5	SFE	GRID, Data-Collection, LAFCo
	Launch Cohort #2 (50 participants) and begin the 12-month data collection period	Participant kick off meeting Safety Training	M8	SFE	GRID, Data-Collection, LAFCo
	Provide Cohort #2 riders with e-bike safety training course	Training Completion	M9	SFE	Safety Training Partner
	Administer participant surveys at 6- and 12-months milestones of each Cohort	Survey instruments	M 11-20	SFE	GRID, LAFCo
	Transfer e-bike titles of ownership to participants	Project completed	M 21	SFE	GRID
	Develop online E-bike benefits calculator <ul style="list-style-type: none"> • Prototype • Initial user interface testing Deployment	Major Deliverable	M 22-24	SFE	Software Partner, GRID, App-based Companies
	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 24-30	SFE	GRID, Data-Collection, LAFCo App-based Companies

Go/No-Go Decision Points: The project consists of three (3) budget periods (BP). In BP 1, the project team will conduct open solicitations to secure the project partners and recruit, train, and deploy both treatment and comparison pools, ensuring they are fully subscribed. The project's ability to fully recruit participants is the project's initial go-no-go decision.

BP 2 is also the performance evaluation period that quantifies the benefits of using e-bikes for app-based deliveries.

Based on the resultants, the project team will decide go-no-go on the development of the Online Tool in BP 3. If the data supports the hypothesis that e-bikes hold environmental and financial benefits over cars, the project team will develop the Online Tool to facilitate and effectuate future commercial e-bike deployments.



E. Project Management/Risk Management/Critical handoffs

SF Environment will facilitate the project launch and conduct regular teleconferences or in-person meetings. Documents will be shared on Google docs or equivalent software, and include all participants and contact information, project schedule, meeting agendas, notes from weekly phone calls/virtual meetings, as well as draft documents, budget and other program documents. Difficulties will be reported directly to the PI to be either resolved on the phone, or in a separate call with only those parties directly involved. The Principal Investigator (PI), Lowell Chu, has more than fifteen years of experience managing energy efficiency and clean transportation programs. He will be responsible for ensuring timely reporting, coordinating with team members, and managing communications. He will also manage risk and ensure a well-coordinated team of qualified and experienced people, appropriate milestones and regular communications.

The only potential risk would be if the e-bike riders unexpectedly leave the program. To mitigate the risk, the project team will keep in frequent communication with the e-bike participants. Additionally, to account for potential attrition, the team will collaborate with the app-based delivery companies to build a back-up pool of participants. SF Environment and GRID have cumulative experience with this type of project, so there will be procedures in place to mitigate this risk. While there is no critical hand-off between project team members, excellent communication is required to ensure all elements of the project work.

E. Technical, financial and project management practices:

The project will use standard Project Management and financial principles in all areas. Oversight by SF Environment includes tracking of the budget, tasks, and timelines, as well as receiving and paying invoices from subcontractors. Daily operations management by the SF Environment

including coordinating with stakeholders, managing project budget, tasks and timelines and reports for DOE review. Contract management by SF Environment including issuing contracts, receiving invoices, paying invoices, and submitting invoices to the DOE.

F. Project Changes/Quality Assurance:

Changes in budget, a timeline shifting more than a quarter (3 months), or a change in tasks or task assignments, will first be discussed with the project team to clarify the impact. The DOE project manager will be informed by email and/or telephone of the proposed change and the expected impacts. If agreed, the SF Environment will send an updated budget, timeline, or task description, depending on the change. Each member of the team has years of experience successfully delivering projects of similar magnitude and complexity.

5. Project Team and Qualifications

A. Unique Qualifications and Relevant, Previous Work Efforts

As the project lead, SF Environment and the SFCCC are well-positioned to validate the integration of e-bikes in commercial applications, facilitate the collection and analysis of vehicle data, and develop the Online Tool.

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. SF Environment has more than twenty years of experience creating and managing large scale energy and clean transportation programs and similar online tools to reduce the city's reliance on fossil fuels.

Since 2015, SF Environment has co-led 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 for all residents. As noted under the Justice 40 section, SF Environment has adopted a racial equity plan and tool to ensure equity and inclusion across all policies and programs.

SF 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. 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 crafting

dynamic plans to accelerate EV adoption and has facilitated a range of vehicle electrification projects.

While SF Environment has historically not received support from the city's general fund, over the years it has secured funding from the California Energy Commission, the Department of Energy, Bay Area Air Quality Management District, and other institutions. The following are just a few examples of previously funded and successful projects.

- In 2014, the DOE awarded SF Environment \$1.3M to create a plan for installing microgrids in San Francisco, identifying community locations, as well as barriers and opportunities.
- In 2014, SF Environment was awarded \$300,000 from the CEC to study challenges to EV adoption in multi-unit EV housing and outline solutions.
- In 2016, SF Environment was awarded \$250,000 from the DOE to craft a plan for rolling out a hydrogen fueling infrastructure in San Francisco.
- In 2018, CEC awarded SF Environment 200,000 to create an Electric Vehicle Blueprint that crafted a plan for light duty EVs in San Francisco, identifying challenges and opportunities.
- In 2018, the California Air Resources Board awarded SF Environment \$7M for the Zero Emission Farm to Table Program: Reducing Air Pollution Emissions/Health Risks from Trucking to demonstrate heavy-duty zero emission vehicle from California's Central Valley to the City.
- In 2021, the CEC awarded SF Environment \$200,000 to create a charging infrastructure map to support 10,000 medium- and heavy-duty zero emission vehicles by 2030.
- In 2022, the CEC awarded SF Environment \$2.4 million to implement select actions from the San Francisco Electric Vehicle Blueprint. This project has several components. It will increase public awareness of EVs, expand charging infrastructure, develop a charging depot in a DAC, create an EV Ombudsman position to provide educational support and streamline the permitting process, and accelerate transportation mode shift by getting delivery-app workers out of cars and onto e-bikes to make deliveries.

Principal Investigator, Lowell Chu. As the Energy Program Manager for the SF Environment, Chu has more than 16 years of experience managing energy efficiency, renewable energy, and clean transportation programs. In addition to managing direct programs, his responsibilities include advising the Mayor's Office and Board of Supervisors on clean transportation, Green Building, and Energy policy. He oversees the achievement of energy and clean transportation strategies for the city's most recent Climate Action Plan, released in late 2021. Chu is also responsible for ensuring that programs have financial and technical resources to achieve these goals. He is a Program Management Professional and has overseen the creation of the Citywide Electric Vehicle Roadmap (2019), San Francisco's Light-duty Electric Vehicle Blueprint (2019), adoption of an ordinance to require electric vehicle charging infrastructure in commercial garages and lots with more than 100 spaces (2020), Medium- and Heavy-duty Blueprint (2020), and the expansion of the Planning Code to include EV and fleet charging as primary uses (2022).

SFCCC Director-Nicole Appenzeller. Nicole Appenzeller is a Sr Clean Transportation Specialist at SF Environment and the San Francisco Clean Cities Coalition Director. She has over a decade

of experience managing, designing, and implementing statewide and local clean transportation projects. Currently, she's leading the development of the city's charging infrastructure plan to support the transition to medium- and heavy-duty zero emission vehicles. She has a Bachelor of Science in Conservation and Resource Studies from University of California, Berkeley.

GRID Alternatives (GRID). GRID is the national leader in making renewable energy technologies accessible to low-income families and communities of color. GRID 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 has an established track record of providing clean mobility program and case management support for local income-qualified households. For example, in 2018 GRID 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's 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's 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.

The Local Agency Formation Commission (LAFCo). LAFCo was launched in 2000 to conduct special studies regarding municipal services. Since then, it has created key reports on the governance structure, risk assessment and implementation of the city's community choice aggregation program, CleanPowerSF. It assessed how a local buildout of renewable energy projects would create green jobs.

From 2019 to 2020, 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 U.S, 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.

Other Partners. Other project-partners that remain to be named. They are for service areas such as vehicle telemetry company, San Francisco E-bike shop, San Francisco bicycle safety training provider, and an online application developer. If awarded, SF Environment will conduct public solicitations to identify these partners. The selection criteria will require experience with similar projects of scope and scale and familiarity with the requested service areas. As SF Environment, through SF CCC, is already implementing a similar project with CEC funding, it is likely that the same partners will emerge as named partners to this project.

B. Time Commitment, Roles and Project Management

Staff in each organization have been identified to perform the tasks as outlined in the budget

justification and attached resume file. As noted, Lowell Chu will manage the project. He has long-term relationships with all stakeholders and project partners.

C. Agreements between Applicant and Key Participants

See Letters of Commitment. SF Environment currently has a contract with GRID that was entered into using standard municipal processes for securing project partners, which was approved by the San Francisco Board of Supervisors. SF Environment also has long term formal relationships with the LAFCo, as well as the other partners and parties to be named later.

Statement of Project Objectives

Decarbonizing App-based Deliveries in San Francisco

A. OBJECTIVES

Project goals are to 1) demonstrate and quantify the financial and environmental benefits of using electric e-bikes for app-based deliveries in San Francisco; 2) use the data to develop an online resource to inform their decisions and take immediate action

Challenges to mass e-bike commercial application are cost and information failure – where individuals lack information to make purchasing decisions. Currently, commercial-grade e-bikes are just too expensive for many app-based delivery workers. Beyond high first cost, there isn't a one-stop resource for interested delivery workers to gather information to determine if e-bikes are appropriate for their work. Existing pricing and information gaps are preventing growth in commercial e-bike deployment.

