

File No. 190972

Committee Item No. 2

Board Item No. _____

COMMITTEE/BOARD OF SUPERVISORS

AGENDA PACKET CONTENTS LIST

Committee: Budget & Finance Committee

Date January 8, 2020

Board of Supervisors Meeting

Date _____

Cmte Board

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

OTHER (Use back side if additional space is needed)

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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>Commission on the Environment Resolution No. 028-19</u> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>Power Point Presentation</u> |
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Completed by: Linda Wong Date January 3, 2020

Completed by: Linda Wong Date _____

[Environment Code - Electrification of Municipal Facilities]

Ordinance amending the Environment Code to require new construction and major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources; and affirming the Planning Department's determination under the California Environmental Quality Act.

NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.
Additions to Codes are in *single-underline italics Times New Roman font*.
Deletions to Codes are in *strikethrough italics Times New Roman font*.
Board amendment additions are in double-underlined Arial font.
Board amendment deletions are in ~~strikethrough Arial font~~.
Asterisks (* * * *) indicate the omission of unchanged Code subsections or parts of tables.

Be it ordained by the People of the City and County of San Francisco:

Section 1. CEQA Findings.

The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Sections 21000 et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 190972 and is incorporated herein by reference. The Board affirms this determination.

Section 2. Findings.

(a) San Francisco has established an ambitious goal of achieving net zero emissions by 2050.

(b) San Francisco continues to be a global climate action leader, having met milestones established in Environment Code Chapter 9 by reducing greenhouse gas

1 emissions 36% from 1990 levels by 2017, while the City's economy has grown 166% and its
2 population has increased 22% during that time.

3 (c) At the Global Climate Action Summit in 2018, Mayor London Breed committed San
4 Francisco to new building decarbonization goals, which require all new buildings to be net
5 zero emissions no later than 2030 and all existing buildings to be net zero emissions by 2050.

6 (d) The City continues to lead by example through its own municipal building stock,
7 which must meet rigorous green building standards and which, to date, includes 67 LEED-
8 certified projects that together comprise 9,375,000 square feet.

9 (e) San Francisco municipal buildings receive 100% greenhouse gas-free electricity
10 from the San Francisco Public Utilities Commission. As a result, all greenhouse gas emissions
11 from the operation of City buildings comes from the combustion of natural gas onsite or in the
12 production of district steam.

13 (f) To achieve the City's goal of net zero emissions, it is necessary to require City
14 agencies to discontinue the installation of equipment dependent on fossil fuels, and instead
15 install high-efficiency equipment that uses electricity and does not emit greenhouse gas.

16 (g) Requiring energy-efficient and all-electric systems in buildings at the time of new
17 construction and major renovations is more cost-effective than replacing equipment in good
18 working order, because workers are already on-site, permitting and administrative costs are
19 lower, and standard construction financing can incorporate such systems.

20 (h) Zero-emissions buildings benefit the health, safety, and welfare of San Francisco
21 and its residents by improving indoor air quality, enhancing emergency preparedness in the
22 event of disaster, and reducing harmful greenhouse gas emissions from energy consumption.

23
24 Section 3. The Environment Code is hereby amended by revising Sections 701 and
25 706, to read as follows:

1 **SEC. 701. DEFINITIONS.**

2 The following terms shall have the meanings set forth below.

3 "All-Electric" means the described system, Building, or project uses a permanent supply of
4 electricity as the source of energy for all space conditioning (including heating and cooling), water
5 heating (including pools and spas), cooking appliances, and clothes drying appliances. An All-Electric
6 system, Building or project may include solar thermal collectors, but installs no natural gas or propane
7 plumbing or equipment in or in connection with a Building, or within property lines of the premises,
8 extending from the point of delivery at the gas meter.

9 * * * *

10 "Building" means:

11 (1) Any structure used for support or shelter of any use or occupancy. "Structure"
12 means that which is built or constructed, an edifice or building of any kind, or any piece of
13 work artificially built or composed of parts joined together in some definite manner and
14 permanently attached to the ground.

15 (2) "Building" includes office buildings, libraries, recreation centers, museums,
16 airport buildings, public safety buildings, hospitals, clinics, education centers, transportation
17 facilities, cruise ship terminals, marina buildings, convention facilities, and other structures.

18 (3) "Building" does not include any construction installation that is not part of a
19 building, or any tunnel, roadway, or bridge, or any vehicle or mobile equipment. "Building"
20 also does not include a structure, facility, or type of infrastructure that primarily provides for the
21 collection, storage, treatment, delivery, distribution, and/or transmission of water, wastewater, and/or
22 power utilities.

23 * * * *

1 "City-owned Facility" means any ~~b~~Building owned by the City and County of San
2 Francisco. "City-owned Facility" includes City-owned ~~Buildings facilities~~ or portions thereof that
3 the City leases to non-City entities.

4 "City Leasehold" means a ~~b~~Building or portion thereof owned by others where the City
5 is a tenant.

6 * * * *

7 "Major Renovation" means any ~~m~~Municipal ~~e~~Construction ~~p~~Project or renovation to an
8 existing structure other than repair or addition. A Major Renovation may include, but is not
9 limited to, a change in occupancy or use, or structural repair to an existing ~~b~~Building or facility;
10 or remodeling, rehabilitation, reconstruction, historic restoration, or changes to the plan
11 configuration of wall and full-height partitions, where the scope of work is sufficient to support
12 LEED certification and extensive enough such that normal building operations cannot be
13 performed while the work is in progress, and/or a new certificate of occupancy, or similar
14 official indication that it is fit and ready for use, is required. Major Renovation does not
15 encompass normal maintenance, reroofing, floor covering, painting, wallpapering, or changes
16 to mechanical and electrical systems.

17 * * * *

18 "Municipal Construction Project" includes any planning, design, building, or
19 construction activity, including demolition, ~~n~~New ~~e~~Construction, ~~m~~Major ~~r~~Renovation, or
20 building additions performed either by a City department at a ~~Building~~, City-owned Facility, or
21 City Leasehold, or by tenants at a City-owned ~~Building or~~ Facility.

22 "Natural Gas" shall have the same meaning as "Fuel Gas" as defined in the California
23 Plumbing Code and Mechanical Code, as amended from time to time.

24 * * * *

1 **SEC. 706. LOCALLY-REQUIRED MEASURES FOR MUNICIPAL CONSTRUCTION**
2 **PROJECTS.**

3 * * * *

4 **(d) Renewable Energy Efficiency, Better Roofs, and Energy Resilience.**

5 * * * *

6 (7) Each Municipal New Construction or Major Renovation Project for which the first
7 building permit application is submitted on or after January 1, 2020 shall be All-Electric, except as
8 follows:

9 (A) Natural Gas or propane service and plumbing may be installed if necessary for
10 processes or features separate from the operation of systems integral to Building functions, such as
11 vehicle fueling and mechanic shop equipment.

12 (B) Existing equipment that uses Natural Gas and serves the project area, but is outside
13 the scope of the project, may be retained. Projects which both (i) are served by existing equipment that
14 use Natural Gas and are outside the scope of work, and (ii) include upgrade to electric service in the
15 project scope of work, are encouraged to include sufficient electrical service capacity to, in the future,
16 replace existing systems that use Natural Gas with All-Electric systems.

17 (C) Emergency backup electricity generation systems may use any combination of
18 technologies permitted under applicable law, including combustion of fossil fuels. Zero-emissions
19 emergency backup electricity systems are encouraged, such as onsite batteries that store electricity
20 from onsite solar photovoltaics.

21 (D) Pursuant to approval of a Waiver under Section 713 of this Chapter 7.

22 * * * *

23
24 Section 4. Effective Date; Retroactivity.

