

# San Francisco Zero Emission Building Taskforce - New Construction Work Group:

Meeting #3 Notes

**New Construction Work Group – Meeting #3**

Friday, April 3, 2020 from 9:00am-11:00am

Online

Hosted by: San Francisco Department of Environment Taskforce

Facilitated by: Michelle Vigen Ralston, Common Spark Consulting

## Attendees

Those in attendance are listed below. Those grayed-out were absent.

Name	Organization	Representation
Robb Kapla	SF City Attorney's Office	SF City Attorney's Office
Ted Tiffany	Guttman & Blaevoet	MEP Engineering, various TAGs
Becky Alderete	SFPUC Power	Municipal Utility
Terezia Nemeth	Alexandria Real Estate	Developer - Research Buildings
Lisa Fisher	SF Planning	SF Planning Department
J. Edgar "Ned" Fennie	Fennie+Mehl Architecture	DBI- Code Advisory Committee
Tony Birdsey	Tishman Speyer	Developer – Large Commercial
James Zhan	SF Department of Building Inspection	SF Building Officials
Richard Berman	Port of San Francisco	City Partner
Ruchi Shah	Tenderloin Neighborhood Development Corporation	Developer – Affordable Housing
Danny Murtagh	Boston Properties	Developer – Large Commercial
David Fahey	San Francisco Plumbers Union	Labor
Michelle Pierce	Bayview Hunters Point Community Advocates	Equity Advocates
Hannah Kaye	PG&E	Investor-Owned Utility
Jacob Bintliff	SF Board of Supervisors	Staff - Supervisor Mandelman
Avni Jamdar	Emerald Cities	Equity Advocates

Scott Shell	EHDD Architects	Architects
Stet Sanborn	SmithGroup	MEP Engineering
Hilary Noll	Mithun	Housing Action Coalition & Affordable Architecture
Pierre Delforge	NRDC	Environmental Advocate
John O'Connor	Residential Builders Association	Developer – Infill Residential
Enrique Landa	Associate Capital	Developer – Large Residential and Commercial Projects

San Francisco Environment Staff in attendance included: Cyndy Comerford, Climate Program Manager; Barry Hooper, Green Building Specialist

Consultant Team: Michelle Vigen Ralston and Jack Chang, Common Spark Consulting

## Meeting Notes

### 1. Welcome and Introductions

Michelle Vigen Ralston kicked off the meeting by outlining the morning’s goals – reviewing the city’s straw proposal for new construction, summarizing discussion during the past two New Construction Work Group meetings, addressing how the city might approach buildings already in the planning process and mapping the city’s building decarbonization outreach and education needs. Vigen Ralston also asked participants, as an icebreaker, to recognize a hero or heroes for their service during the ongoing coronavirus pandemic.

### 2. Presentation of Straw Proposal

#### Public Health, Climate and Public Safety Considerations

Cyndy Comerford acknowledged uncertainty about the future given the ongoing coronavirus crisis. She said, however, that climate change was also a public health concern and needed to be addressed. She pointed to the Labor Day 2017 heat wave that spiked Emergency Medical Services calls in San Francisco. She also noted that natural gas use increases rates of respiratory disease and that long-term exposure can cause asthma in healthy children.

She also highlighted natural gas’ impact on climate change and said methane in natural gas traps 86 times more heat as carbon dioxide does. Building emissions made up 44% of the city’s total greenhouse gas emissions in 2017, with natural gas accounting for the vast majority of those emissions.

Finally, Comerford pointed to the public safety risks of natural gas use, including the Hall of Justice gas leak that cleared the building in February 2019 and a fire that same month that was ignited by a ruptured natural gas pipeline at Parker Avenue and Geary Boulevard, damaging five buildings. Comerford said in

the event of a magnitude-7.9 earthquake, the city estimated that restoring natural gas service to 95% of customers could take up to six months as opposed to a week for electricity service.