To achieve the goals, the Project objectives are:

1. Quantification Analysis: Quantify how e-bike operation improves efficiency, earnings per delivery, worker safety, and satisfaction; reduces demand on the curb spaces, reduces GHG emissions, vehicle miles traveled, and vehicle congestion.
2. Qualification Analysis: Quantify how e-bike operation improves customers (those receiving deliveries) sentiment about their choices and purchases.
3. Collect Data and Validate Performance: Each participant's vehicle performance metric will be evaluated for their net GHG emissions reductions, including both the reduction in natural fossil fuels as well as the expected marginal GHG emissions increases associated with higher electricity consumption from charging the e-bikes.
4. Create an Online Tool to determine the value of e-bikes on earning and environmental benefits. The Project Team will create an Online Tool that serves as a basis for determining the value of e-bikes as used for app-based deliveries.
5. Document Benefits: The Project Team will assess both the GHG emissions reduction and business benefits associated with e-bikes as well as other non-business and non-environmental benefits.
6. Verify Benefits: The Project Team will pull together data to show that value streams associated with using e-bikes for app-based deliveries; create a feasible pathway to recruit more uses and that the measured benefits can motivate new policies and incentives programs.
7. Help Scale the Project: The Project Team will facilitate and forge relationships with app-based companies and regional transportation agencies to help them to launch full-scale procurement and deployment.
8. Disseminate information to a wide audience: The Project Team will disseminate information about the project to a range of partners and stakeholders, including creating a model building decarbonization and grid-interactivity initiatives, to be replicated by other cities.

B. SCOPE OF WORK

This Project directly supports this FOA's goal of "seeking innovative solutions to drastically reduced GHG emissions in support of Biden-Harris Administration goals." Specifically, the Project will provide empirical evidence that the use of commercially rated, cargo e-bikes to make deliveries are more advantageous than driving. Analysis from the data will show that app-based delivery workers and delivery companies generate more earnings using e-bikes, which will compel local and regional app-based workers to try e-bikes, and their companies to create incentives to use them.

This Project will use a comparison group to approximate how the e-bike group would have fared without e-bikes. The Project Team will collaborate with app-based delivery company to identify features and profiles for the randomized trial. The pilot will consist of 100 participants receiving cargo e-bikes and a data app on their smartphones, and 100 participants receiving only data app and using their cars, vans, or trucks to delivery. The Project will maintain a wait list to backfill for participants that unexpectedly drops.

Once the participant groups are filled, the project team will create two (2) cohorts. Cohort #1 has fifty (50) e-bike riders and fifty (50) drivers. Like cohort #1, cohort #2 will also have fifty (50) e-bikes and fifty (50) drivers. To ease implementation, cohort start dates will be staggered by three (3) months. The team will conduct an initial survey of e-bike riders to form a baseline of initial attitude and level of confidence with using e-bikes. It will conduct follow-up surveys at mid- and endpoints. Project partners will provide each e-bike rider with up to four (4) hours of classroom and on-road training.

For both riders and drivers, the team will install a vehicle telemetry application (Telemetry App) on their smartphone devices. The app will launch simultaneously with the delivery app and will track vehicle data and generate insights for both users and the overall project. At a glance, app users will see net and gross earnings per active hour, earnings per delivery, mileage and expenses, and expense per mile in real time. The team will see user metrics plus vehicle specific metrics such as VMT, average speed, locational routes, idle and active times, and accelerate and deceleration rates.

Quarterly, the team will verify the data and conduct granular quantitative analysis. The results provide a direct line to the delivery workers who generated the data. It will identify and segment e-bike delivery patterns between high and low earnings per delivery. The team will use them to communicate directly with riders and drivers to understand the motivations and behaviors behind those patterns to sustain high earnings per e-bike delivery and to also boost, trouble-shoot low earnings. After data collection period ends, the team will determine how the e-bike group would have fared without e-bikes to quantify e-bike advantages.

Using the analysis results, the team will develop an online resource to serve app-based delivery workers. This resource will have two (2) components: interactive e-bike benefits calculator and an e-bike selector based on user inputs. The benefits calculator will compare riding vs. driving and show estimated monetary increases from using e-bikes. It will also present the estimated environmental benefit of GHG emissions reductions. The e-bike selector will streamline delivery

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workers' purchasing decision based on their delivery needs. It will show the user the ideal e-bike specifications, pricing, available incentives and rebates, and links to scheduling test rides at a local retailer. The team will conduct functionality and user experience tests prior to launching the tool.

Overall, the project will be implemented in three consecutive years:

Budget Period 1: Technology Deployment: ramp-up, recruitment, training, develop comparison group, deployment

Budget Period 2: Data Collection and Analysis: tracking and monitoring; analysis; findings and recommendations

Budget Period 3: Online Resource Development and Deployment: develop, test and deploy; broad dissemination

C. TASKS TO BE PERFORMED

The following tasks will be conducted

All Budget Periods**Overall Project Management and Planning**

The Recipient will perform project management activities to include project planning and control, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall objectives of the project.

Task 0.0 – Project Management and Planning:

The Recipient shall develop and maintain the Project Management Plan (PMP). The content, organization, and requirements for revision of the PMP are identified in the Federal Assistance Reporting Checklist and Instructions. The Recipient shall manage and implement the project in accordance with the PMP.

Task 0.1- Kick-Off Meeting:

The Recipient will participate in a project kickoff meeting with the DOE within 30 days of project initiation.

Budget Period 1: Technology Deployment**Task 1.1 – Project Launch**

Subtask 1.1.2 – The recipient will conduct Project initiation meeting.

Subtask 1.1.1 – The recipient will refine the Project approach; develop the implementation and data collection plans.

Subtask 1.1.3 – Procure e-bikes, accessories, safety equipment, and insurance policies.

Subtask 1.1.4 – Secure services for bike safety training and telemetry development.

Task 1.2 – Recruit and Train Project Participants

Subtask 1.2.1 – The recipient will recruit app-based delivery riders to use e-bikes for local deliveries and consent to vehicle data tracking and sharing.

Subtask 1.2.2 – The recipient will recruit app-based delivery drivers to consent to vehicle data tracking and sharing.

Subtask 1.2.3 – The recipient will provide up to four (4) hours of safety and performance training to all e-bike riding, app-based delivery workers.

Task 1.3 – Survey Initial Qualitative Attributes and Attitudes

Subtask 1.3.1 – The recipient will conduct an initial survey of all the e-bike riders before each cohort launch to baseline initial attitude, confidence, and other qualitative attributes.

Task 1.4 – Launch Cohort #1

Subtask 1.4.1 – The recipient will form cohort #1 with fifty (50) e-bike riders and fifty (50) drivers.

Subtask 1.4.2 – The recipient will enable Telemetry App on participants' smartphone devices.

Subtask 1.4.3 – The recipient will continuously verify data streams quality.

Task 1.5 – Launch Cohort #2

Subtask 1.5.1 – The recipient will compile cohort #2 consisting of fifty (50) e-bike riders and fifty (50) drivers.

Subtask 1.5.2 – The recipient will enable Telemetry App on participants' smartphone devices.

Subtask 1.5.3 – The recipient will continuously verify data streams quality.

Milestone	Type	Description
Technology Deployment Complete	Technical	The deployment of e-bikes and Telemetry App have been completed and data ready for comparison and analysis
Recruit and Train E-bike Riders	Technical	RecI havst to backfill.
Launch Cohort #1	Technical	Deploy 50 e-bike riders and 50 drivers with telemetry application.
Launch Cohort #2	Technical	Deploy 50 e-bike riders and 50 drivers with telemetry application.
Successful Deployment to Collect Data for Comparison Analysis	Go/No Go	Development of e-bike rider and driver groups have been completed; established a statistically sound comparison group; verifying that data streams are active

Continuation: The recipient is **NOT** authorized to initiate any scope in the next budget period without the DOE Contracting Officer's prior written approval in accordance with the award terms and conditions.

Budget Period 2: Data Collection and Analysis

Task 2.1 – Conduct Quantitative Data Analysis

Subtask 2.1.1 – The recipient will conduct a quantitative analysis using comparison group approach to determine the resulting benefits for using e-bikes to complete app-based deliveries.

Task 2.2 – Conduct Qualitative Surveys

Subtask 2.2.1 – The recipient will administer surveys with e-bike riders to evaluate if their attitudes and confidence have improved since cohort launches.

Milestone	Type	Description
Conduct Quantitative Data Analysis	Technical	Quantify e-bike benefits using comparison group analysis
Conduct Qualitative Analysis	Technical	Conduct user surveys to determine if e-bike riders' attitude, confidence have improved since cohort launches
Determine Findings and Results	Technical	Determine if Project outcomes have been met
Develop the Online Resource?	Go/No Go	Evaluate Project outcomes to validate the development of the Online Resource Tool

Continuation: The recipient is **NOT** authorized to initiate any scope in the next budget period without the DOE Contracting Officer's prior written approval in accordance with the award terms and conditions.

Budget Period 3: Online Tool Development and Deployment

Task 3.1 – Develop the Online Resource

Subtask 3.1.1 – The recipient will develop the Online Resource and conduct testing to refine user experience and maximize effectiveness in building e-bike interests among app-based delivery workers.

Task 3.2 – Deploy and Track Usage

Subtask 3.2.1 – Deploy the Online Resource, track usage rates, and refine to increase traffic to the site.

Milestone	Type	Description
Develop the Online Resource	Technical	Develop the interactive Online Tool to spur e-bike deployment among app-based delivery workers.

Deploy and Track Usage	Technical	Deploy the Online Resource and conduct traffic analysis.
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D. DELIVERABLES

In addition to the reports specified in the "Federal Assistance Reporting Checklist", the Recipient will provide the following to the DOE Project Officer (identified in Block 15 of the Assistance Agreement as the Program Manager):

- Summary of accomplishments and project work report will be prepared for inclusion in the Vehicle Technologies Office annual programmatic progress report. Report will be due by October 31 of each year.
- Project Implementation Plan
- Comparison Group Methodology Summary
- Data Collection and Analysis Plan
- Documentation of Meetings (agenda, notes, attendees, presentations, and etc.)
- Participant (riders and drivers) and Customer Surveys
- Online E-bike Tool for App-based Delivery Workers
- Final Project Report
- Dissemination Plan

E. BRIEFINGS AND TECHNICAL PRESENTATIONS

- A technical presentation at the Vehicle Technologies Annual Merit Review Meeting held in Washington, DC.
- Detailed project status update briefings at Washington, DC or via communication/conferencing media approximately twice per year. Briefings will explain the plans, progress, and results of the technical effort.
- Technical paper(s) and presentations as appropriate at technical society meetings, or at technical exchange meetings.
- Presentations to SF EV Working Group, SF Commission on the Environment, and the SF Board of Supervisors.
- Presentations at regional and federal Clean Cities Coalition convenings and in SFCCC newsletter
- Presentations to the networking organizations such Urban Sustainability Directors Network and the Pacific Coast Collaborative.