1 (a) This ordinance shall become effective 30 days after enactment. Enactment occurs
2 when the Mayor signs the ordinance, the Mayor returns the ordinance unsigned or does not
3 sign the ordinance within ten days of receiving it, or the Board of Supervisors overrides the
4 Mayor's veto of the ordinance.

5 (b) If the effective date of this ordinance is later than January 1, 2020, the ordinance
6 shall, upon its effective date, be retroactive to January 1, 2020.

7
8 Section 5. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors
9 intends to amend only those words, phrases, paragraphs, subsections, sections, articles,
10 numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal
11 Code that are explicitly shown in this ordinance as additions, deletions, Board amendment
12 additions, and Board amendment deletions in accordance with the "Note" that appears under
13 the official title of the ordinance.

14
15 APPROVED AS TO FORM:
16 DENNIS J. HERRERA, City Attorney

17 By:


18 NEHA GUPTA
Deputy City Attorney

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20
21
22
23
24
25

LEGISLATIVE DIGEST

[Environment Code - Electrification of Municipal Facilities]

Ordinance amending the Environment Code to require new construction and major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources; and affirming the Planning Department's determination under the California Environmental Quality Act.

Existing Law

Chapter 7 of the Environment Code contains a number of "green building" standards for buildings owned or leased by the City. These standards include construction and operating requirements for energy efficiency, water conservation, toxics reduction, indoor environmental quality, and recycling and composting of refuse. Chapter 7 also includes provisions for waiver, administration, and enforcement of the requirements.

Amendments to Current Law

The proposed ordinance would add to Chapter 7's requirements for municipal new construction and major renovation projects a mandate that, beginning with projects for which the first permit application is submitted on or after January 1, 2020, such projects be all-electric, with no installation of natural gas combustion equipment or plumbing. It would clarify that "buildings," for Chapter 7 purposes, do not include structures or facilities that primarily provide for collection, storage, treatment, delivery, distribution, and/or transmission of water, wastewater, or power utilities.

Exemptions from the requirement that municipal new construction and major renovations be all-electric would include: natural gas-based equipment for functions separate from the operation of a building itself, such as vehicle fueling and mechanic shop equipment; emergency electricity backup systems; and projects for which a waiver is procured under Chapter 7's existing waiver process.

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Item 2 File 19-0972	Department: Department of Environment (DOE)
EXECUTIVE SUMMARY	
<p style="text-align: center;">Legislative Objectives</p>	
<ul style="list-style-type: none"> The proposed ordinance would amend the Environment Code to require new construction and whole building major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources. It would also affirm the Planning Department's determination under the California Environmental Quality Act (CEQA). 	
<p style="text-align: center;">Key Points</p>	
<ul style="list-style-type: none"> Chapter 9 of the City's Environment Code sets the City's greenhouse gas emission limits to 80 percent below 1990 levels by 2050. Natural gas combustion in buildings currently comprises approximately 38 percent of San Francisco's greenhouse gas emissions. The City's municipal buildings generally obtain their electricity from the San Francisco Public Utilities Commission's Hetch Hetchy Power Enterprise, which is free from fossil fuel combustion and greenhouse gas emissions. Therefore, 100 percent of greenhouse gas emissions from municipal building operations are due to the use of natural gas. The proposed ordinance would amend Chapter 7 of the Environment Code to require new construction and whole building major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources. The new requirements would retroactively apply to any municipal building projects that have not applied for building permits by January 1, 2020. Municipal building projects primarily used for water, wastewater, and/or power utilities would be exempt from this requirement. The proposed ordinance allows municipal building projects to retain natural gas equipment if it services other buildings or is part of an emergency backup electricity system. 	
<p style="text-align: center;">Fiscal Impact</p>	
<ul style="list-style-type: none"> Construction costs for an all-electric building vary depending on the type of all-electric infrastructure installed, ranging from an estimated increase of \$1 per square foot to an estimated decrease of \$1 per square foot. Construction costs could potentially be lower when compared to the costs of installing natural gas infrastructure. Estimated annual energy savings varied based on the type of all-electric equipment installed. In addition, City projects could have reduced annual energy costs for municipal buildings that purchase Hetch Hetchy electricity at a lower rate than standard PG&E electricity rates. The proposed ordinance may have the greatest cost impact on capital projects that are currently in the design stage, because implementation of the ordinance could require redesign to an all-electric building. 	
<p style="text-align: center;">Recommendation</p>	
<ul style="list-style-type: none"> Approval of the proposed ordinance is a policy decision for the Board of Supervisors. 	

MANDATE STATEMENT

According to City Charter Section 2.105, all legislative acts shall be by ordinance and require the affirmative vote of at least a majority of the members of the Board of Supervisors.

BACKGROUND

Chapter 7 of the City's Environment Code contains a number of "green building" standards for municipal buildings, defined as buildings owned or leased by the City. These standards include construction and operating requirements for energy efficiency, water conservation, toxics reduction, indoor environmental quality, and recycling and composting of waste.

Chapter 9 of the City's Environment Code sets the City's greenhouse gas emission limits to 80 percent below 1990 levels by 2050. According to the Department of the Environment, natural gas combustion in buildings currently comprises approximately 38 percent of San Francisco's greenhouse gas emissions. Of that, approximately 35 percent is from privately owned buildings, and approximately three percent is from municipal buildings. The proposed legislation would address the three percent of the City's greenhouse gas emissions from municipal natural gas consumption.

According to the Department of the Environment's 2019 Building Code Update presentation, several public buildings in and around San Francisco have been built or designed without natural gas infrastructure. These include the Southeast Community Center, Golden Gate Park Golf Course Clubhouse, Claire Lilienthal Elementary School, Alameda Creek Watershed Center, Mission Branch Library, and San Francisco State University Housing Block 6.

The City's municipal buildings generally obtain their electricity from the San Francisco Public Utilities Commission's Hetch Hetchy Power Enterprise, which is free from fossil fuel combustion and greenhouse gas emissions. Therefore, 100 percent of greenhouse gas emissions from municipal building operations are due to the use of natural gas, via combustion onsite or the production of district steam.

DETAILS OF PROPOSED LEGISLATION

The proposed ordinance would amend Chapter 7 of the Environment Code to require new construction and whole building major renovations of municipal buildings ("municipal building projects") to exclude natural gas and include exclusively all-electric energy sources. The new requirements would retroactively apply to any municipal building projects that have not applied for building permits by January 1, 2020.

Municipal building projects primarily used for water, wastewater, and/or power utilities would be exempt from this requirement. The proposed ordinance allows municipal building projects to retain natural gas equipment if it services other buildings or is part of an emergency backup electricity system.

The proposed ordinance would also affirm the Planning Department's findings that the actions of the ordinance comply with the California Environmental Quality Act (CEQA). According to the Planning Department, this legislation would have no impact under CEQA.

FISCAL IMPACT

Potential Impact on Construction Costs

According to a study conducted by the engineering consultant Arup in April 2019, on behalf of the Department of the Environment, costs to install all-electric infrastructure and appliances in municipal buildings could range from \$1 per square foot less to \$1 more per square foot more than average construction costs, depending on the type of electricity infrastructure.¹ These estimates are based on the differences in the types of equipment installed but not on changes in the infrastructure necessary to install the all-electric equipment.

Estimated annual energy savings varied based on the type of all-electric equipment installed. According to the Arup study, less efficient electric systems installed in an office building could increase energy costs by an estimated 3 percent per year; however, the more efficient electric systems installed in an office building could reduce energy costs by an estimated 9 percent per year.