Proposed Ordinance

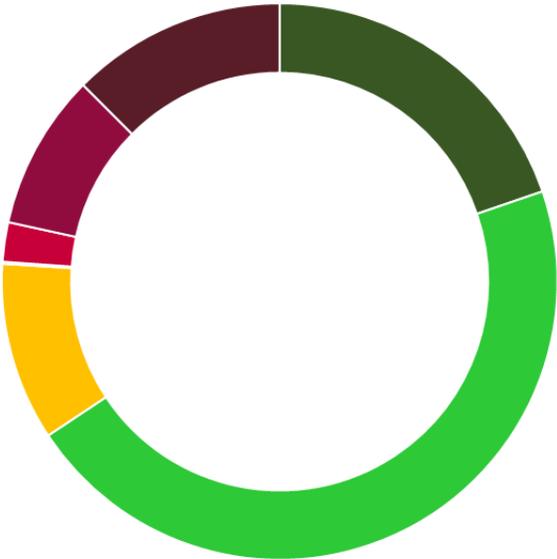
Comerford said the city has set a goal of cutting greenhouse gas emissions by 68% by 2030 and reaching net zero emissions by 2050. Mayor London Breed has set specific steps toward reaching those goals by ordering all new construction be fully electric by 2030 and existing buildings in the city transition to fully electric systems powered by 100% renewable electricity by 2050.

Comerford presented the straw proposal for new construction: The City Attorney’s Office has recommended reaching the new construction goals by amending the city’s building code, but not its energy code, Comerford said. Amending the building code does not require California Energy Commission (CEC) approval, she said. The proposed ordinance would prohibit natural gas infrastructure from being installed in any new building in which an electric system or design is available. Additionally, no permits would be issued to modify all-electric buildings to use natural gas. Also, the ordinance would not let natural gas infrastructure be added to mixed-use buildings. The ordinance would go into effect on January 1, 2021 and apply only to newly constructed buildings, and not to additions or alterations.

Buildings in the Pipeline

The requirement would be enforced through the city’s building permit application process. It would apply to an estimated 66% of units in the city’s development pipeline, such as those projects with applications filed with the Planning Department. The ordinance would not apply to projects that have already filed building permit applications with the Department of Building Inspection, including projects already under construction.

Ordinance would apply	■ Application Filed with Planning Department	66%
	■ Application Approved by Planning Department	
Ordinance would not apply	■ Building Permit Application Filed with Department of Building Inspection	34%
	■ Lapsed Building Permit Application is "re-instated" by Department of Building Inspection	
	■ Building Permit Application Approved by Department of Building Inspection	
	■ Approved Building Permit Application Issued by Department of Building Inspection	
	■ Project is Under Construction	



## Exemptions

Comerford said the ordinance would establish a case-by-case process for reviewing possible exemptions to the requirement based on concerns such as technological limitations, cost prohibitions, health, safety and welfare impacts. The straw proposal proposes to develop rules and regulations for the Department of Building Inspections (DBI) to evaluate cases for exemptions. This process is designed in response to known issues in specific building types such as labs and life sciences buildings, affordable housing, restaurants and infill development with transformer placement challenges. That said, Comerford emphasized that the ordinance would not favor one building type over another and there are no blanket exemptions for types of buildings. She added that the city has ordered all buildings to be all-electric by 2050, which means buildings exempted now would eventually need to transition off natural gas systems.

Barry Hooper said that similar to the city of Berkeley, San Francisco was considering a process for considering natural gas use in the case of possible code conflicts, or if in a specific site electrification was proved to entail sufficient added cost to result in less housing units built.

## Cost Savings

Comerford presented one cost scenario supporting how all-electric new construction buildings can save money. In the case of the Maceo May Apartments on Treasure Island, replacing solar water heaters and eliminating natural gas use in favor of electric direct hot water saved \$242,000 in construction costs.

Jacob Bintliff said Supervisor Rafael Mandelman's office was working with the city to wrap up this round of stakeholder conversations and continue developing the ordinance.

## Questions and Discussion

### Exemptions

**Height limits:** One participant asked about exemptions for buildings surpassing a height limit. Comerford said the city was not able to verify a reason that height would pose a specific engineering limitation and would continue to look for guidance on whether there is a sound basis for considering height exemptions.