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Achieving equity and justice in transportation electrification will require a long-term commitment, ample resources, and the adoption of models outside of traditional norms. A model of transportation equity that includes justice will be focused on the root causes of inequities and understanding how power creates injustice. This model is committed to redistributing power and ensuring that disadvantaged and marginalized community members are given tools and opportunities to make informed decisions about their transportation options and have access resources. Transportation equity that is committed to justice applies a systems framework analysis and stakeholder engagement techniques to understand how inequities came to exist, and how to ensure that future programs and policies do not repeat past harms

- 1) The project team will secure a local bike shop for E-bike repairs that specifically provides workforce development opportunities for underserved populations.
- 2) This project will recruit participants from disadvantaged communities and will remove upfront costs for e-bike adoption for participants, support in asset building and increased earnings due to lower operational costs of an e-bike.
- 3) This e-bike project will hire two additional staff, as well as the SFCCC intern supporting the project. SF Environment is committed to ensuring a diverse workforce, particularly from populations that are under-represented in STEM and will make every effort to ensure this happens for this project. SF Environment has formally adopted a Racial Equity Plan¹ that guides hiring decisions. It includes:
 - Increasing diversity of department equity workforce, particularly in leadership roles, through retention and hiring processes.
 - Hiring of position(s) based on available approved city budget to lead department internal and external racial equity work.
 - Advocating for additional resources and allocating funding to implement and support ongoing racial equity action plan work.
 - Restructuring department-wide performance plans and incorporation of racial equity goals into all employee plans.

Community Benefits

Studies and surveys of app-based delivery workers reveals that workers face economic insecurity at high rates, often have high overhead costs with having to provide their own vehicle, gas, and car maintenance, and at times end of up with less than minimum wage. Independent contractors like app-based delivery workers don't get the same workplace benefits as employees, such as overtime pay, sick leave, and health and safety protections. Low-wage workers may also be

¹ https://sfenvironment.org/sites/default/files/fliers/files/env_racial_equity_plan_v1_123020.pdf

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relying on older, more polluting vehicles to make deliveries, adding to the environmental impact of their work.

This project will recruit participants from disadvantaged communities and will remove upfront costs for e-bike adoption for participants, support in asset building and increased earnings due to lower operational costs of an e-bike. App-based delivery workers that were once profoundly impacted by the expense of car repairs and other costs of owning and operating a single-occupancy vehicle, will experience in real time the impacts of e-bikes. 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.

Partnerships

The Project Team is well positioned to engage with Communities of Concern. For over 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 now been designated by CalEnviroScreen 4.0 as disadvantaged communities (DAC). As a trusted institution in these neighborhoods, SF Environment has robust relationships and has worked with well over a hundred CBOs through its environmental justice, toxics reduction, urban greening, and energy efficiency programs. It is also extensively involved in resiliency planning in the city's DACs. It will leverage this network as it moves forward on the e-bike pilot project.

GRID Alternatives exclusively works to advance renewable energy solutions and clean mobility options for environmental economics justice communities. The Bay Area team collaborates with the Clean Cities Coalition and others on the Bay Area Air Quality Management District's "Clean Cars 4 All" and the California Air Resources Board's "Clean Vehicle Assistance Program" that provides access to EVs for underserved populations. GRID helps residents understand the availability and benefits of having an EV. SF Environment recently received over \$2M from the CEC to implement portions of the EV Blueprint, which includes developing a charging hub in Bayview Hunters Point. This hub will be vital to providing a charging infrastructure that serves participants in the e-bike project.

Leveraging Existing Plans

The San Francisco Commission on the Environment passed a resolution codifying its commitment to racial equity.² In addition to being guided by this resolution and SF Environment's Racial Equity Plan, the team will also use its Racial Equity Scan. All proposed policies and programs are viewed through this tool, which ensures that all stakeholders are included, assesses whether there will

² <https://sfenvironment.org/policy/resolution-affirming-the-commissions-commitment-to-racial-equity-in-the-department-of-the-environments-programs-policies-and-services>

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burdens resulting from the policy or program, and creates solutions to these burdens. These racial equity tools will be used to assess all components of this project.

In addition, SF Environment led the effort to craft the city’s most recent Climate Action Plan, which involved extensive community participation. The tool it created, the Racial and Social Equity Assessment Tool was used to review and improve equity outcomes of climate actions. It has been adopted by other municipalities. As actions are being implemented, there is continued engagement with all affected communities to follow through on the Plan's commitment to advancing equity.

Racial Equity Scan for SF Environment Programs and Policies

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.

NOTE: This is a template so please download a copy for your own use.

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)	Staff time: Materials: Publicity: Grants/Contracts: Outreach: Other:
STEP 1 - Desired Results/Outcomes	
What is the desired outcome of this initiative? Think about impact.	
STEP 2 - Benefits and Burdens Analysis	

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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)	
What data do you still <i>need</i> to understand who benefits and who is burdened?	
Who receives the benefits? (Also consider who might benefit financially)	
What are barriers to accessing the benefits?	
Who is/could be burdened?	
What are/could be the unintended consequences?	
STEP 3 – Stakeholder Power Analysis	
Who are the stakeholders impacted by this initiative? (check all that apply)	<ul style="list-style-type: none"> <input type="radio"/> Communities of color <input type="radio"/> Low-income populations <input type="radio"/> Unhoused populations <input type="radio"/> Limited English Proficient communities <input type="radio"/> Community based organizations and groups <input type="radio"/> Interest based organizations and groups <input type="radio"/> Churches and faith-based groups <input type="radio"/> Neighborhood coalitions or associations <input type="radio"/> Neighborhood groups <input type="radio"/> Property Owners <input type="radio"/> Renters <input type="radio"/> Businesses <input type="radio"/> Business organizations (associations, chambers of commerce, business districts) <input type="radio"/> Employees (unions, non-unionized) <input type="radio"/> Institutions (education, health, correctional) <input type="radio"/> Local government officials and advisory bodies <input type="radio"/> Local government departments <input type="radio"/> Tribal sovereign nations <input type="radio"/> Other public agencies

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	<input type="radio"/> Other stakeholders _____
Who is involved in major decisions? Do certain stakeholder groups carry more influence/access than others in your initiative? Why?	
Where does this initiative lie on the spectrum on community engagement? (see community engagement table at end)	
Was community engagement conducted when the initiative was started? Why or why not?	
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?	

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STEP 5 – Racial Equity Implementation Plan

How can we implement these strategies?	
What resources might be needed?	
What additional data or community engagement is necessary?	

Page Break

STEP 6 – Racial Equity Communications & Accountability

How would you evaluate and report back on progress towards meeting desired outcomes?	
Is there a way to receive and incorporate feedback about the program?	

STEP 7 – Changes Implemented (REQUIRED)

The following changes were implemented as a result of applying this RE Scan Tool.	
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Spectrum of Community Engagement to Ownership

Stance towards community	0 IGNORE	1 INFORM	2 CONSULT	3 INVOLVE	4 COLLABORATE	5 DEFER TO
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

Resumes
SF Environment Department
Proposal to Department of Energy FOA-0002611
Decarbonizing App-based, Last-mile Deliveries in San Francisco

<i>Team Member Name and Title</i>	<i>Organization</i>	<i>Role/Responsibility</i>
Lowell Chu, Energy Program Manager	SF Environment	Project Manager/Principal Investigator. Responsible for project administration including: managing contractors; ensuring administrative needs are met; coordinating and convening all project partners; reviewing all work products, reports, and invoices; supporting project dissemination; supervising 5642 Senior Environmental Specialist.
TBD 5642-Senior Environmental Specialist	SF Environment/SFCCC	Responsible for day-to-day implementation including: being single point of contact for all project partners; tracking project progress and refining implementation; Task Lead for Tasks 1,2 and 3; lead for project dissemination; supervising 5640 Environmental Specialist and contractors.
Nicole Appenzeller, Environmental Specialist-EVs, Acting SFCCC Director	SF Environment/SFCCC	Responsible for day-to-day program implementation of select sub-tasks, managing SFCCC intern and workplan, and supporting project dissemination.
Zach Franklin, Chief Strategy Officer	GRID Alternatives, Inc.	Ensure project's long-term scalability and leverage other GRID EV initiatives into the project.
Linda Kamoushian, Director of Shared Mobility	GRID Alternatives, Inc.	Develop and lead GRID's e-bike strategy, coordinate with other team members, and support project dissemination.

Lowell Chu

Interim Energy Program Manager



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

CREDENTIALS

Years of Experience: 16

Certifications/Licenses:

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

Education:

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

EXPERIENCE

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

- Manage administration, implementation, and budget for SF Environment's energy efficiency and electric vehicle programs. Advise on city policies for energy efficiency and electric vehicle programs. Create innovate programs and secure resources for implementation.

SF Environment Department / Senior Energy Specialist, 2010-2019

Managed Bay Area Regional Energy Network Program (BayREN) 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 energy efficiency proceedings representing City and County of San Francisco

SF Environment Department / 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

(805)795-0733

Nicole Appenzeller

ndappenzeller@gmail.com

Effective manager with expertise in electric vehicle and clean energy markets and programs. Creative problem solver and analytical thinker; excellent ability to operationalize strategic vision.