A separate July 2019 study by energy consultants TRC and EnergySoft, on behalf of the statewide utility program California Energy Codes and Standards, a committee-run program of all four California Investor-Owned Utilities (and led by Southern California Edison), showed potential construction savings in all-electric buildings due in part to not installing natural gas infrastructure. According to Ms. Eden Brukman, Department of the Environment Senior Green Building Coordinator, the Arup study did not account for these savings, which may somewhat offset any potential construction increases to install electric HVAC systems. According to the TRC study, construction of a medium office building of 53,628 square feet would have savings of approximately \$18,949, or approximately \$0.35 per square foot, from not installing natural gas infrastructure. Therefore, when factoring in figures from both the Arup Study and the TRC Report, the potential impact on construction costs ranges from -\$1.35/sq. ft. to +\$0.65/sq. ft.

Electric usage and costs in new buildings could be offset through solar panels or other on-site renewable power generation.

¹ The April 2019 report compared two types of all-electric Heating, Ventilation, Air Conditioning (HVAC) systems to baseline systems: (1) Variable Air Volume (VAV) systems in which conditioned air is provided to each zone of the building at a constant temperature; and (2) Variable Refrigeration Flow (VRF) systems in which the flow of refrigerant to indoor units varies based on demand. The April 2019 report defined the baseline systems as (a) HVAC systems using VAV systems in which air cooling was provided by water-source chillers or condensed refrigerant liquid and heating was provided by natural gas with 82 percent efficiency; and (b) water heaters using natural gas with 94 percent efficiency. These baseline systems were compared to (a) HVAC systems using (1) electric VAV systems or (2) electric VRF systems; and (b) electric water heaters. On average, electric VAV systems had lower installation costs than the baseline systems, and electric VRF systems had higher installation costs than the baseline systems.

Potential Impact on Projects in Design Phase

According to Mr. Joe Chin, Public Works Project Manager, the proposed ordinance could impact the costs for capital projects that have completed design but not yet begun construction if design plans need to be revised for an all-electric building. According to a July 2019 memorandum from Public Works to the Department of Public Health, project costs could potentially increase for two health center projects that had completed design but had not yet begun construction. Because these two projects had already obtained building permits, they would not have been impacted by the proposed ordinance. However, if the projects would have been subject to the requirements of the proposed ordinance, Section 713 of the Environment Code allows City departments to request waivers from the green building requirements (including the requirements of the proposed ordinance) if compliance is cost prohibitive.

Projects that were in early planning stages, and did not have detailed design documents, would likely not incur the same additional costs noted for projects that had completed designs.

Summary

Construction costs for an all-electric building vary depending on the type of all-electric infrastructure installed, ranging from an estimated increase of \$1 per square foot to an estimated decrease of \$1 per square foot. Construction costs could potentially be lower when compared to the costs of installing natural gas infrastructure. In addition, City projects could have reduced annual energy costs for municipal buildings that purchase Hetch Hetchy electricity at a lower rate than standard PG&E electricity rates.

RECOMMENDATION

Approval of the proposed ordinance is a policy decision for the Board of Supervisors.

1 [Support of the Municipal Electrification Ordinance, File Number: 190972]

2
3 **Resolution urging the Board of Supervisors and the Mayor to adopt File Number**
4 **190972, an Ordinance amending the Environment Code to require new construction**
5 **and major renovations of municipal buildings to exclude natural gas and include**
6 **exclusively all-electric energy sources;**

7 WHEREAS, the City and County of San Francisco has a duty to protect the natural
8 environment, the economy, and the health of its citizens; and,

9 WHEREAS, the San Francisco Commission on the Environment seeks to improve,
10 enhance, and preserve the environment and to promote San Francisco's long-term
11 environmental sustainability as set forth in Section 4.118 of the City Charter; and,

12 WHEREAS, climate change has already affected San Francisco to varying degrees
13 including degraded air quality from wildfires, drought, flooding, and extreme heat and is
14 projected to increase the number of extreme heat days, increase sea level rise and flooding,
15 increase the frequency and severity of droughts and extreme storms, and worsen air quality;
16 and,

17 WHEREAS, the elderly, the poor, young children, those with pre-existing medical conditions
18 and communities of color are the most likely to suffer the greatest health impacts from climate
19 change; and

20 WHEREAS, San Francisco has established an ambitious goal of achieving net zero
21 emissions by 2050 to reduce harmful greenhouse gas emissions in order to stabilize the
22 planet and protect the health of our residents; and,

23 WHEREAS, San Francisco continues to be a global climate action leader, having
24 already met milestones established in Environment Code Chapter 9 by reducing greenhouse

1 gas emissions 36% from 1990 levels by 2017, while the City's economy has grown 166% and
2 its population has increased 22% during that time; and,

3 WHEREAS, at the Global Climate Action Summit in 2018, Mayor London Breed
4 committed San Francisco to new building decarbonization goals, which require all new
5 buildings to be net zero emissions no later than 2030 and all existing buildings to be net zero
6 emissions by 2050; and,

7 WHEREAS, the City continues to lead by example through its own municipal building
8 stock, which must meet rigorous green building standards and which, to date, includes 67
9 LEED-certified projects that together comprise 9,375,000 square feet; and,

10 WHEREAS, San Francisco municipal buildings receive 100% greenhouse gas-free
11 electricity from the San Francisco Public Utilities Commission, which means all greenhouse
12 gas emissions from the operation of City buildings come from the combustion of natural gas
13 onsite or from the production of district steam; and,

14 WHEREAS, to achieve the City's goal of net zero emissions, it is necessary to require
15 City agencies to discontinue the installation of equipment dependent on fossil fuels, and
16 instead install high-efficiency equipment that uses electricity and does not emit greenhouse
17 gas; and,

18 WHEREAS, requiring energy-efficient and all-electric systems in buildings at the time of
19 new construction and major renovations is more cost-effective than replacing equipment in
20 good working order, because workers are already on-site, permitting and administrative costs
21 are lower, and standard construction financing can incorporate such systems; and,

22 WHEREAS, zero-emissions buildings benefit the health, safety, and welfare of San
23 Francisco and its residents by improving indoor air quality and reducing harmful greenhouse
24 gas emissions from energy consumption; now, therefore, be it,

RESOLVED, that the Commission on the Environment urges the Board of Supervisors and the Mayor to adopt File Number 190972, an ordinance ensuring critical greenhouse gas reductions from the buildings sector; and, be it,

FURTHER RESOLVED, that the Commission on the Environment urges the Board of Supervisors and the Mayor to continue to support policies that help San Francisco reach its goal of achieving net zero emissions from new construction no later than 2030 and from all buildings by 2050.

I hereby certify that this Resolution was adopted at the Commission on the Environment's Meeting on November 25, 2019.

