San Francisco Zero Emission Building Taskforce  
- Existing Commercial Buildings Work Group

Public Webinar

Existing Commercial Buildings Work Group – Public Webinar
Wednesday, March 11, 2020 from 9:30am-11:30am
Hosted by: San Francisco Department of Environment
Facilitated by: Michelle Vigen Ralston, Common Spark Consulting

Meeting Notes

1. Welcome and Introduction

The facilitator, Michelle Ralston, opened the meeting, providing instructions on how participants can un-mute and participate in the discussion, summarized the agenda, and recognized City staff, the consultant team, and the various perspectives represented by Work Group members.

San Francisco Environment Staff in attendance included: Cyndy Comerford, Climate Program Manager; Barry Hooper, Senior Green Building Specialist; Rich Chien, Senior Green Building Specialist; Paris Smith, Green Building Energy Associate

Consultant Team: Lane Burt, Ember Strategies; Michelle Vigen Ralston and Jack Chang, Common Spark Consulting

2. Background

Barry Hooper, a Senior Green Building Specialist with the City of San Francisco, provided a background presentation. Summary:

Energy use in San Francisco buildings contributes roughly half of citywide carbon emissions. Mayor London Breed has pledged to ensure all buildings citywide operate at zero carbon emissions no later than 2050. Mayor Breed’s pledge builds upon climate science, established local laws committing to mitigate San Francisco’s contribution to climate change, technical analysis, and substantial evidence of progress.

The Zero Emission Buildings Taskforce was convened to inform a Roadmap to Zero Emission Buildings. The ZEB Taskforce is comprised of workgroups of leaders across sectors. The Existing Commercial Buildings Workgroup focuses on the largest commercial buildings due to scale of energy use & emissions. The task for the Existing Commercial Buildings (ECB) Workgroup: Recommend how can the City help

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2 More info: [https://sfenvironment.org/zebtaskforce](https://sfenvironment.org/zebtaskforce)
stakeholders plan and implement the elimination of operational carbon emissions in the largest buildings in the City. The group is encouraged to prioritize base building systems as these are commonly under owners’ control, and large-scale systems will require time, expertise, and planning to electrify.

Participants from the city and the ECB workgroup agreed to three ideas early on:

- The cost of failure to act on climate risk is too great.
- The City and constituents have shared interest in mitigating climate risks. Owning a building entails risk of climate impacts to local infrastructure — and corresponding investment.
- Time is a useful and necessary tool to manage change.

Operational energy use in San Francisco commercial buildings is supplied by electricity, onsite use of fossil fuel (natural gas), and district steam (fueled by natural gas). The recipe for decarbonization of buildings is: improve energy efficiency, supply renewable electricity, and electrify systems that rely upon on-site fossil fuel use. In the previous three decades (1990-2017), total carbon emissions from the operation of buildings in San Francisco have been reduced 51% through energy efficiency investments & codes, and development of renewable electricity sources.

- Efficiency: From 2013-2017, citywide GDP, employment, and commercial property value rose, while total energy used by commercial buildings declined 11%.
- Renewable Electricity: In 2018, 69% of total grid-supplied electricity in San Francisco in 2018 was generated from renewable sources. Electricity today is the lowest-carbon energy input for local buildings, and the City’s goal is to provide 100% renewable electricity citywide by 2030.
- Fossil Fuel Use: In 2018, combustion of natural gas accounted for 81% of total carbon emissions from operation of buildings in San Francisco.4

In addition, natural gas is a resilience issue. In the event of a magnitude-7.9 quake, local utility PG&E has estimated electricity service would be restored to 95% of customers in San Francisco within a week. For natural gas, restoration of service to 95% of customers has been estimated to require six months.5

The City is committed to meeting its climate goals, and is therefore by necessity planning for a range of potential future actions. Decarbonization by 2050 would require 3.5% of buildings or building systems to eliminate onsite fossil fuel use to reach its target. The counsel of stakeholders is sought in order to proactively empower private sector ingenuity and capacity to accelerate building decarbonization.

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3 Department of Environment (2020) San Francisco Climate Storyboard https://sfenvironment.org/sf-climate-dashboard
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3. Presentation of Work Group Discussion and SF Interpretation

Michelle Vigen Ralston, the facilitator with Common Spark Consulting, reviewed the main points that the city heard from stakeholders during Existing Commercial Buildings Work Group meetings.

- Building owners need a strong, clear signal about coming mandates for existing commercial buildings including timelines for implementation and sizes of buildings impacted.
- Planning will be key to reaching the city’s goals. The city needs to work with stakeholders to come up with a nuanced, realistic decarbonization plan. That cooperation could include pilots and roles for the city to help building owners navigate the available technology for building electrification.
- The city must be reasonable and understand every building faces unique challenges and the different runways that every building will need to reach zero emissions. That will include factoring in known complexities such as steam heat and tenant energy system controls and equipment.
- The city must validate building electrification successes by publicly recognizing fully decarbonized buildings. The value of distinctions will be amplified if they are recognized by environmental and social responsibility reporting regimes.
- Consider a geographic approach to plan for shrinking natural gas infrastructure to help utilities better plan for electrification and avoid some consumers from being stuck with paying for the maintenance of the remaining natural gas system.