Experience:

Awards: Center for Sustainable Energy Mission Award for Exceptional Project Management for External Client Project

San Francisco Environment Department (SF Environment), San Francisco, CA

Energy Specialist, 03/2021-present

- *Serve as Acting San Francisco Clean Cities Coalition Director and execute all deliverables on time and within budget.*
- *Manage Clean Cities intern recruitment, hiring, and oversight, including training, task assignment and monitoring, and mentorship.*
- Collaborate with SF Environment staff, interdepartmental stakeholders, and external partners to implement the San Francisco Electric Vehicle (EV) Roadmap, Climate Action Plan, and State transportation electrification objectives across residential, commercial, and municipal sectors.
- Manage the development of the City's Medium and Heavy-Duty Zero Emission Vehicle Blueprint.
- Perform day-to-day project management in key EV initiatives such as charging network expansion, charging station permit streamlining, medium-and heavy-duty electric truck planning, commercial garage ordinance compliance, and incoming grants.

Center for Sustainable Energy, Oakland, CA

Project Manager, Electric Vehicle Infrastructure, 06/2015-03/2021

Transportation Program Associate, 05/2014- 06/2015

Transportation Program Assistant, 01/2013-05/2014

Event Lead, 10/2012-01/2013

- Designed, implemented, and grew three statewide electric vehicle and infrastructure incentive programs totaling over \$250M; most recently managed the California Electric Vehicle Infrastructure Project (CALeVIP).
- Moved cross-country to establish a new regional office in Boston, MA for the organization; represented company in regional meetings, developed and maintained new stakeholder relationships, and co-led recruitment.
- Prepared and presented monthly KPI progress reports and quarterly project plans to key stakeholders.
- Managed 16 strategic partnerships by scheduling regular meetings, sending invoices and progress reports, and answering questions and data requests.
- Analyzed performance measures and identified opportunities for program improvement.
- Worked cross-functionally with 14 team members across operations, equity, marketing, platform development, and transparency and evaluation teams to execute project deliverables.
- Built strong partnerships with EV charging market stakeholders including utility representatives, EV service providers, government agency representatives, project partners, and others.
- Supported development of program budget; monitored program expenses to ensure budget performance.

U.S. Green Chamber of Commerce, San Diego, CA

Environmental Intern, 06/2012-09/2012

Created and planned events centered around green business, participated in committee meetings, wrote blogs and social media posts on environmental themes.

Sungevity, Berkeley, CA

Remote Solar Designer, Summer 2011

Worked in a team environment to create residential installations tailored to the customer's needs. Quickly and effectively learned software application as evidenced by designing photovoltaic solar installations after two weeks on the job.

Education:

University of California, Berkeley

Bachelor of Science, Conservation and Resource Studies

Area of Interest: Political Ecology

Awards: California Alumni Association Leadership Award

Professional Development:

Lean Six Sigma Green Belt

GoLeanSixSigma.com, Completed 11/2020

Clean Energy Fellowship

Clean Energy Leadership Institute, Completed 08/2020

Skills:

- Stakeholder Engagement
- Salesforce
- Project Development
- Communication
- MS Office
- Detail-oriented
- EV Charging Technologies
- Budgeting
- Process Improvement
- Scheduling



zfranklin@gridalternatives.org
Phone: (510) 731-1315

Zach Franklin
Chief Strategy Officer

Education **Local Initiatives Support Corporation, Bay Area Office**

Housing Development Training Institute, June 2004-April 2005

- Year-long Comprehensive Training in Affordable Housing Development and Finance

Brown University, Providence, RI

Bachelor of Arts Degree - Economics and History, Received May 1997

Professional **Chief Strategy Officer, GRID Alternatives**
Experience

09/2016 - Present

- Lead long-term strategy development for rapidly growing, emerging national nonprofit organization
- Develop and implement strategic business plan for GRID Alternatives' involvement in the electric vehicle space
- Build out GRID Alternatives' Clean Mobility department, including supervising the CARB One-Stop-Shop Pilot Project, GRID's participation in the Clean Mobility Options for Disadvantaged Communities voucher program, and GRID's statewide low-income electric vehicle supply equipment (EVSE) programming
- Lead GRID Alternatives' participation in a major 3-year research project, "Unlocking Widespread Solar Adoption", in partnership with National Renewable Energy Laboratory under the Department of Energy's SEEDS II program

Vice President of Development and Communications, GRID Alternatives

01/2006 – 09/2016

- Responsible for all aspects of fund development and communications organization-wide
- Helped grow organization from a small Bay Area startup to a significant national nonprofit with 200+ employees and offices throughout the US and Nicaragua, including expanding organizational revenue from \$150,000 to \$42 million
- Directly supervised team of 18 national staff covering development, communications and special events, while coordinating related activities of staff at local GRID Alternatives offices

- Developed a nationally-recognized corporate partnerships program generating over \$7 million in cash and in-kind donations annually for low-income solar projects across the country
- Led national brand-building efforts and thought leadership communications campaigns around the need for national low-income solar policies, and bringing more women and people of color into the solar industry

Independent Grant Writing Consultant, Greater Richmond Interfaith Program

08/2005 – 02/2007

- Responsible for researching and preparing grants to help raise operating support for a new homeless shelter and services facility
- Raised nearly \$500,000 with an 80% success rate on competitive applications
- Provide related services such as updating their website with fundraising and PR materials

Project Manager/Technology Manager, Oakland Community Housing Inc.

10/2000 – 07/2005

- Responsible for development of affordable rental and homeownership projects, including site acquisition, finance, and project management during construction
 - Prepared over \$1 million in successful public and private grant applications.
 - Responsible for all aspects of information technology systems. Planned and implemented Community Technology programs at affordable rental properties throughout the East Bay.
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lkhamoushian@gridalternatives.org

(916) 620-9807

Linda Khamoushian

Director, Shared Mobility

<p>Professional Experience</p>	<p>Director of Shared Mobility, GRID Alternatives</p> <ul style="list-style-type: none"> • Develop and lead GRID e-bike strategy and coordinate closely with affiliate offices to develop and launch programs • 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 <p>Policy Director, California Bicycle Coalition Nov 2019 – April 2020</p> <ul style="list-style-type: none"> • 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 <p>Senior Policy Advocate, California Bicycle Coalition Oct 2017 – Nov 2019</p> <ul style="list-style-type: none"> • 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
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	<ul style="list-style-type: none"> • 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 <p>Planners4Health Project Manager, American Planning Association – CA Chapter Jan 2017 – Dec 2017</p> <ul style="list-style-type: none"> • Established California Planners4Health network and organized core committee of experts to support effective implementation of project deliverables • Coordinated and provided fiscal sponsorship for two trainings of planners and public health professionals to discuss and understand health equity including the Design 4 Active Sacramento’s 2nd Regional Convening • Facilitated the development of a strategic plan for integrating public health at all of the local APA sections <p>Research and Planning Consultant, Freelance Los Angeles, CA Aug 2014 – Oct 2016</p> <ul style="list-style-type: none"> • Contracting with public and private university research centers, community-based organizations, and the private sector to conduct data collection through fieldwork, interviews, focus group facilitation, survey design and administration; data management; qualitative and quantitative analysis; reporting and evaluation; Areas of research include but not limited to: built environment design and public health; improving public transportation commuting strategie. <p>Safe Routes to School Plan Technical Advisory Committee Member, City of Cudahy, California July 2014 – Jan 2015</p> <ul style="list-style-type: none"> • Participated in TAC meetings facilitated by the Los Angeles County Dept. of Public Health PLACE Program; performed detailed review of the draft SRTS plan in order to ensure feasibility and soundness of recommendations; provided detailed written and verbal feedback to city staff and was complimented for highlighting critical areas that needed improvement and concerns that needed careful consideration
<p>Education</p>	<p>UNIVERSITY OF CALIFORNIA, LOS ANGELES Master of Urban and Regional Planning, 2014 Relevant Courses: Transportation & the Environment, Built Environment & Health, Environmental Law Capstone Project: “Taking a Step Beyond: Elevating Public Health Through the General Plan.”</p> <p>UNIVERSITY OF CALIFORNIA, BERKELEY Bachelor of Arts in Political Economy in Industrial Societies, 2010 <i>Minor: Public Policy</i></p>

Instructions and Summary

Award Number: _____
Award Recipient: _____

Date of Submission: _____
Form submitted by: SF Environment
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through j. must include both Federal (DOE) and Non-Federal (cost share) portions
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than three budget periods, consult your DOE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary						
		Federal	Cost Share	Total Costs	Cost Share %	Proposed Budget Period Dates
Budget Period 1		\$455,109	\$287,167	\$742,276	38.69%	Example!!! 01/01/2014 - 12/31/2014
Budget Period 2		\$3,244	\$287,167	\$290,411	98.88%	
Budget Period 3		\$147,267	\$35,000	\$182,267	19.20%	
Total		\$605,620	\$609,334	\$1,214,954	50.15%	
Section B - Budget Categories						
CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Total Costs	% of Project	Comments (as needed)
a. Personnel	\$105,912	\$88,561	\$52,436	\$246,909	20.32%	
b. Fringe Benefits	\$40,243	\$33,409	\$19,831	\$93,483	7.69%	
c. Travel	\$0	\$0	\$0	\$0	0.00%	
d. Equipment	\$245,700	\$0	\$0	\$245,700	20.22%	
e. Supplies	\$0	\$0	\$0	\$0	0.00%	
f. Contractual						
Sub-recipient	\$245,421	\$168,441	\$110,000	\$523,862	43.12%	
Vendor	\$0	\$0	\$0	\$0	0.00%	
FFRDC	\$0	\$0	\$0	\$0	0.00%	
Total Contractual	\$245,421	\$168,441	\$110,000	\$523,862	43.12%	
g. Construction	\$0	\$0	\$0	\$0	0.00%	
h. Other Direct Costs	\$105,000	\$0	\$0	\$105,000	8.64%	
Total Direct Costs	\$742,276	\$290,411	\$182,267	\$1,214,954	100.00%	
i. Indirect Charges	\$0	\$0	\$0	\$0	0.00%	
Total Costs	\$742,276	\$290,411	\$182,267	\$1,214,954	100.00%	

Additional Explanation (as needed):

a. Personnel

INSTRUCTIONS - PLEASE READ!!!