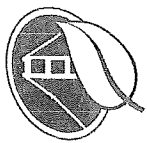

 Anthony Valdez, ~~Commission Secretary~~
 Policy and Public Affairs Manager

Vote: 6-0 Approved

Ayes: Commissioners Bermejo, Chu, Stephenson, Sullivan, Wan, and Wald

Noes: None

Absent: Commissioner Ahn

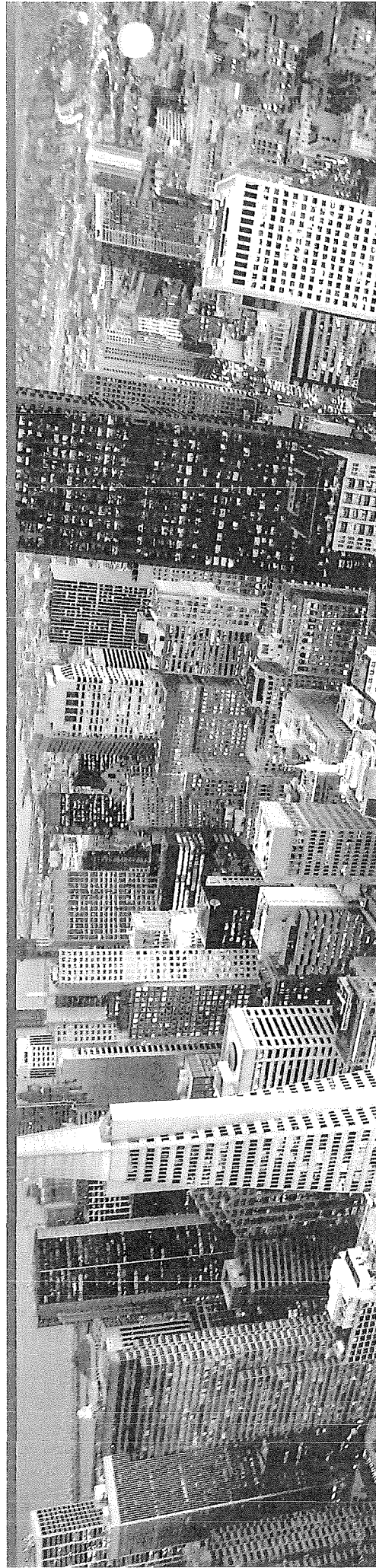


SFEnvironment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

Reducing GHG Emissions Through Building Codes in San Francisco



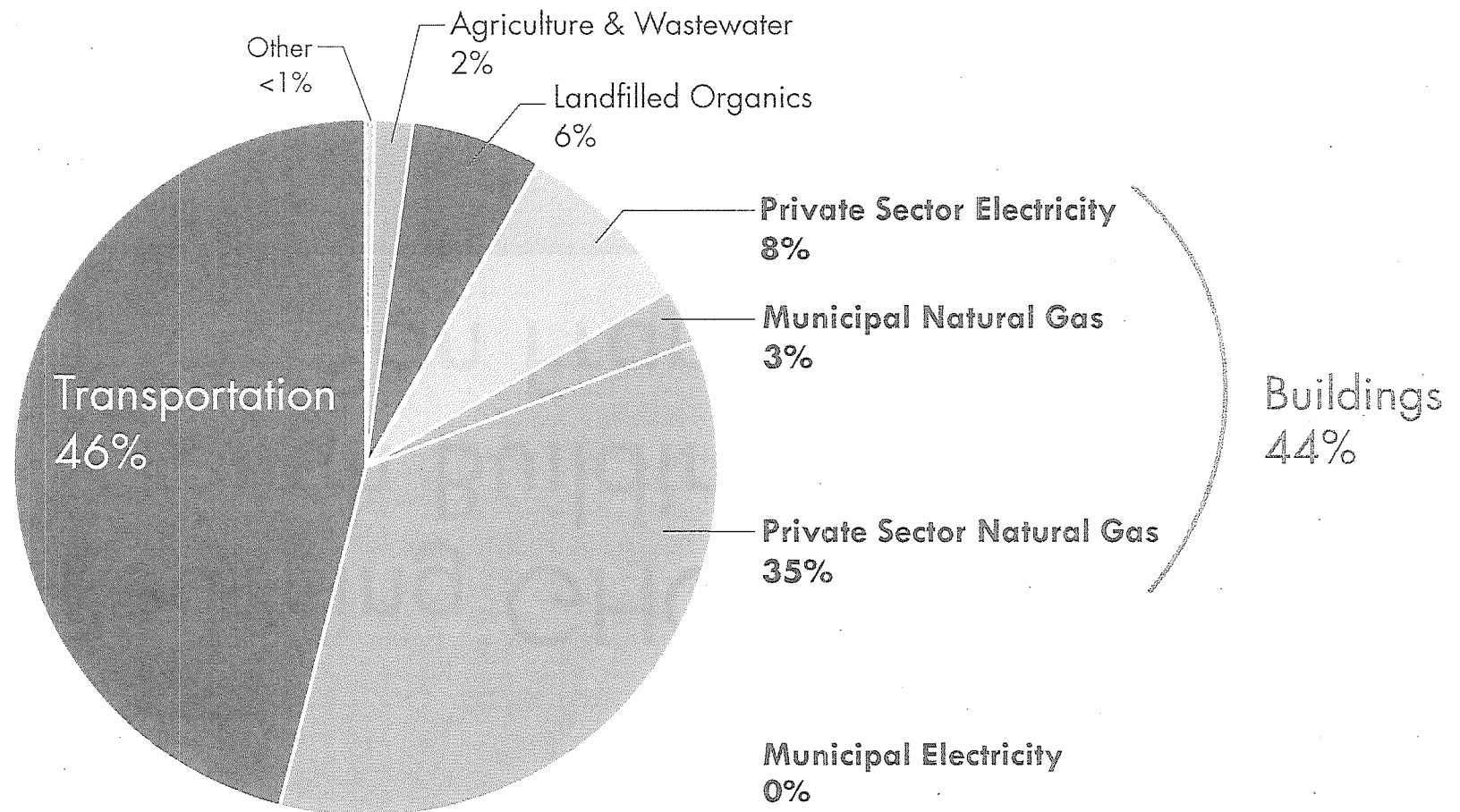
190978

190974

12/9/19

RECORDED IN
COMMITTEE

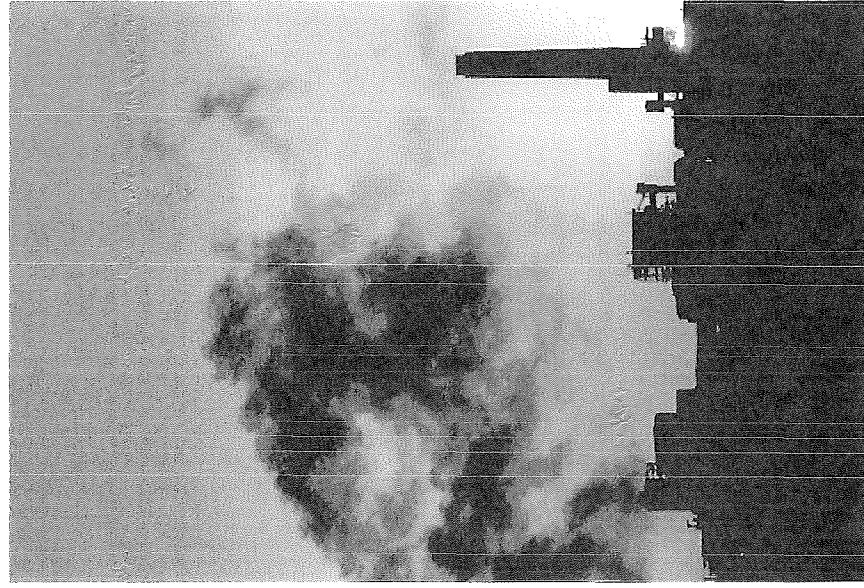
San Francisco's Emissions Sources Today



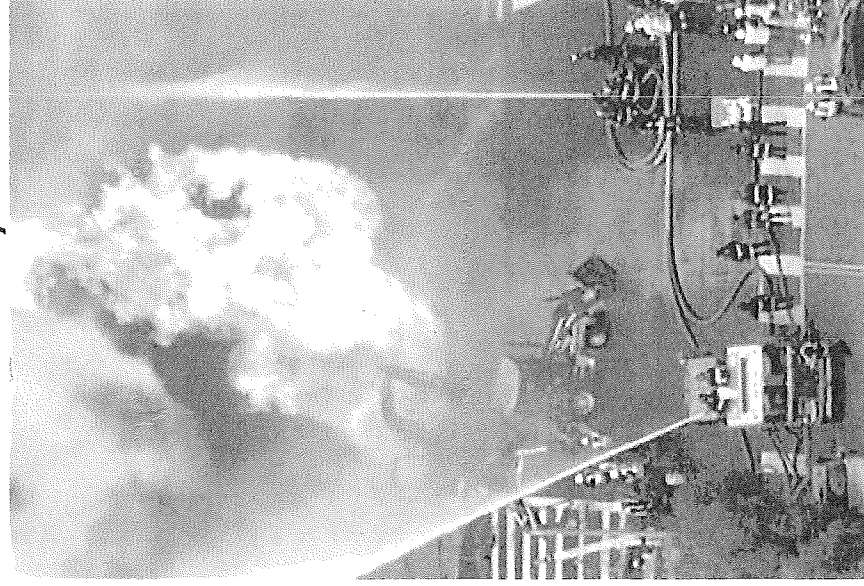
Natural Gas Impacts . . .