**Affordable housing:** Several participants said affordable housing developments have already largely switched to all-electric systems. They asked why the City has identified affordable housing developments as possibly eligible for exemption. Comerford responded that the City wanted to ensure that the electrification mandate didn't prevent affordable housing units from being constructed due to cost concerns. A stakeholder pointed out affordable housing also shouldn't be allowed to present more health risks than other buildings as well due to continued natural gas use, because allowing less healthy conditions in affordable housing would not be equitable. Barry Hooper, of the San Francisco Dept of Environment, added via chat that the city might allow some flexibility for specific building systems rather than whole buildings in affordable housing construction, such as when base building systems for space conditioning or water heating presented specific technical or cost challenges.

**Residential buildings:** A participant asked about possible exemptions for all residential buildings. Comerford responded that the city was not considering blanket exemptions for any building type or land use.

**Restaurants:** One participant noted that restaurants depend on natural gas now and are having a tough time sustaining themselves even with natural gas stoves. Requiring all-electric appliances in restaurants could be a deal-breaker, especially for cultural cooking restaurants. The participant also noted that the most efficient time to install a gas connection in a new building is during base construction, not later when a lease is signed is released.

Bintliff said Supervisor Mandelman's offices was reaching out to restaurants, which have been devastated by coronavirus-related closures. He said such concerns were a main driver for pushing back public introduction of the policy from April to May, to avoid adding more issues to restaurants during a challenging time. Bintliff noted that the ordinance would affect only new buildings, which means no existing restaurants would be affected. The city recognized that cultural cooking would be a big issue in the decarbonization debate, as well as the mom and pop restaurants.

Comerford noted that outreach to restaurants and other businesses has been limited over the past month due to shelter in place orders.

**Decorative roofs:** A participant noted that the city doesn't allow flat roofs on commercial buildings, which largely prevents the installation of PV on new buildings. The participant proposed including an exemption for such flat roofs to create more space for PV.

**Market signal:** One participant proposed via chat that the city not allow any exemptions and instead send a clear signal that the transition to decarbonized buildings was happening. The participant suggested that if exemptions are allowed, that builders should be required to purchase trustworthy carbon offsets equivalent to the 50-year greenhouse gas impact of the gas connection. Another participant said including language in the ordinance listing building types that could be exempted would only create confusion.

**Exemption Process:** Another participant wrote via chat that city reviewers should be given a clear list of criteria by which to judge case-by-case exemptions.

### Electrical system capacity

Several participants asked about the capacity of the city's grid infrastructure to serve higher loads due to building electrification. Participants asked about the capacity of the city's older secondary grid to handle all-electric new construction. One participant described a building that had been designed as zero net carbon but had to abandon that plan due to grid constraints. Hooper said the city would pursue making available a clear map of utility infrastructure that building applicants could use while planning.

PG&E representative Hannah Kaye said she would find out more about Integration Capacity Analysis (ICA) maps that provide detailed grid capacity information. She noted that providing electric power for retrofits versus new construction was a different process for PG&E. Overall, she said the utility was very

supportive of servicing all-electric new construction and wanted to work with San Francisco and other cities.

An SFPUC representative noted that electricity infrastructure upgrades would be needed throughout the city so load issues wouldn't be relegated to the secondary network. The SFPUC would be interested in seeing more detailed grid infrastructure data as well.

Another participant said increased load wasn't going to come from building electrification as much as from increased electric vehicle charging. Building load planning is designed mainly around cooling in the summer months, and air conditioning is electric.

### Solar water heating

One participant asked about the city presentation noting the possible cost savings of removing solar water heating. Hillary Noll said most mechanical engineers find that solar water heaters don't couple well with air source heat pump systems due to temperature differentials<sup>1</sup> and integration problems between the two systems. Solar water heaters also require more maintenance. By contrast, on-site generation of electricity with photovoltaics combined with on-site use of electricity by heat pumps is the most cost-effective option for all-electric design and providing the desired environmental benefits.

A participant said the California Energy Commission (CEC) was leaning toward replacing its solar thermal requirement with PV requirements for integrating with heat pump water heating systems. Another participant said PV plus heat pumps have a great return on investment.

### Title 24 All-Electric Modeling

One participant noted that modeling all-electric systems has been a challenge in the software for Title 24, and that the proposed San Francisco ordinance wouldn't be in line with the state's energy code.