- List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
- All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
- If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
- If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
- Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 3			
1	Sr. Engineer (EXAMPLE!!!)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary
2	Technicians (2)	4000	\$20.00	\$80,000	0	\$0.00	\$0	0	\$0.00	\$0	4000	\$80,000	Actual Salary
1,2,3	Principal Environment Specialist	200	\$108.13	\$21,626	100	\$112.59	\$11,259	60	\$115.96	\$6,958	360	\$39,843	Actual Salary
1,2,3	Senior Environmental Specialist	300	\$87.97	\$26,391	300	\$91.60	\$27,480	110	\$94.35	\$10,379	710	\$64,250	Actual Salary
1,2,3	Environment Specialist	700	\$75.60	\$52,920	600	\$78.72	\$47,232	400	\$81.08	\$32,432	1700	\$132,584	Actual Salary
1,2,3	Senior Accounting Clerk	80	\$62.19	\$4,975	40	\$64.76	\$2,590	40	\$66.70	\$2,668	160	\$10,234	Actual Salary
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
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				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0	0	\$0	
Total Personnel Costs		1280		\$105,912	1040		\$88,561	610		\$52,436	0	\$246,909	

Additional Explanation (as needed):

b. Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170,000	20%	\$34,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$38,000
Principal Environment Specialist	\$21,626.00	35.0%	\$7,569	\$11,259.00	35.0%	\$3,941	\$6,957.60	35.0%	\$2,435	\$13,945
Senior Environmental Specialist	\$26,391.00	37.0%	\$9,765	\$27,480.00	37.0%	\$10,168	\$10,378.50	37.0%	\$3,840	\$23,772
Environment Specialist	\$52,920.00	40.0%	\$21,168	\$47,232.00	39.0%	\$18,420	\$32,432.00	39.0%	\$12,648	\$52,237
Senior Accounting Clerk	\$4,975.20	35.0%	\$1,741	\$2,590.40	34.0%	\$881	\$2,668.00	34.0%	\$907	\$3,529
			\$0			\$0			\$0	\$0
Total:	\$105,912		\$40,243	\$88,561		\$33,409	\$52,436		\$19,831	\$93,483

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification.

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of day of departure and day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
										\$0	
	Budget Period 1 Total									\$0	
	Domestic Travel	Budget Period 2									
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
										\$0	
	Budget Period 2 Total									\$0	
	Domestic Travel	Budget Period 3									
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
										\$0	
	Budget Period 3 Total									\$0	
	PROJECT TOTAL									\$0	

Additional Explanation (as needed):

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
2	Cargo E-Bikes with Panniers and Luggage Rack, Battery, and Charging Cord	100	\$2,250	\$225,000		
2	Accessory: U-Type Security Lock, Keys, Cable	100	\$60	\$6,000		
2	Accessory: Headlights and Combo Tail and Brake Lights	100	\$40	\$4,000		
2	Accessory: Gloves	100	\$30	\$3,000		
2	Accessory: Safety Helmet	100	\$45	\$4,500		
2	Accessory: Rain Poncho	100	\$32	\$3,200		
Budget Period 1 Total				\$245,700		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
PROJECT TOTAL				\$245,700		

Additional Explanation (as needed):

e. Supplies

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment. A computing device is a supply if the acquisition cost is less than the lesser of the capitalization level established by the non-Federal entity for financial statement purposes or \$5,000, regardless of the length of its useful life.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
	PROJECT TOTAL			\$0		

Additional Explanation (as needed):

f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.
2. Subrecipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$250,000 or (2) 25% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000	\$96,000
1	San Francisco Bicycle Coalition	Partner to provide class and on-road training. Cost estimate based on number of participants trained.	\$14,000	o	o	\$14,000
1	Community Based Organization (to be named post award)	Partner to support recruiting participants from app-based companies.	\$40,000	\$0	o	\$40,000
1,2	Vehicle Telemetry & Analytics (to be named post award)	Partner to collect vehicle data and provide analytical insights. Cost estimate based on existing work with CEC.	\$40,000	\$40,000	\$0	\$80,000
1,2	GRID Alternatives, Inc.	Partner to recruit participants and implement the project. Cost estimate based on personnel hours and travel.	\$151,421	\$128,441	\$110,000	\$389,862
3	Application Development Co. (to be named post award)	Partner to develop the Online Tool. Cost estimate based on experience with developing similar tool.	\$0	\$0	\$0	\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$245,421	\$168,441	\$110,000	\$523,862

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500		\$119,400
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Project Total
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$0	\$0	\$0	\$0

Total Contractual		\$245,421	\$168,441	\$110,000	\$523,862
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Additional Explanation (as needed):

g. Construction

PLEASE READ!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.

2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.

3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
1	Incentives for drivers for data collection	\$10,000		
1	Shipping and storage of e-bikes	\$25,000		
2	Collision and Injury insurnace	\$60,000		
2	Bike maintanance and emergency repairs	\$10,000		
Budget Period 1 Total		\$105,000		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
PROJECT TOTAL		\$105,000		

Additional Explanation (as needed):

i. Indirect Costs

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting costs as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (§200.306(b)(1)).
5. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Total	Explanation of BASE
Provide ONLY Applicable Rates:					
Overhead Rate	0.00%	0.00%	0.00%		
General & Administrative (G&A)	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%		
OTHER Indirect Rate	0.00%	0.00%	0.00%		
Indirect Costs (As Applicable):					
Overhead Costs				\$0	
G&A Costs				\$0	
FCCM Costs, if applicable				\$0	
OTHER Indirect Costs				\$0	
Total indirect costs requested:	\$0	\$0	\$0	\$0	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

***When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.**

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs

Additional Explanation (as needed): ***IMPORTANT:** Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. **Cash Cost Share** - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. **In Kind Cost Share** - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources **MAY NOT** be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Object Class Category	Organization/Source	Type (Cash or In Kind)	Cost Share Item (Each item must correspond with a project cost declared in the related budget tab - a through i)	Budget Period 1	Budget Period 2	Budget Period 3	Total Project Cost Share
Recipient Cost Share							
a. Personnel	California Energy Commission and SF Department of Environment	In Kind	Personnel	\$91,213	\$91,213		\$182,426
b. Fringe	California Energy Commission and SF Department of Environment	In Kind	Fringe	\$61,814	\$61,814		\$123,628
c. Travel							\$0
d. Equipment							\$0
e. Supplies							\$0
f. Contractual (NOT subrecipient provided)							\$0
g. Construction							\$0
h. Other							\$0
i. Indirect	California Energy Commission and SF Department of Environment	In Kind	Indirect	\$35,000	\$35,000	\$35,000	\$105,000
Total recipient provided cost share				\$188,027	\$188,027	\$35,000	\$411,054
f. Subrecipient (3rd Party) Cost Share	List your subrecipients providing cost share		For simple cost share contributions from a partner provide the detail below; for complex contributions provide a separate budget justification (if required) or a supplementary detailed explanation				
Sub-Recipient cost share	GRID Alternatives, Inc.	In Kind	Personnel and Fringe	\$99,140	\$99,140		\$198,280
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Total - Sub-Recipient provided cost share				\$99,140	\$99,140	\$0	\$198,280
Total Contractual Cost Share (Sum of Recipient and Sub-Recipients)				\$99,140	\$99,140	\$0	\$198,280
Grand Total - Cost Share All Sources			Totals	\$287,167	\$287,167	\$35,000	\$609,334

Total Project Cost: \$1,214,954

Cost Share Percent of Award: 50.15%

Additional Explanation (as needed):

Instructions and Summary

Award Number: DE-EE0010637
Date of Submission: 24-Aug-23
Award Recipient: San Francisco Environment
Form submitted by: GRID Alternatives, Inc.
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. **must include both Federal (DOE) and Non-Federal (cost share) portions.**
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than three budget periods, consult your DOE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary						
		Federal	Cost Share	Total Costs	Cost Share %	Proposed Budget Period Dates
Budget Period 1		\$529,994	\$7,292	\$537,286	1.36%	05/16/2023 - 06/30/2026
Budget Period 2		\$0	\$0	\$0	0.00%	
Budget Period 3		\$0	\$0	\$0	0.00%	
Total		\$529,994	\$7,292	\$537,286	1.36%	
Section B - Budget Categories						
CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Total Costs	% of Project	Comments (as needed)
a. Personnel	\$170,306	\$0	\$0	\$170,306	31.70%	
b. Fringe Benefits	\$44,722	\$0	\$0	\$44,722	8.32%	
c. Travel	\$1,602	\$0	\$0	\$1,602	0.30%	
d. Equipment	\$107,940	\$0	\$0	\$107,940	20.09%	
e. Supplies	\$30,900	\$0	\$0	\$30,900	5.75%	
f. Contractual						
Sub-recipient	\$93,165	\$0	\$0	\$93,165	17.34%	
Vendor	\$23,807	\$0	\$0	\$23,807	4.43%	
FFRDC	\$0	\$0	\$0	\$0	0.00%	
Total Contractual	\$116,972	\$0	\$0	\$116,972	21.77%	
g. Construction	\$0	\$0	\$0	\$0	0.00%	
h. Other Direct Costs	\$16,000	\$0	\$0	\$16,000	2.98%	
Total Direct Costs	\$488,442	\$0	\$0	\$488,442	90.91%	
i. Indirect Charges	\$48,844	\$0	\$0	\$48,844	9.09%	
Total Costs	\$537,286	\$0	\$0	\$537,286	100.00%	

Additional Explanation (as needed):

b. Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170,000	20%	\$34,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$38,000
Director, Shared Mobility	\$1,386.00	26.26%	\$364	\$0.00	24.40%	\$0	\$0.00	24.40%	\$0	\$364
Senior Project Lead	\$39,375.00	26.26%	\$10,340	\$0.00	24.40%	\$0	\$0.00	24.40%	\$0	\$10,340
Micromobility Program Manager	\$68,681.15	26.26%	\$18,036	\$0.00	24.40%	\$0	\$0.00	24.40%	\$0	\$18,036
Project Fellow	\$45,600.00	26.26%	\$11,975	\$0.00	24.40%	\$0	\$0.00	24.40%	\$0	\$11,975
Clean Mobility Manager	\$15,264.11	26.26%	\$4,008			\$0			\$0	\$4,008
Total:	\$170,306		\$44,722	\$0		\$0	\$0		\$0	\$44,722

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

- A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.***
- There is not a current federally approved rate agreement negotiated and available.****

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification.