Climate



Safety



Health



Today's Proposal – Building “Reach Code”



A “Reach Code” is a local enhancements to state code adopted with the current building code cycle.

State Regulations for Private Buildings

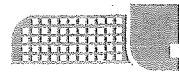
- ✓ Cost-effective, *and*
- ✓ Meets California Energy Standards, *and*
- ✓ Cannot require the use of more efficient appliances than federally mandated.

City's own facilities

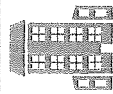
- ✓ Must meet California Energy Standards

State Regulations are through the California Energy Commission

Policy for New Construction



Commercial



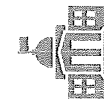
Multifamily ≥ 4 floors



Multifamily ≤ 3 floors



Single Family



Municipal

(New construction and whole building major renovations)

All-Electric

Natural Gas & Electricity
"Mixed-Fuel"

10% better than Code
CalGreen Tier 2

Meet Code

11% Better Than Code
CalGreen Tier 1

28% better than Code
CalGreen Tier 1

Meet Code

No Natural Gas Allowed
Waiver process available

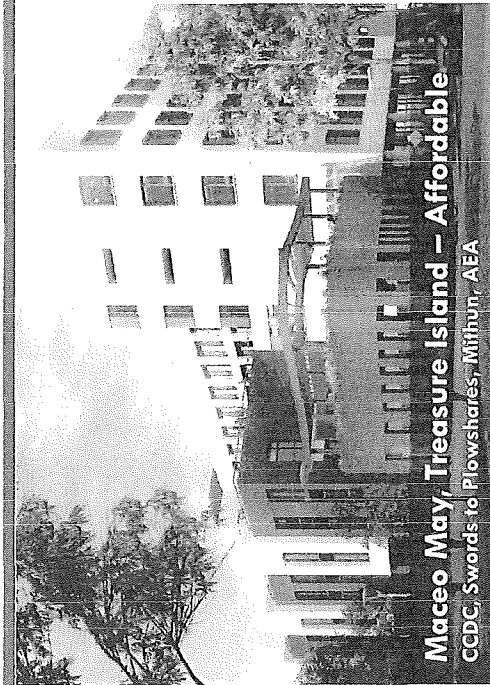
Other California Cities Taking Action



JURISDICTION	MUNICIPAL	1-3 STORY RESIDENTIAL	HIGH RISE RESIDENTIAL	COMMERCIAL	KEY
Alameda					Electric Only
Berkeley					Partial Electric
Brisbane					
Davis					Electric Preferred
Marin County					
Menlo Park					
Mill Valley					
Milpitas					
Morgan Hill					
Mountain View					
Pacifica					
Palo Alto					
Saratoga					
San Jose					
San Mateo				office only	
Santa Monica					
Santa Rosa					
Windsor					

Updated: 11/25/2019

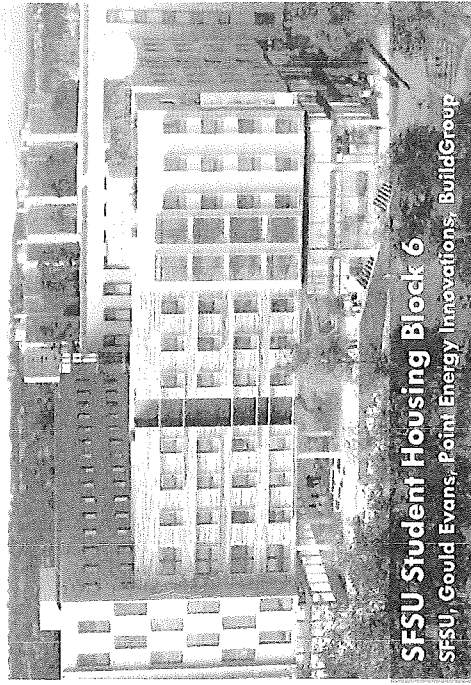
Local Examples of All Electric Buildings



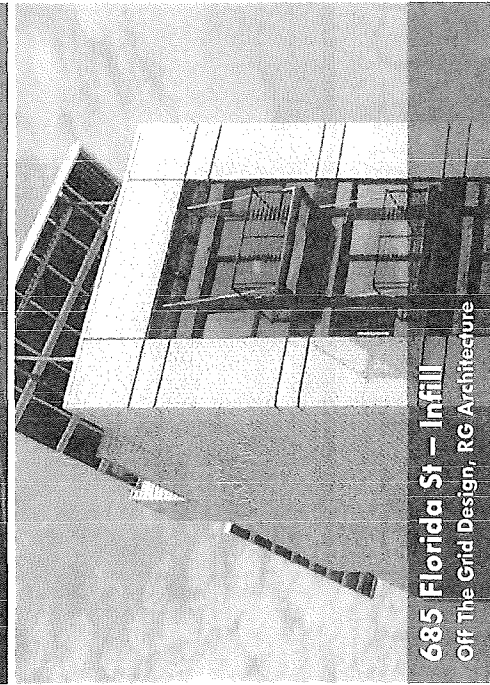
Maceo May, Treasure Island – Affordable
CCDC, Swords to Plowshares, Mithun, AEA



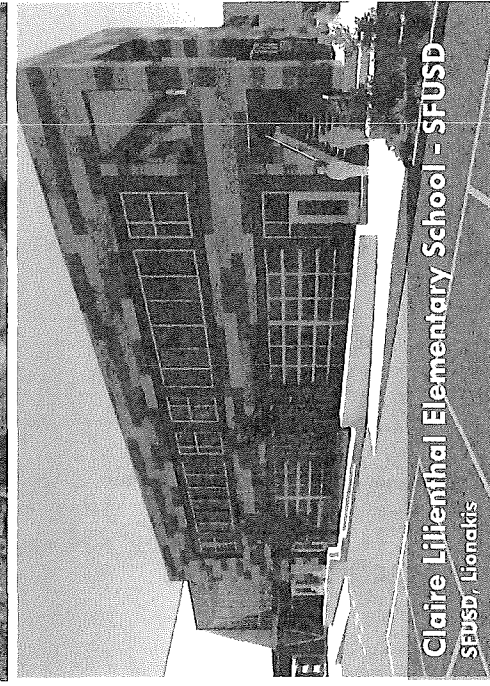
Southeast Community Center - Municipal
SEPCU, SFPW



SFSU Student Housing Block 6
SFSU, Gould Evans, Point Energy Innovations, BuildGroup