Another participant said several fixes are already available on the hot water side of the Title 24 software and that a three-phase approach is also being put in place at the CEC. The main obstacle has been the inability to model central heat pump water heating for domestic hot water. A fix is already in place allowing the use of a central system with CO<sub>2</sub>-based refrigerant, the participant said, with additional options on the way. The CEC was also looking at doing more to incorporate non-CO<sub>2</sub>-based systems in the software.

One other participant said the space conditioning baseline for high-rise buildings is being changed by the CEC to match the baseline for mid-rise, which will make the high-rise electrical baseline more reasonable.

---

<sup>1</sup> Efficiency of most air source heat pump water heaters is strongly influenced by the differential between input water temperature and the temperature set point; such units can heat up incoming cool water much more efficiently than water which has been preheated by a solar hot water heating system.

## Port of San Francisco

A Port of San Francisco representative noted that the Port would not be included in the ordinance if it was written as part of the San Francisco Building Code because the Port has its own building code. In that case, the Port could modify its own code according to the city’s.

James Zhan of the Department of Building Inspections (DBI) responded that his department has been in constant discussion with the port about how to coordinate between the two sets of regulations. He said a MOU exists between the department and the Port asking DBI to serve as a consultant on the Port’s plan review and inspection services and that the MOU spells out that DBI’s services are based on the city’s building code, which covers building code through Title 24, Title 2 and Title 11, which is the Green Building Code.

The port representative said that MOU, however, might not apply to this ordinance. They would continue this discussion offline, and the Port is supportive of all-electric new construction.

### Chat comments

Participants also shared comments, questions and concerns in the chat box. A summary of stakeholder comments is included in the Appendix.

## 3. Outreach and Education: Mapping Needs

Vigen Ralston asked participants to use the chat box to offer input on ordinance outreach and education. This is a summary of stakeholder comments:

Who	What (beyond the ordinance)	How
Building Owners/Developers		AIA, BOMA, ASHRAE, USGBC San Francisco Business Times IREM, IFMA
Tenants (Potential or pre-leased) Restaurants		Restaurant Association
Tenants, Residential	Education about induction stoves, other electric appliances	Resident Services team
Workforce, Contractors, Subcontractors <ul style="list-style-type: none"> <li>- Mechanical</li> <li>- Plumbing</li> <li>- MWDVBE</li> </ul>	Training on systems installations Education and training on electrification	Pacific Energy Center holds some classes Free or low-cost courses at the City College of San Francisco or San Francisco State University.
Code Compliance Consultants		ICC Chapters
Design Engineers		

<b>Architect/MEP Firms</b>	Technologies and modeling for T24	DBI database and who is in the Planning pipeline – reach out via stakeholder meetings and webinars AIA newsletter blast
<b>Product Manufacturers</b>		Notice or Article to ASHRAE Chapters, HVAC Union Halls
<b>DBI Plan Checkers</b>	Technical support in terms of available technologies/approved devices Electrical Plan Check Engineers – capacity calculations	Internal training/workshop Support from PG&E and SF PUC for capacity calculations
<b>Kitchen Equipment Suppliers</b>	All-electric alternatives to major kitchen equipment, not just induction cooktop, ovens, fryers, etc. that are cost comparable	<ul style="list-style-type: none"> <li>- Fish-nick</li> <li>- PG&amp;E Energy Center</li> </ul>
<b>Affordable Housing Owners and Financing</b>	Financing folks on how utility allowances for all-electric can be calculated	CHPC runs a green owner’s group
<b>Real Estate Brokers</b>	Marketing of market-rate condos Messaging about air quality and benefits of electrification and ceasing the promotion of gas ranges as ‘luxury’ Enables building to meet LEED, GPR, etc. certification	

#### 4. What to Expect Next

Comerford said the city planned to do more to make the stakeholder process more inclusive. She said details around possible exemptions, factors/criteria, needed to be fleshed out and that the city would send out a survey to work group participants about exemptions. The city could also hold another meeting just about exemptions. The city plans to release a policy brief and solicit more participant feedback on rules and regulations. She said the city will circle back with work group and January 2020 public workshop participants at different steps of the process, such as when legislation is introduced and as it’s considered by committees, the Board of Supervisors and the planning department. She said it was timing for introducing the legislation is still uncertain given the ongoing coronavirus emergency.

Bintliff said Supervisor Mandelman’s office plans to put out a clear statement in June as to where the new rules are headed. He added that the Board of Supervisors has cancelled its August recess so that could help speed up the process.

#### 5. Closing Exercise

Vigen Ralston ended the meeting by asking participants their impressions on the process and to list something new they had learned.

Participant comments included that the process needs to go faster, that getting out the message was important and that the work group's range of expertise was a major asset to creating a successful ordinance.

## Appendix: Facilitator Chat Transcript re: Straw Proposal

*The below chat transcript has only been edited for clarity. Chats not pertaining to the topic have been removed. Attribution removed except for those of the facilitator and City of San Francisco staff.*

[Would the ordinance apply] to substantial rehabs too?

Curious everyone's thoughts on affordable housing exemptions from an equity and public health perspective. Should these units be the priority to solve? the "exemption" is they qualify for technical and/or financial support. We have great statistics on the human health impacts of natural gas so would not want the narrative to end up affordable housing = less healthy housing

Response From Barry Hooper: The documented IAQ impacts are due to open combustion in the building. In new construction, that's limited to cooking. Affordable housing already systematically uses electric cooking.

From Barry Hooper: So, the basis for *\*some flexibility\** for affordable housing is in the event the base building systems pose specific challenges, those systems could get an exemption.

From Barry Hooper: That would, in the moment relate to DHW.

I keep hearing from colleagues that affordable housing is most cost effective as all electric. The designers I know working on these buildings are already going all electric. Happy to share lots of examples.

I have concerns and questions about utility engagement on this.

Is there a plan to phase out exemptions to send a market signal that exemptions will not be around forever?

Again, this is just for new construction. I don't think there should be any exemptions. Or, teams seeking an exemption should be required to purchase a GHG offset from ILFI or other reputable groups equivalent to 50-year GHG impact of that gas connection.

Utility challenges and secondary network issues makes it extremely expensive to put PV on affordable housing.

It would be good to have PUC/PGE provide city map of where the capacity of the electrical network cannot accept new load. That could provide a roadmap to SFPUC to phase in infrastructure upgrades to support future electrification. This applies to future retrofits

Please make sure there is a good list of criteria defined for Case-By-Case reviewers to reference in reviewing applications and developing Administrative Bulletins to help both DBI make decisions, and the public in knowing ahead of design/permit application where their appeal would be approved.

I really hope this group could share more on how utilities are engaged on this policy.

[ ] raised two excellent ideas above re offsets and mapping capacity. +1

How big is the secondary grid that has this issue?

Will there be a 3rd party panel that reviews technical exemptions? I.e. making sure DBI has support to know about current technical approaches

I am not sure, but I think on PG&E's site they have zip codes. TNDC has a lot of sites on that network.

I guess can have a technical supporting/advisory team by all the technical experts from this group, to support DBI in making those difficult decisions.

In a new building, when designing for future retail, IF there were going to be some consideration for a large restaurant, the most efficient time to bring a stub to the new building is during base construction. remembering that the utility dictates via the green book how gas comes into the building and the requirements for gas meter rooms and ventilations are done best at time of construction not later when a lease is signed. even if no gas is made live at time of base construction, provisions should be done just in case. just a comment for consideration.

Will the ordinance language list the building types that were shown on the slide? I do not support it doing so — this could add confusion.

The city doesn't allow flat roofs on commercial buildings, this limitation excludes the installation of PV on new buildings. can an exemption for decorative roofs be made to allow more space on top of the building for PV?

DBI can work with SFE/City attorney to address the bldg. types

If the exemption plays out more like a planning code variance (case by case), is that a good situation?

[Facilitator prompted participants for any last comments about the proposal in the chat box.]

Workforce issues not addressed.

Would like to see the parallel workforce training program

A PV roof should be considered a better roof in SF

From Barry Hooper: Could you clarify - Are you recommending that PV should be the preferred use of roof space, or referring to the 'better roofs' ordinance?

Response from Stakeholder: Flatter roof space in commercial buildings with fewer architectural impediments so PV space would be larger and more beneficial element for the building construction

I'm concerned this process is being rushed too much and more time and thoughtful consideration is necessary

Outreach and education are key so thanks for the focus on this. I'm also hearing from architects and engineers that the word is getting around fast since 30 or so cities have already passed electrification ordinances. thanks for the very thorough process.