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of day of departure and day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
Domestic Travel		Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
	GRID staff travel to DC for in-person meeting with DOE	Oakland	Washington DC	3	1	\$771	\$294	\$300	\$237	\$1,602	Current GSA rates
										\$0	
										\$0	
										\$0	
International Travel										\$0	
Budget Period 1 Total										\$1,602	
Domestic Travel		Budget Period 2									
										\$0	Current GSA rates
										\$0	Current GSA rates
										\$0	Current GSA rates
										\$0	
International Travel										\$0	
Budget Period 2 Total										\$0	
Domestic Travel		Budget Period 3									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel										\$0	
Budget Period 3 Total										\$0	
PROJECT TOTAL										\$1,602	

Additional Explanation (as needed):

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3.4.5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
1	Cargo E-Bikes with Insulated Bag, Luggage Rack, Battery, and Charging Cord	60	\$1,799	\$107,940	Vendor Quote - Attached	E-bikes to be provided to program participants to collect necessary data
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$107,940		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
PROJECT TOTAL				\$107,940		

Additional Explanation (as needed): Costs are based on actual cost from initial CEC-funded cohort - future cohort equipment may be modified based on lessons learned from initial cohort(s).

e. Supplies

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment. A computing device is a supply if the acquisition cost is less than the lesser of the capitalization level established by the non-Federal entity for financial statement purposes or \$5,000, regardless of the length of its useful life.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
	Accessory: U-Type Security Lock, Keys, Cable	60	\$150.00	\$9,000	Vendor Quote -	Security for e-bike equipment
	Accessory: Safety Helmet	60	\$60.00	\$3,600	Vendor Quote -	Safety accessory for pilot participants
	Tannus tire armor	60	\$200.00	\$12,000	Vendor Quote -	Safety accessory for pilot participants
	Rear basket	60	\$80.00	\$4,800	Vendor Quote -	Delivery accessory for pilot participants
	Tiles or Apple Airtags	60	\$25.00	\$1,500	Online price	Security for e-bike equipment
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$30,900		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
	PROJECT TOTAL			\$30,900		

Additional Explanation (as needed): Costs are based on actual cost from initial CEC-funded cohort - future cohort supplies may be modified based on lessons learned from initial cohort(s).

f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.
2. Subrecipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$250,000 or (2) 25% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO	Sub-Recipient	Purpose and Basis of Cost	Budget	Budget	Budget	Project
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on	\$48,000	\$32,000	\$16,000	\$96,000
1	San Francisco Bicycle Coalition	Partner to support participant bike safety classes and community engagement. Cost estimate based on previous existing work with CEC.	\$33,165			\$33,165
2,3	Vehicle Telemetry & Analytics (to be selected)	Partner to support app-based data collection from delivery workers. Cost estimate based on previous contract with a vendor.	\$60,000			\$60,000
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$93,165	\$0	\$0	\$93,165

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided	\$32,900	\$86,500		\$119,400
3	Web vendor (to be named post award)	Vendor to develop the Online Tool. Cost estimate based on previous web vendor contracts.	\$23,807			\$23,807
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$23,807	\$0	\$0	\$23,807

SOPO	FFRDC	Purpose and Basis of Cost	Budget	Budget	Budget	Project
						\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$0	\$0	\$0	\$0

	Total Contractual	\$116,972	\$0	\$0	\$116,972
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Additional Explanation (as needed): Staff from GRID Alternatives Bay Area, GRID Alternatives Inc.'s regional affiliate that implements our local projects, may also be involved in project implementation

a. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
1,2	Incentives for drivers for data collection	\$6,000	\$100/driver: existing incentive level from 1st	To provide financial incentive to participate in data collection
1	Shipping and storage of e-bikes	\$5,000	Projected based on actual expenses to date	Logistics for procurement and storage of replacement equipment during
2	Bike maintenance and emergency repairs	\$5,000	Projected based on actual expenses to date	Repairs for participants during their cohort periods
Budget Period 1 Total		\$16,000		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
PROJECT TOTAL		\$16,000		

Additional Explanation (as needed):

i. Indirect Costs

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting costs as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (§200.306(b)(1)).
5. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Total	Explanation of BASE
Provide ONLY Applicable Rates:					
Overhead Rate	0.00%	0.00%	0.00%		
General & Administrative (G&A)	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%		
OTHER Indirect Rate	10.00%	10.00%	10.00%		10% De Minimis Indirect Cost Rate
Indirect Costs (As Applicable):					
Overhead Costs				\$0	
G&A Costs				\$0	
FCCM Costs, if applicable				\$0	
OTHER Indirect Costs	\$48,844			\$48,844	
Total indirect costs requested:	\$48,844	\$0	\$0	\$48,844	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): ***IMPORTANT:** Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. **Cash Cost Share** - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. **In Kind Cost Share** - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources **MAY NOT** be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Object Class Category	Organization/Source	Type (Cash or In Kind)	Cost Share Item (Each item must correspond with a project cost declared in the related budget tab - a through i)	Budget Period 1	Budget Period 2	Budget Period 3	Total Project Cost Share
Recipient Cost Share							
a. Personnel	GRID Alternatives	Cash	Senior Project Lead	\$5,250			\$5,250
b. Fringe	GRID Alternatives	Cash	Senior Project Lead	\$1,379			\$1,379
c. Travel							\$0
d. Equipment							\$0
e. Supplies							\$0
f. Contractual (NOT							\$0
g. Construction							\$0
h. Other							\$0
i. Indirect	GRID Alternatives	Cash	10% De Minimis Indirect Cost Rate	\$663			\$663
Total recipient provided cost				\$7,292	\$0	\$0	\$7,292
f. Subrecipient (3rd Party)	List your subrecipients		For simple cost share contributions from a partner provide the detail below:				
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Total - Sub-Recipient				\$0	\$0	\$0	\$0
Total Contractual Cost Share (Sum of Recipient and Sub-Recipients)				\$0	\$0	\$0	\$0
Grand Total - Cost Share All			Totals	\$7,292	\$0	\$0	\$7,292

Total Project Cost: \$537,286

Cost Share Percent of Award: 1.36%

Additional Explanation (as needed): GRID Alternatives, Inc. may also provide cost share in the form of staffing expenses paid by other sources during the project period.

Applicant Name: San Francisco Environment

Award Number: DE-EE0010637

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Budget Period 1				\$529,994.00	\$7,292.00	\$537,286.00
2. Budget Period 2				\$0.00	\$0.00	\$0.00
3. Budget Period 3				\$0.00	\$0.00	\$0.00
4.						
5. Totals				\$529,994.00	\$7,292.00	\$537,286.00

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity			Total (5)
	Budget Period 1	Budget Period 2	Budget Period 3	
a. Personnel	\$170,306.00	\$0.00	\$0.00	\$170,306.00
b. Fringe Benefits	\$44,722.00	\$0.00	\$0.00	\$44,722.00
c. Travel	\$1,602.00	\$0.00	\$0.00	\$1,602.00
d. Equipment	\$107,940.00	\$0.00	\$0.00	\$107,940.00
e. Supplies	\$30,900.00	\$0.00	\$0.00	\$30,900.00
f. Contractual	\$116,972.00	\$0.00	\$0.00	\$116,972.00
g. Construction	\$0.00	\$0.00	\$0.00	\$0.00
h. Other	\$16,000.00	\$0.00	\$0.00	\$16,000.00
i. Total Direct Charges (sum of 6a-6h)	\$488,442.00	\$0.00	\$0.00	\$488,442.00
j. Indirect Charges	\$48,844.00	\$0.00	\$0.00	\$48,844.00
k. Totals (sum of 6i-6j)	\$537,286.00	\$0.00	\$0.00	\$537,286.00
7. Program Income				\$0

Applicant Name: San Francisco Environment

Award Number: DE-EE0010637

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Budget Period 1				\$529,994.00	\$7,292.00	\$537,286.00
2. Budget Period 2				\$0.00	\$0.00	\$0.00
3. Budget Period 3				\$0.00	\$0.00	\$0.00
4.						
5. Totals				\$529,994.00	\$7,292.00	\$537,286.00

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity			Total (5)
	Budget Period 1	Budget Period 2	Budget Period 3	
a. Personnel	\$170,306.00	\$0.00	\$0.00	\$170,306.00
b. Fringe Benefits	\$44,722.00	\$0.00	\$0.00	\$44,722.00
c. Travel	\$1,602.00	\$0.00	\$0.00	\$1,602.00
d. Equipment	\$107,940.00	\$0.00	\$0.00	\$107,940.00
e. Supplies	\$30,900.00	\$0.00	\$0.00	\$30,900.00
f. Contractual	\$116,972.00	\$0.00	\$0.00	\$116,972.00
g. Construction	\$0.00	\$0.00	\$0.00	\$0.00
h. Other	\$16,000.00	\$0.00	\$0.00	\$16,000.00
i. Total Direct Charges (sum of 6a-6h)	\$488,442.00	\$0.00	\$0.00	\$488,442.00
j. Indirect Charges	\$48,844.00	\$0.00	\$0.00	\$48,844.00
k. Totals (sum of 6i-6j)	\$537,286.00	\$0.00	\$0.00	\$537,286.00
7. Program Income				\$0

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SF-424A (Rev. 4-92)
Prescribed by OMB Circular A-102

Current and Pending Support
SF Environment Department
Proposal to Department of Energy 2611-2020
Decarbonizing App-based, Last-mile Deliveries in San Francisco

The cost share for this project is being provided by a grant from the California Energy Commission (CEC). The proposed project will build on this small CEC-funded pilot currently being implemented by the SF Environment and the SFCCC team. This small pilot compares earnings and performance metrics between app-based food delivery workers using e-bikes against those using cars. This pilot is small - only thirty (30) full-time, app-based delivery workers are eligible for e-bikes. Their use will be monitored and compared with eighty (80) food-deliver workers using cars over twelve (12) months, from January 2023 to January 2024.