685 Florida St – Infill
Off The Grid Design, RG Architecture



Claire Lilienthal Elementary School - SFUSD
SFUSD, Lionakis

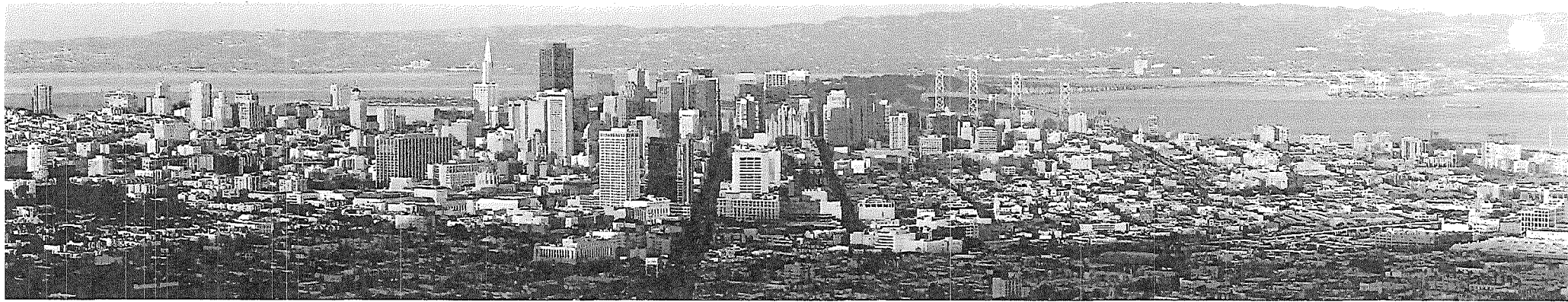


270 Brannan - Office
Pfau Long Architecture

Next Steps – Delivering the Buildings of the Future



Thank you for listening



Debbie Raphael, Director
San Francisco Department of the Environment

SUBMITTED IN COMMITTEE
190974
12/9/19

Testimony to Land Use and Transportation Committee of SF Board of Supervisors
File # 190974

December 9, 2019

Submitted by Robin Cooper, MD

Co-Founder, Climate Psychiatry Alliance

Member, California Climate Health Now

Assistant Professor of Medicine, University of California, San Francisco

My name is Robin Cooper; I am a physician and psychiatrist in San Francisco and present a number of climate and health groups including but not limited to Physicians for Social Responsibility and Ca. Climate Health Now. I wear my white coat, the symbol of health providers, today with intent to visually demonstrate the intertwined and inseparable connection between the climate crisis and the health care **emergency** we now face. As a physician, I see the suffering of climate change up close; my patients are suffering. We are in a public health emergency because of the persistent dependency of fossil fuels.

Today we are discussing only one component of the contribution to greenhouse gas emissions; the impact of natural gas on building stock.

Since methane and natural gas are major contributors to global warming and their use in our current building stock has a significant contribution to emissions, banning natural gas in buildings is one powerful way to improve and protect public health. These are preventive health actions.

In support of greater understanding of broad impacts of methane extraction and natural gas use on public health, I am submitting an article from the prestigious New England Journal of Medicine authored by highly regarded public health leaders just published last week (<https://www.nejm.org/doi/full/10.1056/NEJMp1913663>)

I call your attention to the chart outlining the significant and wide ranging negative health impacts of methane and specifically the extraction practice of fracking as the source of natural gas. This is highly relevant to the discussion of today. By reducing demand for natural gas, decarbonization of buildings can have an important role in improving health outcomes. Therefore, the authors specifically "recommend that new residential or commercial gas hookups not be permitted" (Pg. 3 highlighted) :

Despite the limited and weak current code modifications proposed today, it must pass as a step toward **decarbonization**. **Additional more stringent efforts to drive all electric construction, including an electric readiness requirements must be a step toward full ban of natural gas.** These are needed to achieve the emissions reductions that will keep us safer and meet target goals.

Emergency Means Urgent and Dramatic Action is needed.

For the sake of my patients, for the sake of your health, for the sake of our public health, pass this code adjustment and then **rapidly** move to greater efforts toward decarbonization of buildings.



Perspective

The False Promise of Natural Gas

Philip J. Landrigan, M.D., Howard Frumkin, M.D., Dr.P.H., and Brita E. Lundberg, M.D.

Production of natural gas has grown by nearly 400% in the United States since 1950, and gas is now the country's second-largest energy source. The main driver of this increase has been

the wide-scale adoption of hydraulic fracturing ("fracking"). During the fracking process, large volumes of water, sand, and chemicals are injected deep underground at high pressure to fracture shale deposits and sand and coal beds to release trapped gas. The world's largest gas-transmission network — with more than 300,000 miles of interstate and intrastate transmission pipelines, 2.1 million miles of local distribution lines, and more than 1000 compressor stations — brings this gas to the market. The ready availability of gas has reduced dependence on coal and oil, enables the United States to ship gas overseas, and will make the country a net energy exporter by 2020.¹ It has also made gas an important feedstock for the chemical, pesticide, and plastics-manufacturing industries.

Natural gas, composed principally of methane, has been hailed as a clean "transition" fuel — a bridge from the coal and oil of the past to the clean energy sources of the future. This claim is partially true. Gas combustion produces only negligible quantities of sulfur dioxide, mercury, and particulates. It is thus less polluting than combustion of coal or oil, and this benefits health.² Gas combustion also generates less carbon dioxide per unit of energy than combustion of coal or oil.

But beneath this rosy narrative lies a more complex story. Gas is associated with health and environmental hazards and reduced social welfare at every stage of its life cycle.² Fracking is linked to contamination of ground and surface water, air pollution, noise and light pollution, radiation releases,

ecosystem damage, and earthquakes (see table). Transmission and storage of gas result in fires and explosions. The pipeline network is aging, inadequately maintained, and infrequently inspected. One or more pipeline explosions occur every year in the United States. In September 2018, a series of pipeline explosions in the Merrimack Valley in Massachusetts caused more than 80 fires and explosions, damaged 131 homes, forced the evacuation of 30,000 people, injured 25 people, including two firefighters, and killed an 18-year-old boy. Gas compressor stations emit toxic and carcinogenic chemicals such as benzene, 1,3-butadiene, and formaldehyde. Wells, pipelines, and compressor stations are disproportionately located in low-income, minority, and marginalized communities, where they may leak gas, generate noise, endanger health, and contribute to environmental injustice while producing no local benefits. Gas combustion generates oxides of nitrogen that increase asthma risk

Health and Environmental Hazards of Natural Gas.*		
Category	Pathways and Mechanisms	Established and Potential Health Hazards
Local hazards		
Water contamination	Ground and surface water at gas wells is contaminated with fracking chemicals.	Many fracking chemicals are toxic: 25% are carcinogens; 75% are dermal, ocular, respiratory, and gastrointestinal toxins; 40 to 50% have toxic nervous, immune, cardiovascular, and renal effects; 30 to 40% are endocrine disruptors
Air pollution	Heavy trucks, construction equipment, and drill rigs emit diesel exhaust, oxides of nitrogen, and particulates; sand piles release silica dust; gas venting and flaring produce volatile organic compounds (benzene, 1,3-butadiene, and formaldehyde).	Exacerbation of asthma and COPD; increased risk of cardiovascular disease and diabetes; increased risk of prematurity and low birth weight; volatile organic compounds increase risk for leukemia and lymphoma
Noise pollution	Heavy equipment and gas flaring generate nearly continuous noise; sound levels can reach 70 A-weighted decibels, which exceeds EPA community guidelines.	Sleep disturbance; stress (associated with increased cardiovascular disease risk); cognitive deficits in children
Light pollution	High-intensity illumination and gas flaring generate bright light day and night	Sleep disturbance; stress
Radionuclide releases	Some shale formations contain naturally occurring radionuclides such as radon, principally in Pennsylvania and Texas.	Cancers, chiefly lung cancer
Earthquakes	Seismic activity is increased near fracking sites and up to 30 miles away.	Injuries; anxiety; loss of property value
Community disruption	Poor and minority communities are disproportionately exposed to noise, toxic chemicals, and explosion hazards.	Mental health problems; substance abuse; sexually transmitted diseases
Regional hazards		
Fires and explosions	Pipeline explosions occur every year in the United States and recently occurred in Armada Township, MI; Refugio, TX; Salem, PA; Watford City, ND; and Merrimack Valley, MA.	Injury; death
Air pollution from gas combustion	Gas combustion in stoves, boilers, and furnaces generates oxides of nitrogen.	Increased asthma risk; exacerbation of COPD and cardiovascular disease
Global hazards		
Contributions to climate change	Use of natural gas causes methane leakage and gas combustion generates carbon dioxide.	Heat waves; extreme weather events; droughts; floods; wildfires; expanded ranges of vectorborne diseases; compromised food supplies resulting in famine, migration, conflict, and mental distress

* COPD denotes chronic obstructive pulmonary disease, and EPA Environmental Protection Agency. Sources of information are listed in the Supplementary Appendix, available at NEJM.org.

and aggravate chronic obstructive pulmonary disease.