<table>
<thead>
<tr>
<th>Task Force Input</th>
<th>SFE Interpretation</th>
<th>*Fine Print</th>
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<tbody>
<tr>
<td>Send a strong clear signal.</td>
<td>All commercial buildings must decarbonize by 2035.</td>
<td>Large buildings may have resources, but struggle with complexity and timing. Small buildings can act, but lack resources.</td>
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<tr>
<td>Planning is key.</td>
<td>The City will help owners create an electrification plan.</td>
<td>City-supported pilots and case studies are needed. Technologies and approaches must improve. Capital planning cycles are key.</td>
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<tr>
<td>The City must be reasonable.</td>
<td>Every building will face unique challenges in complexity, cost, and degree of control.</td>
<td>The City must create a process for considering extensions. Steam users, tenant equipment, etc, are known issues.</td>
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<tr>
<td>The City must validate success.</td>
<td>Fully decarbonized buildings should be recognized.</td>
<td>The recognition needs to be public in the local market and usable by ESG reporting mechanisms like GRESB.</td>
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<tr>
<td>Investigate a complementary geographic approach.</td>
<td>We need a decarbonization masterplan.</td>
<td>Network and resilience benefits accrue block by block. Gas rates are driven by fixed costs, creating equity concerns as the system shrinks.</td>
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Timing

One representative of a large building owner said the proposed 2035 target for transitioning all commercial buildings to all-electric existing commercial buildings was too quick and overly strict. The representative suggested phasing compliance dates in five-year increments based on the size of building, starting in 2030. The representative also asked why the city was focusing on eliminating natural gas from buildings when it was cleaner than other energy sources.
Another large building owner representative suggested targeting buildings with the highest consumption of natural gas first and then phasing in buildings with lower consumption. The same representative noted some buildings have substantial unutilized boiler capacity, and BAAQMD has allowed some boilers that do not meet current criteria air pollutant standards to remain in place where it has been demonstrated the boiler use <10% of capacity (so produces emissions similar to or less than a modernized boiler with greater utilization). Another participant offered electrifying small buildings may be more straightforward because they can use more off-the-shelf, all-electric technology.

A large building owner representative suggested that upon the transfer of a building title or upon sale, the purchaser would have a time period to complete building electrification. That would let owners factor in that cost into the purchase process and underwrite those costs. Properties that don’t change hands might have a longer window to comply such as in 2045.

Several people responded that the city needed to address natural gas use since it made up 80% of remaining carbon emissions from city buildings. One participant pointed out that natural gas emissions had a global warming potential up 86 times higher than that for carbon dioxide.

The city responded that 2035 was a date discussed by the existing commercial building working group but that there would be space to tailor exceptions for buildings with unique needs.

Planning

An engineering firm representative suggested using the city’s existing requirement to perform energy audits as a platform to plan electrification of the existing building stock.

Another engineer noted the city had put together an alternative compliance path, the Strategic Energy Assessment (SEA), to its mandatory audit requirements and had changed the format of audits from American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) to more of a capital planning document.

The city added that the SEA helps people think about energy as part of a capital planning approach. The city said the assessment wasn’t an electrification product but could be used in that way by motivated engineers. The city has long required audits based on ASHRAE standards but the SEA lets building owners perform an engineering survey focused on near- and long-term energy system capital improvement possibilities.

An engineer said a strategic decarbonization plan could also help building owners come up with capital plans that would identify the order of buildings needing to be converted to all electric uses.

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6 The participant did not cite a source. From Dept of Environment: Atmospheric methane traps 104 times as much heat as an equivalent amount of CO2. The lifetime of methane in the atmosphere is 12 years before it oxidizes to CO2. Therefore, Dept of Environment recommends generally accounting for methane impacts over a 20-year time frame (GWP20) to avoid misleading dilution of methane’s impact. The IPCC 5th Assessment report calculated methane GWP20 of 86; meaning that over a 20-year timeframe, the impact of methane is 86 times greater than CO2. For more information: Dept of Environment (2017) Methane Math https://sfenvironment.org/download/methane-math-how-cities-can-rethink-emissions-from-natural-gas
Grid Capacity

A PG&E representative answered concerns from a building owner about grid capacity by saying that given that electrification will occur over an extended period, the utility fully expects to meet the needs that all-electric buildings will require.

Resilience

A representative of a large commercial tenant said building energy resilience was a priority in its real estate decisions and that resilience needed to play an important role in the building electrification conversation.

Building Efficiency

One participant suggested looking at how building efficiency best practices can be used to control buildings’ load profiles rather than only looking at fuel use. The city responded that building efficiency alone wouldn’t be able to help the city reach zero emissions.

Back-up Generation

One participant suggested using propane or natural gas for back-up generation and said batteries aren’t a good solution for long-term power.

The city responded that natural gas is rarely used in back-up generation due to resilience concerns. Liquid fossil fuels stored on-site are the standard approach, and Dept of Environment has developed tools to support the sizing and deployment of solar and battery storage for energy continuity.7

4. Recap and Next Steps

Michelle Ralston provided a recap of the webinar and noted that the Work Group would be having a third and final meeting before wrapping up. City staff would then be working on drafting the Roadmap with the input from the Work Group and from this Public Webinar.

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7 See: www.solarresilient.org and www.sfenvironment.org/solar-energy-storage-for-resiliency