DOE funding will expand the scope and scale of this small pilot, further demonstrating and quantifying e-bike utility beyond food deliveries and providing a compelling case for app-based workers to try e-bikes and their companies to create incentives to use them. DOE funding will also ensure that the project team has the resources to disseminate project learnings and tools.

Much of the funding for this project is going to pay subcontractors.

SF Environment has standard accounting practices in place to ensure there is no overlap in funding and that staff are performing the services as described. Its accounting tools include accounting for each grant and tying it to the work performed for that grant. In addition, the City of San Francisco and its departments are audited each year to ensure compliance with grant agreements.

I, Lowelll Chu, Energy Manager for SF Environment, certify to the best of my knowledge and belief that the information contained in this Current and Pending Support Disclosure Statement is true, complete and accurate. I understand that any false, fictitious, or fraudulent information, misrepresentations, half-truths, or omissions of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (18 U.S.C. §§ 1001 and 287, and 31 U.S.C. 3729-3730 and 3801-3812). I further understand and agree that (1) the statements and representations made herein are material to DOE's funding decision, and (2) I have a responsibility to update the disclosures during the period of performance of the award should circumstances change which impact the responses provided above.

Instructions and Summary

Award Number: _____

Date of Submission: _____

Award Recipient: _____

Form submitted by: GRID Alternatives, Inc.

(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than three budget periods, consult your DOE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary						
		Federal	Cost Share	Total Costs	Cost Share %	Proposed Budget Period Dates
	Budget Period 1	\$151,421	\$0	\$151,421	0.00%	Example!!! 01/01/2014 - 12/31/2014
	Budget Period 2	\$128,441	\$0	\$128,441	0.00%	
	Budget Period 3	\$11,478	\$0	\$11,478	0.00%	
	Total	\$291,340	\$0	\$291,340	0.00%	
Section B - Budget Categories						
CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Total Costs	% of Project	Comments (as needed)
a. Personnel	\$85,893	\$85,893	\$6,416	\$178,202	61.17%	
b. Fringe Benefits	\$20,958	\$20,958	\$62	\$41,978	14.41%	
c. Travel	\$7,070	\$9,090	\$0	\$16,160	5.55%	
d. Equipment	\$0	\$0	\$0	\$0	0.00%	
e. Supplies	\$0	\$0	\$0	\$0	0.00%	
f. Contractual						
Sub-recipient	\$37,500	\$12,500	\$5,000	\$55,000	18.88%	
Vendor	\$0	\$0	\$0	\$0	0.00%	
FFRDC	\$0	\$0	\$0	\$0	0.00%	
Total Contractual	\$37,500	\$12,500	\$5,000	\$55,000	18.88%	
g. Construction	\$0	\$0	\$0	\$0	0.00%	
h. Other Direct Costs	\$0	\$0	\$0	\$0	0.00%	
Total Direct Costs	\$151,421	\$128,441	\$11,478	\$291,340	100.00%	
i. Indirect Charges	\$0	\$0	\$0	\$0	0.00%	
Total Costs	\$151,421	\$128,441	\$11,478	\$291,340	100.00%	

Additional Explanation (as needed):

b. Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170,000	20%	\$34,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$38,000
Director, Shared Mobility	\$20,497.90	24.40%	\$5,001	\$20,497.90	24.40%	\$5,001	\$68.33	24.40%	\$17	\$10,020
Clean Mobility Project Manager	\$14,162.18	24.40%	\$3,456	\$14,162.18	24.40%	\$3,456	\$47.21	24.40%	\$12	\$6,923
Clean Mobility Project Coordinator	\$43,723.88	24.40%	\$10,669	\$43,723.88	24.40%	#####	\$36.44	24.40%	\$9	\$21,346
Chief Strategy Officer	\$7,508.75	24.40%	\$1,832	\$7,508.75	24.40%	\$1,832	\$100.12	24.40%	\$24	\$3,689
			\$0			\$0			\$0	\$0
Total:	\$85,893		\$20,958	\$85,893		\$20,958	\$252		\$62	\$41,978

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification.

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of day of departure and day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
Domestic Travel		Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
	Director, Shared Mobility In-Person Meetings in San Francisco	Los Angeles, CA	San Francisco, CA	4	1	\$500	\$1,000	\$200	\$320	\$2,020	Current GSA rates
	Director, Shared Mobility In-Person Meetings in San Francisco	Los Angeles, CA	San Francisco, CA	4	1	\$1,000	\$2,000	\$400	\$640	\$4,040	Current GSA rates
	Director, Shared Mobility Travel to/from EERE Annual Merit	Los Angeles, CA	Washington, DC	2	1	\$250	\$500	\$100	\$160	\$1,010	Current GSA rates
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 1 Total										\$7,070	
Domestic Travel		Budget Period 2									
	Director, Shared Mobility In-Person Meetings in San Francisco	Los Angeles, CA	San Francisco, CA	4	1	\$1,000	\$2,000	\$400	\$640	\$4,040	Current GSA rates
	Director, Shared Mobility In-Person Meetings in San Francisco	Los Angeles, CA	San Francisco, CA	4	1	\$1,000	\$2,000	\$400	\$640	\$4,040	Current GSA rates
	Director, Shared Mobility Travel to/from EERE Annual Merit	Los Angeles, CA	Washington, DC	2	1	\$250	\$500	\$100	\$160	\$1,010	Current GSA rates
										\$0	
International Travel											
										\$0	
Budget Period 2 Total										\$9,090	
Domestic Travel		Budget Period 3									
										\$0	
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 3 Total										\$0	
PROJECT TOTAL										\$16,160	

Additional Explanation (as needed):

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
	Cargo E-Bikes with Panniers and Luggage Rack,	0	\$2,000	\$0		
	Accessory: U-Type Security Lock, Keys, Cable	0	\$60	\$0		
	Accessory: Headlights and Combo Tail and Brake	0	\$40	\$0		
	Accessory: Gloves	0	\$30	\$0		
	Accessory: Safety Helmet	0	\$45	\$0		
	Accessory: Rain Poncho	0	\$32	\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
	PROJECT TOTAL			\$0		

Additional Explanation (as needed):

e. Supplies

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment. A computing device is a supply if the acquisition cost is less than the lesser of the capitalization level established by the non-Federal entity for financial statement purposes or \$5,000, regardless of the length of its useful life.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.
2. Subrecipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$250,000 or (2) 25% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO	Sub-Recipient	Purpose and Basis of Cost	Budget	Budget	Budget	Project
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based	\$48,000	\$32,000	\$16,000	\$96,000
	GRID Alternatives Bay Area, Inc.	Vehicle selection, procurement, vendor management, project design	\$37,500	\$12,500	\$5,000	\$55,000
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$37,500	\$12,500	\$5,000	\$55,000

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate	\$32,900	\$86,500		\$119,400
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$0	\$0	\$0	\$0

SOPO	FFRDC	Purpose and Basis of Cost	Budget	Budget	Budget	Project
						\$0
						\$0
						\$0
						\$0
		Sub-total	\$0	\$0	\$0	\$0

	Total Contractual		\$37,500	\$12,500	\$5,000	\$55,000
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Additional Explanation (as needed):

a. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

i. Indirect Costs

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting costs as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (§200.306(b)(1)).
5. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Total	Explanation of BASE
Provide ONLY Applicable Rates:					
Overhead Rate	0.00%	0.00%	0.00%		
General & Administrative (G&A)	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%		
OTHER Indirect Rate	10.00%	10.00%	10.00%	\$127,536	10% De Minimis Indirect Cost Rate
Indirect Costs (As Applicable):					
Overhead Costs				\$0	
G&A Costs				\$0	
FCCM Costs, if applicable				\$0	
OTHER Indirect Costs				\$0	
Total indirect costs requested:	\$0	\$0	\$0	\$0	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources **MAY NOT** be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Object Class Category	Organization/Source	Type (Cash or In Kind)	Cost Share Item (Each item must correspond with a project cost declared in the related budget tab - a through i)	Budget Period 1	Budget Period 2	Budget Period 3	Total Project Cost Share
Recipient Cost Share							
a. Personnel							\$0
b. Fringe							\$0
c. Travel							\$0
d. Equipment							\$0
e. Supplies							\$0
f. Contractual (NOT							\$0
g. Construction							\$0
h. Other							\$0
i. Indirect							\$0
Total recipient provided cost				\$0	\$0	\$0	\$0
f. Subrecipient (3rd Party)	List your subrecipients		For simple cost share contributions from a partner provide the detail below;				
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Sub-Recipient cost share							\$0
Total - Sub-Recipient				\$0	\$0	\$0	\$0
Total Contractual Cost Share (Sum of Recipient and Sub-Recipients)				\$0	\$0	\$0	\$0
Grand Total - Cost Share All			Totals	\$0	\$0	\$0	\$0

Total Project Cost: \$291.340

Cost Share Percent of Award: 0.00%

Additional Explanation (as needed):

Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary						
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Budget Period 1				\$151,421.00	\$0.00	\$151,421.00
2. Budget Period 2				\$128,441.00	\$0.00	\$128,441.00
3. Budget Period 3				\$11,478.00	\$0.00	\$11,478.00
4.						
5. Totals				\$291,340.00	\$0.00	\$291,340.00