Compounding these hazards are the grave dangers that gas extraction and use pose to the global climate.³ Gas is a much more powerful driver of climate change than is generally recognized. As much as 4% of all gas produced by fracking is lost to

leakage, and these releases appear to have contributed to recent sharp increases in atmospheric methane.⁴ Methane is a potent contributor to global warming, with a heat-trapping potential 30 times greater than that of carbon dioxide over a 100-year span and 85 times greater over a 20-year span. Gas burned in stoves and boilers ad-

ditionally contributes to global warming by generating carbon dioxide. Together, this evidence suggests that the purported advantage of gas over coal and oil has been greatly overstated.

Despite growing recognition of the dangers associated with gas and recent exponential increases in the production of electricity

from renewables, new gas wells continue to be drilled and new pipelines built. The U.S. Energy Information Administration projects that daily natural-gas production in the United States will increase by 10 billion cubic feet in the next year and that under current federal policy, more electricity will be generated from gas than from renewables each year from now through 2050.¹ This expansion of the gas infrastructure is supported by government subsidies and tax breaks that benefit the fossil-fuel industry and artificially depress gas prices. In 2016, federal subsidies for gas equaled \$32.6 billion, an amount 60 times greater than the \$533 million allocated to research and development related to solar energy.⁵ State subsidies provide additional support for fossil fuels.

As physicians deeply concerned about climate change and pollution and their consequences, we consider expansion of the natural-gas infrastructure to be a grave hazard to human health. All reasonable analyses indicate that we must leave nearly all remaining fossil fuels in the ground if we are to hold the extent of global warming below 1.5°C, the target set by the Intergovernmental Panel on Climate Change, and thus mitigate the health and environmental consequences of climate change.

A further argument against investment in gas is that it is economically reckless. Such investment ignores the reality that the cost of producing electricity from renewables is falling rapidly and that energy prices are approaching a “tipping point” after which it will become cheaper to generate electricity from solar and wind sources than from gas. The Energy Information Administration

estimates that by 2023 it will cost \$36.60 per megawatt-hour to produce electricity from wind and \$37.60 to produce solar energy, versus \$40.20 to produce energy from gas. Any investment in gas is thus at risk of failing to yield an economic return and becoming a stranded asset. This risk could increase if federal subsidies for gas were to be cut.

We believe that investment in gas is also shortsighted. States that provide subsidies for gas and permit construction of new pipelines and compressor stations will lock in dependence on gas for years to come while missing opportunities to invest in renewables. The real problem with fracking, then, is that it perpetuates the carbon-based energy system and delays the transition to a carbon-free economy.

To address this problem, we recommend that state and federal subsidies for natural gas be reduced over the next 2 years and then eliminated. The International Monetary Fund has made similar recommendations. We also recommend that new residential or commercial gas hookups not be permitted, new gas appliances be removed from the market, further gas exploration on federal lands be banned, and all new or planned construction of gas infrastructure be halted. We believe an ill-conceived proposal announced recently by the Environmental Protection Agency to roll back limits on methane pollution needs to be blocked. At the same time, we call for the creation of new tax structures, subsidies, and incentives such as carbon pricing that favor wind, solar power, and other nonpolluting, renewable energy sources and policies that support energy conservation, clean vehi-

cles, and expansion of public transit.

Implementation of these recommendations will require courageous political leadership and face fierce resistance. But wide-scale transition to renewables would yield enormous benefit for the United States. It would reduce air pollution and therefore prevent disease, extend life expectancy, and reduce health care costs. It would free up the billions of public dollars now spent on fossil-fuel subsidies, and it would protect our planet.

Models exist for effective climate action. In July 2019, New York State enacted comprehensive energy and climate legislation and pledged to reduce greenhouse-gas emissions by 85% by 2050. To meet this target, New York is developing the country's largest wind farm and collaborating with Ireland and Denmark to improve its electric power grid. It has also created economic incentives for clean vehicles, including trucks and buses, and tax incentives for energy conservation. Idaho Power, the largest utility in a deeply conservative state, has pledged to produce 100% of its electricity from renewable sources by 2045. The United Kingdom has committed to net zero carbon emissions by 2050. New York, Idaho, and the United Kingdom are creating new, high-paying jobs in the wind and solar energy industries.

Natural gas has been portrayed as a bridge to the future. The data now show that it is only a tether to the past. We believe it's time to reject the false promise of gas.

Disclosure forms provided by the authors are available at NEJM.org.

From the Program in Global Public Health and the Common Good and the Global Ob-

servatory on Pollution and Health, Boston College, Chestnut Hill (P.J.L.) and Lundberg Health Advocates, Newton (B.E.L.) — both in Massachusetts; and the Wellcome Trust, London (H.F.).

This article was published on December 4, 2019, at NEJM.org.

1. Energy Information Administration. Annual energy outlook 2019: with projections to 2050. Washington, DC: Department of Energy, January 2019 (<https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf>).
2. Saunders PJ, McCoy D, Goldstein R, Saunders AT, Munroe A. A review of the public health impacts of unconventional natural gas development. *Environ Geochem Health* 2018;40:1-57.
3. Intergovernmental Panel on Climate Change (IPCC). Global warming of 1.5°C: an IPCC special report. Geneva: World Meteorological Organization, 2018 (<https://www.ipcc.ch/sr15/>).
4. Howarth RW. Is shale gas a major driver of recent increase in global atmospheric methane? *Biogeosciences* 2019;16:3033-46.
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DOI: 10.1056/NEJMp1913663

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Hello, my name is Dr Margie Chen. I represent a consortium of doctors from Physicians for Social Responsibility and Ca Climate Health Now, because Climate change is a Health Emergency. I would like to address the often overlooked issue of indoor air pollution. All electric new construction would immediately improve indoor air quality for SF residents. On average, Californians spend 68% of their time inside their residence, making indoor air quality a key determinant of human health.

The combustion of gas inside our homes produces harmful indoor air pollution, specifically nitrogen ~~oxide~~, carbon monoxide, nitric oxide, formaldehyde, acetaldehyde, and ultra fine particles. These odorless and undetectable gas combustion pollutants can cause respiratory distress and other serious conditions, including death.

All electric new construction will also be key to mitigating outdoor air pollution in San Francisco. Hazardous air pollution is ~~A~~ particularly acute issue for low-income families and communities who are exposed to higher levels of particulate matter (PM 2.5) and other toxic pollutants.

While most think of cars, trucks, power plants and industry as the major culprits of outdoor air pollution, buildings are a major source of air pollution, particularly in the winter months from gas heating. Gas appliances produce nearly seven times more nitrogen oxide emissions than all of California's gas power plants.

As physicians deeply concerned about climate change, air pollution and their health consequences, all electric new construction will address a significant contributor of air pollution that is gravely affecting our health now. We urge you to vote Yes on all electric new construction. *and to be "electric ready"*

140978

From: Aaron Goodman <amgodman@yahoo.com>
Sent: Monday, October 21, 2019 10:03 AM
To: Major, Erica (BOS); Peskin, Aaron (BOS); Haney, Matt (BOS); Safai, Ahsha (BOS); Board of Supervisors, (BOS)
Subject: SFBOS Land-Use - Monday October 21st - Comment (A.GOODMAN) D11

This message is from outside the City email system. Do not open links or attachments from untrusted sources.

ATTN: SF BOS (Land-Use) Committee (cc: SFBOS)

As I am unable to attend the mid-day meeting today, please accept this email as my public comment on the issues below. Will keep them brief as I can but you have a lot on the agenda today needing vetting.

19054 - Jobs Housing Linkage
19089 - Jobs Housing Fit

I support both items above, in determining the best strategy forward on the creation of affordable RENTAL housing for working communities and the need to determine how to build larger housing developments for 100% affordable units.

I would ask that you also consider in the two items the relation of mass transit and equity in relation to funding areas and districts since many areas seeing the largest developments in SF are also devoid of any serious transit projects that are shovel ready and supportive prior to the construction of mass housing developments.

190971 - India Basin (Street Vacated)

I would like to submit comments on the EQUITY concerns on lacking transit proposals to improve the T-Line and the linkage between numerous developments in D10. The Pier 70 / India Basin / Alice Griffith and Hunters View, BVHP, Candlestick areas all the way around to Sunnydale from Potrero require a more robust solution on public transit. Please look into this issue with the SFMTA and how they propose to amp up the mass-transit in D10 to equitably address mass transit needs and upcoming service issues during roadway construction at Cesar Chavez and Alemany on 101/280 already at serious congestion levels that impacts Bayshore, and the T-third. (I am in support of the India Basin project, but would like to see a more robust water-taxi, and trackless train system that loops around the BVHP and back up Geneva Harney to balboa park station to bring quickly new mass-transit solutions to these neighborhoods being developed.)

190972 - Electrification of Municipal Facilities

190974 - Energy Performance in New Buildings

I am in support of this proposal and would want to see more efforts on urban infrastructure and build out in addition to local property tax incentives to switch to solar. Costs are causing residential installers to balk at installations, especially smaller installs. Therefore it is critical to ensure smaller home-owners and businesses can switch to solar more readily.. On the energy efficiency issues LEED does not always take into account the issues of obsolescence and sound existing construction that should promote preservation and adaptive re-use. So key is to include measures that document the demolition of existing systems and buildings and their

replacement with new energy efficient systems. If we toss a recently installed roof for a new roof and solar, the carbon impacts must be addressed in the changes.

191016 - Educator Housing

Key is to determine the effects prior and loss of educator housing since 2001 (Purchase of Stonestown and portions of Parkmerced) that served as educator housing. SFSU-CSU was asked to consider staff/teacher housing at the UPS blocks. The SOTA switch downtown should be considered whether the site is for 100% future housing or an option to rebuild the school at its existing site and plan for the school SOTA to remain and the old educator building converted to shared housing co-op building downtown due to already overcongested streets in the Van Ness Market area. Which will be more dangerous for kids and teens if shifted in that area from the existing SOTA site. There is also the concerns about CCSF and teacher housing on Balboa Reservoir, and CCSF's future plans. All these sites MUST have new and adequate new transit serving the areas so please legislate to support more transit improvements in these areas.

191018 - 770 Woolsley

I am supportive of the landmarking in the hope to create a more adventurous solution with green-houses and landscaped courtyards for the future housing on this site. There is also the need for addressing overcrowded bus services on the 44 and 8/9 lines along with the 54 which serve the D10/D11 neighborhoods. Please look into the transit issues and equity for these proposals.

191013- Mobility Permits

191033 - Office of Emerging Technology

My concern is the lacking ADA compliance on many of these new technologies that service the seniors and disabled communities. Portland and Detroit have ADA bikes for bike-share, and currently with all the mobility push, we have yet to see it adequately addressed in the pods and systems being attached to bike racks and public infrastructure. These systems are parasitical and do not adequately address EQUITY in low cost options alone. Therefore a percentage should be done financially that re-invests in public mass-transit systems connections, loops and links in existing infrastructure.

Thank you all for addressing these concerns in your discussion later today.

Sincerely

Aaron Goodman D11
amgodman@yahoo.com

BOARD of SUPERVISORS



City Hall
Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

October 2, 2019

File No. 190972

Lisa Gibson
Environmental Review Officer
Planning Department
1650 Mission Street, Ste. 400
San Francisco, CA 94103

Dear Ms. Gibson:

On September 24, 2019, Supervisor Brown submitted the proposed legislation:

File No. 190972

Ordinance amending the Environment Code to require new construction and major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources; and affirming the Planning Department's determination under the California Environmental Quality Act.

This legislation is being transmitted to you for environmental review.

Angela Calvillo, Clerk of the Board

A handwritten signature in cursive script, appearing to read "Erica Major".

By: Erica Major, Assistant Clerk
Land Use and Transportation Committee

Attachment

c: Joy Navarrete, Environmental Planning
Don Lewis, Environmental Planning

Not defined as a project under CEQA Guidelines Sections 15378 and 15060(c)(2) because it would not result in a direct or indirect physical change in the environment.

joy
navarrete

Digitally signed by joy navarrete
DN: dc=org, dc=sfgov, dc=cityplanning,
ou=CityPlanning, ou=Environmental
Planning, cn=joy navarrete,
email=joy.navarrete@sfgov.org
Date: 2019.10.17 17:02:09 -07'00'

BOARD of SUPERVISORS



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MEMORANDUM

TO: Deborah Raphael, Director, Department of the Environment
Harlan Kelly, Jr., General Manager, Public Utilities Commission

FROM: Erica Major, Assistant Clerk, Land Use and Transportation Committee

DATE: October 2, 2019

SUBJECT: LEGISLATION INTRODUCED

The Board of Supervisors' Land Use and Transportation Committee has received the following proposed legislation, introduced by Supervisor Brown on September 24, 2019:

File No. 190972

Ordinance amending the Environment Code to require new construction and major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources; and affirming the Planning Department's determination under the California Environmental Quality Act.

If you have comments or reports to be included with the files, please forward them to me at the Board of Supervisors, City Hall, Room 244, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 or by email at: erica.major@sfgov.org.

cc: Peter Gallotta, Department of the Environment
Charles Sheehan, Department of the Environment
Juliet Ellis, Public Utilities Commission
Donna Hood, Public Utilities Commission
John Scarpulla, Public Utilities Commission
Mona Panchal, Public Utilities Commission

Introduction Form

By a Member of the Board of Supervisors or Mayor

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2019 SEP 24 PM 1:17

BY  Time stamp
or meeting date

I hereby submit the following item for introduction (select only one):

- ☒ 1. For reference to Committee. (An Ordinance, Resolution, Motion or Charter Amendment).
- ☐ 2. Request for next printed agenda Without Reference to Committee.
- ☐ 3. Request for hearing on a subject matter at Committee.
- ☐ 4. Request for letter beginning : "Supervisor inquiries"
- ☐ 5. City Attorney Request.
- ☐ 6. Call File No. from Committee.
- ☐ 7. Budget Analyst request (attached written motion).
- ☐ 8. Substitute Legislation File No.
- ☐ 9. Reactivate File No.
- ☐ 10. Topic submitted for Mayoral Appearance before the BOS on

Please check the appropriate boxes. The proposed legislation should be forwarded to the following:

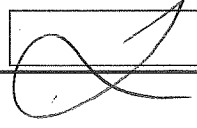
- ☐ Small Business Commission ☐ Youth Commission ☐ Ethics Commission
- ☐ Planning Commission ☐ Building Inspection Commission

Note: For the Imperative Agenda (a resolution not on the printed agenda), use the Imperative Form.

Sponsor(s):

Subject:

The text is listed:

Signature of Sponsoring Supervisor: 

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energy
sources.