Section B - Budget Categories				
6. Object Class Categories	Grant Program, Function or Activity			Total (5)
	Budget Period 1	Budget Period 2	Budget Period 3	
a. Personnel	\$85,893.00	\$85,893.00	\$6,416.00	\$178,202.00
b. Fringe Benefits	\$20,958.00	\$20,958.00	\$62.00	\$41,978.00
c. Travel	\$7,070.00	\$9,090.00	\$0.00	\$16,160.00
d. Equipment	\$0.00	\$0.00	\$0.00	\$0.00
e. Supplies	\$0.00	\$0.00	\$0.00	\$0.00
f. Contractual	\$37,500.00	\$12,500.00	\$5,000.00	\$55,000.00
g. Construction	\$0.00	\$0.00	\$0.00	\$0.00
h. Other	\$0.00	\$0.00	\$0.00	\$0.00
i. Total Direct Charges (sum of 6a-6h)	\$151,421.00	\$128,441.00	\$11,478.00	\$291,340.00
j. Indirect Charges	\$0.00	\$0.00	\$0.00	\$0.00
k. Totals (sum of 6i-6j)	\$151,421.00	\$128,441.00	\$11,478.00	\$291,340.00
7. Program Income				\$0

Applicant Name: 0 Award Number: 0

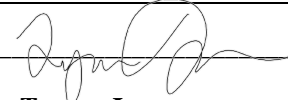
Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary						
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Budget Period 1				\$151,421.00	\$0.00	\$151,421.00
2. Budget Period 2				\$128,441.00	\$0.00	\$128,441.00
3. Budget Period 3				\$11,478.00	\$0.00	\$11,478.00
4.						
5. Totals				\$291,340.00	\$0.00	\$291,340.00

Section B - Budget Categories				
6. Object Class Categories	Grant Program, Function or Activity			Total (5)
	Budget Period 1	Budget Period 2	Budget Period 3	
a. Personnel	\$85,893.00	\$85,893.00	\$6,416.00	\$178,202.00
b. Fringe Benefits	\$20,958.00	\$20,958.00	\$62.00	\$41,978.00
c. Travel	\$7,070.00	\$9,090.00	\$0.00	\$16,160.00
d. Equipment	\$0.00	\$0.00	\$0.00	\$0.00
e. Supplies	\$0.00	\$0.00	\$0.00	\$0.00
f. Contractual	\$37,500.00	\$12,500.00	\$5,000.00	\$55,000.00
g. Construction	\$0.00	\$0.00	\$0.00	\$0.00
h. Other	\$0.00	\$0.00	\$0.00	\$0.00
i. Total Direct Charges (sum of 6a-6h)	\$151,421.00	\$128,441.00	\$11,478.00	\$291,340.00
j. Indirect Charges	\$0.00	\$0.00	\$0.00	\$0.00
k. Totals (sum of 6i-6j)	\$151,421.00	\$128,441.00	\$11,478.00	\$291,340.00
7. Program Income				\$0

Disclosure of Lobbying ActivitiesComplete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <u>b</u> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: <u>a</u> a. bid/offer/application b. initial award c. post-award	3. Report Type: a. initial filing <u>a</u> b. material change
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if Known: San Francisco Clean Cities Coalition/S 1155 Market Street, 3rd Floor San Francisco, CA 94103 Congressional District, if known: 12	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Congressional District, if known:	
6. Federal Department/Agency: U.S. Department of Energy Vehicle Technology Office	7. Federal Program Name/Description: Vehicle Technologies Office Fiscal Year 2022 Research Funding Opportunity, Area of Interest #12 CFDA Number, if applicable: _____	
8. Federal Action Number, if known: DE-FOA-0002611	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> N/A	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> N/A	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature:  Print Name: Tyrone Jue Title: Acting Director, San Francisco Environment Department Telephone No.: 415-355-3701 Date: 11/9/2022	
Federal Use Only	Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

Disclosure of Lobbying ActivitiesComplete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee <input type="checkbox"/> Tier _____, if Known: Congressional District, if known:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Congressional District, if known:	
6. Federal Department/Agency: USDOE Vehicle Technology Office	7. Federal Program Name/Description: #12 CFDA Number, <i>if applicable</i> : 81.086	
7. Federal Action Number, if known: DE-FOA-0002611	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> NA	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> NA	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: <u>Zach Franklin</u> Print Name: <u>Zach Franklin</u> Title: <u>Chief Strategy Officer</u> Telephone No.: <u>510-731-1310</u> Date: <u>11/9/22</u>	
Federal Use Only	Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

Data Management Plan
SF Environment Department
Proposal to Department of Energy 2611-2020
Decarbonizing App-based, Last-mile Deliveries in San Francisco

The project team has a robust plan for collecting data and making it available while protecting information about specific participants.

For any publication that includes results of the project, the underlying research data will be made available according to the policies of the publishing media. Where no such policy exists, SF Environment will indicate on the publication a means for requesting and digitally obtaining the underlying research data. This includes the research data necessary to validate any results, conclusions, charts, figures, images in the publications.

Data Collection and Types. The availability and quality of vehicle telemetry data are fundamental to achieving the goal and objectives. Telemetry data from e-bikes will identify when and where roads are highly trafficked. The data will be overlaid with latest accident information to identify high-risk areas and apply road-safety measures.

The project will collect relevant metadata as necessary to derive the impact of e-bike deployments. These data include participant contacts, locations, dates and times of deliveries, cargo type (food, packages), and earnings. Any, or all, of these data will be used for more granular subgroup tracking and management and could be used to facilitate future studies.

The table below provides a summary of the data collected.

Data Type	Data Name	Units
Vehicle	Vehicle Miles Traveled per Day	VMT / Day
Vehicle	Average Miles Traveled and Time per Delivery	Miles & Time / Delivery
Vehicle	Average Speed	Miles per Hour
Vehicle	Average Power Consumption	Kilowatt hour
Vehicle	Average Acceleration and Deceleration Rates	Ft/sec ²
Vehicle	Dwell Time per Day	Mins
Vehicle	Vehicle Deadhead Miles Traveled per Day	VDMT / Day
Operator	Operator Height & Weight	Ft / Lbs
Operator	Calories Consumed per Day	Kc (kilocalorie)
Operator	Number of Stops per Day	No.
Operator	E-bike Fuel Cost	\$ per kWh / Miles Traveled
Operator	ICE Vehicle Fuel Cost	\$ per Gallon / Miles Traveled
Operator	Monthly Maintenance Cost	\$ / month
Operator	Monthly Operation Cost of E-	\$ / month

Application for Federal Assistance SF-424

* 1. Type of Submission:		* 2. Type of Application:	* If Revision, select appropriate letter(s):
<input type="checkbox"/> Preapplication		<input checked="" type="checkbox"/> New	<input type="text"/>
<input checked="" type="checkbox"/> Application		<input type="checkbox"/> Continuation	* Other (Specify):
<input type="checkbox"/> Changed/Corrected Application		<input type="checkbox"/> Revision	<input type="text"/>
* 3. Date Received:	4. Applicant Identifier:		
<input type="text" value="11/09/2022"/>	<input type="text" value="2611-2020"/>		
5a. Federal Entity Identifier:		5b. Federal Award Identifier:	
<input type="text"/>		<input type="text" value="E-FOA-0002611"/>	
State Use Only:			
6. Date Received by State: <input type="text"/>		7. State Application Identifier: <input type="text"/>	
8. APPLICANT INFORMATION:			
* a. Legal Name: <input type="text" value="Department of the Environment-City and County of San Francis"/>			
* b. Employer/Taxpayer Identification Number (EIN/TIN):		* c. UEI:	
<input type="text" value="94-6000417"/>		<input type="text" value="LTDTMU3KHHM6"/>	
d. Address:			
* Street1:	<input type="text" value="1155 Market"/>		
Street2:	<input type="text"/>		
* City:	<input type="text" value="San Francisco"/>		
County/Parish:	<input type="text"/>		
* State:	<input type="text" value="CA: California"/>		
Province:	<input type="text"/>		
* Country:	<input type="text" value="USA: UNITED STATES"/>		
* Zip / Postal Code:	<input type="text" value="94103-4144"/>		
e. Organizational Unit:			
Department Name:		Division Name:	
<input type="text" value="Energy"/>		<input type="text" value="NA"/>	
f. Name and contact information of person to be contacted on matters involving this application:			
Prefix:	<input type="text" value="Mr."/>	* First Name:	<input type="text" value="Lowell"/>
Middle Name:	<input type="text"/>		
* Last Name:	<input type="text" value="Chu"/>		
Suffix:	<input type="text"/>		
Title:	<input type="text" value="Energy Program Manager"/>		
Organizational Affiliation:			
<input type="text"/>			
* Telephone Number:	<input type="text" value="415-355-3700"/>	Fax Number:	<input type="text" value="415-554-6495"/>
* Email:	<input type="text" value="lowell.chu@sfgov.org"/>		

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

B: County Government

Type of Applicant 2: Select Applicant Type:

C: City or Township Government

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

US Department of Energy

11. Catalog of Federal Domestic Assistance Number:

81.086

CFDA Title:

Fiscal Year 2022 Vehicle Technologies Office Program Wide Funding Opportunity Announcement

*** 12. Funding Opportunity Number:**

DE-FOA-0002611

* Title:

Fiscal Year 2022 Vehicle Technologies Office Program Wide Funding Opportunity Announcement

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

areas affected by the project.docx

Add Attachment

Delete Attachment

View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Decarbonizing App-based, Last-mile Deliveries in San Francisco

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424**16. Congressional Districts Of:*** a. Applicant * b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:* a. Start Date: * b. End Date: **18. Estimated Funding (\$):**

* a. Federal	<input type="text" value="605,620.00"/>
* b. Applicant	<input type="text" value="609,334.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="1,214,954.00"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- a. This application was made available to the State under the Executive Order 12372 Process for review on
- b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)** Yes No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

 ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title: * Telephone Number: Fax Number: * Email:

* Signature of Authorized Representative:


* Date Signed: