

# Methane leakage is as large a GHG impact as combustion--please don't exempt methane/hydrogen fuel cells

Sean Armstrong

Tue 12/1/2020 12:04 AM

To: Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul <[REDACTED]>  
Diep, Lan <[REDACTED]> Arenas, Sylvia <[REDACTED]> Esparza, Mava <[REDACTED]>  
Jones, Chappie <[REDACTED]> Jimenez, Sergio <[REDACTED]> Carrasco, Maaddalena  
<[REDACTED]> Foley, Pam <[REDACTED]> Khamis, Johnny <[REDACTED]>  
Cc: Agendadesk <[REDACTED]> City Clerk <[REDACTED]>

[External Email]

Honorable San Jose Councilmembers,

You may not know that "natural gas" has two profound, roughly equal impacts on our climate. Combustion is well understood, but "natural gas" that is leaked rather than burned is 34 times more powerful than CO2 over 20 years, like a magnifying glass compared to a dirty greenhouse window.

**Leaking more than 3% means just the leaked methane is equal to the GHGs cause by burning the other 97%**, and sadly it appears from the studies summarized below that **methane leaks at 2.2%-17.3% from natural gas fields**. Hydrogen/methane fuel cells still contribute dramatically to our climate crisis.

Below is an image from an [expose in the New York Times](#) of methane leakage nation-wide, and below that is a map of all the natural gas fields that are physically delivering natural gas to hydrogen fuel cells and other natural gas uses in California. Because we import almost 90% of California's gas, our state uses fracked gas all the way from Pennsylvania and from offshore wells in Oklahoma, and every state in between.

Please end this natural disaster from natural gas. There is no clean way to extract it, no safe way to deliver it, and no final use that is so essential that it cannot be met by other, better means.

Thank you!  
Sean Armstrong



November 30, 2020

David Bini  
 Executive Director

Robert Baldini  
 President

Honorable Mayor and City Council  
 City of San Jose  
 200 East Santa Clara Street  
 San Jose, CA 95113

- Boilermakers 549
- Brick & Tile 3
- Carpenters 405
- Carpenters 2236
- Carpet & Linoleum 12
- Cement Masons 400
- Electricians 332
- Electricians 234
- Elevator Constructors 8
- Glaziers 1621
- Heat & Frost Insulators 16
- Iron Workers 377
- Laborers 270
- Laborers 67
- Lathers 9144
- Millwrights 102
- Operating Engineers 3
- Painters District Council 16
- Painters & Tapers 507
- Plasterers 300
- Plumbers & Steamfitters 393
- Roofers 95
- Sheet Metal Workers 104
- Sign, Display 510
- Sprinkler Fitters 483
- Teamsters 853
- UA Local 355

Re: Item 6.1-Updated Natural Gas Infrastructure Prohibition Ordinance

Dear Mayor and Council,

The Santa Clara and San Benito Counties Building and Construction Trades Council (Building Trades Council) stands in solidarity with UA Local 393 on the subject of GHG reduction efforts. The 11-30-2020 letter from UA Local 393 Business Manager Steven Flores highlights the opportunity to minimize the impact on local workers of addressing the threat of global climate change by also addressing water efficiency. Such a compromise as detailed by Mr. Flores would multiply ecological achievements while preventing massive cuts to local employment.

Specifically, we ask that you direct staff to:

- 1) Include the recommended exemptions in the Staff Memorandum from Kerrie Romanow dated 11/16/2020 in the Natural Gas Infrastructure Prohibition Ordinance.
- 2) Convene a Future of Work Workshop with key stakeholders from labor, business, and the environmental community as recommended by Mr. Flores, by March 31<sup>st</sup>, 2021.

The Building Trades Council appreciates your leadership on addressing climate change, drought, and other ecological concerns, and your anticipated efforts to see that our local workforce is at the table to assist you in these endeavors.

Sincerely,



David Bini  
 Executive Director

Affiliated with:  
 State Building and  
 Construction Trades  
 Council of California  
 California Labor Federation,  
 AFL-CIO  
 California Labor C.O.P.E.  
 South Bay AFL-CIO  
 Labor Council



# Fw: Pass gas ban; reject Bloom Energy's request for an exemption (Agenda Item 6.1)

Gregory, Barbara

Tue 12/1/2020 7:17 AM

To: Agendadesk <[REDACTED]>

Hi

I think you were cc 'd just making sure

Thank You,

*Barb Gregory*



**Analyst II**

**Office of the City Clerk**

**200 E Santa Clara St FL T-14**

**San Jose, C-A 95112**

**408-535-1272 Fax: 408-292-6207**

**e-mail:** [REDACTED]

**[How is our service? Please take our short survey.](#)**

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**From:** diane@dianesdreamdestinations.biz <diane@dianesdreamdestinations.biz>

**Sent:** Tuesday, December 1, 2020 1:06 AM

**To:** Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul

<[REDACTED]> Diep, Lan <[REDACTED]> Arenas, Sylvia <[REDACTED]>

Esparza, Maya <[REDACTED]> Jones, Chappie <[REDACTED]> Jimenez, Sergio

<[REDACTED]> Carrasco, Magdalena <[REDACTED]> Khamis, Johnny

<[REDACTED]> Foley, Pam <[REDACTED]>

**Cc:** Agendadesk <[REDACTED]> City Clerk <[REDACTED]>

**Subject:** Pass gas ban; reject Bloom Energy's request for an exemption (Agenda Item 6.1)

[External Email]

Please pass the original updated gas ban ordinance without the exemptions proposed in the Supplemental Memos of 11/16 or 11/23, so that San Jose can meet its climate goals. (Yes, I live next door, but my sister lives in San Jose, and I go there often, or did until March.)

Sincerely,

Diane Harrison

[REDACTED]

(land of the Ohlone and  
Muwekma Ohlone people)

[REDACTED]

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# Re: Natural Gas Prohibition

Agendadesk

Tue 12/1/2020 8:30 AM

Sent Items

To: Gregory, Barbara <[REDACTED]>

Thank you!

## Agenda Desk

City of San José | Office of the City Clerk  
200 East Santa Clara St. – Tower 14th Fl.  
San José, CA 95113-1905  
Phone 408.535.1275 | Fax 408.292.6207  
[REDACTED]

Live updates of City Council Meetings can be found on [Facebook](#) and [Twitter](#).

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**From:** Gregory, Barbara <[REDACTED]>  
**Sent:** Tuesday, December 1, 2020 7:19:02 AM  
**To:** Agendadesk <[REDACTED]>  
**Subject:** Fw: Natural Gas Prohibition

Hi

You got this too I believe

Thank You,

*Barb Gregory*



**Analyst II**  
**Office of the City Clerk**  
**200 E Santa Clara St FL T-14**  
**San Jose, C-A 95112**  
**408-535-1272 Fax: 408-292-6207**  
**e-mail:** [REDACTED]

**[How is our service? Please take our short survey.](#)**

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**From:** William Benson <[REDACTED]>  
**Sent:** Tuesday, December 1, 2020 12:40 AM

**To:** Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul

<[REDACTED] Diep, Lan <[REDACTED] Arenas, Sylvia <[REDACTED]  
Esparza, Maya <[REDACTED] Jones, Chappie <[REDACTED] Jimenez, Sergio  
<[REDACTED] Carrasco, Magdalena <[REDACTED] Foley, Pam  
<[REDACTED] Khamis, Johnny <[REDACTED]  
Cc: Agendadesk <[REDACTED] City Clerk <[REDACTED]  
**Subject:** Natural Gas Prohibition

[External Email]

Dear Mayor and Council Members,

I urge you to pass the strongest possible version of the Updated Natural Gas Infrastructure Prohibition Ordinance, and to reject the Bloom Energy exemption. Such an ordinance will be a significant step towards implementing the city's climate-smart goals, and protecting our people . The exemption, if passed, would only perpetuate and possibly expand the market for fracked natural gas, delaying progress that is already decades late.

Please pass the un-amended ordinance. It will show the world our city's leadership and courage.

sincerely,  
- William Benson

[REDACTED]  
[REDACTED]

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# Fw: Agenda Item 6.1: Updated Natural Gas Infrastructure Prohibition Ordinance

Gregory, Barbara

Tue 12/1/2020 7:24 AM

To: Agendadesk <[REDACTED]>

Thank You,

*Barb Gregory*



**Analyst II**

**Office of the City Clerk**

**200 E Santa Clara St FL T-14**

**San Jose, C-A 95112**

**408-535-1272 Fax: 408-292-6207**

**e-mail:** [REDACTED]

**[How is our service? Please take our short survey.](#)**

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**From:** kathryn hedges <biolart@[REDACTED]>

**Sent:** Monday, November 30, 2020 9:27 PM

**To:** City Clerk <[REDACTED]> CouncilMeeting <CouncilMeeting@[REDACTED]> The Office of Mayor Sam

Liccardo <[REDACTED]> District1 <[REDACTED]> District2 <[REDACTED]>

<[REDACTED]> District3 <[REDACTED]> District4 <[REDACTED]> District5 <[REDACTED]>

<[REDACTED]> District 6 <[REDACTED]> District7 <[REDACTED]> District8 <[REDACTED]>

<[REDACTED]> District9 <[REDACTED]> District 10 <[REDACTED]> Agendadesk <[REDACTED]>

<[REDACTED]>

**Cc:** [REDACTED]

**Subject:** Agenda Item 6.1: Updated Natural Gas Infrastructure Prohibition Ordinance

[External Email]

Dear Mayor, Councilmembers, and City Staff:

I am a constituent living in an (almost) all electric apartment building near City Hall in District 3. Our building is all electric except for the gas boiler for our hot water.

I support the recommendation to extend the prohibition on natural gas installation in new construction to retail and commercial buildings, as the City of Berkeley and other local cities have done. I read the letter from the architectural firm that has compiled a portfolio of successful all-

electric projects from around California. Their expertise convinced me that we do not need to add to the cost of commercial and retail buildings by including natural gas infrastructure that we need to make obsolete as quickly as possible.

The cost of including gas boilers and other gas-fired utilities alongside electric hookups will probably be higher than the commercial linkage fees the commercial development community claims they can't pay. When the time comes to phase out natural gas, they will want exemptions from switching over because it was permitted at the time of construction so they won't have to pay to install new electric water heating and other appliances.

I also support prohibiting the exemption for the natural gas fuel cell backup power company because that was their choice to design a project using an outmoded technology. If the only alternative were diesel-powered generators (admittedly far more polluting than natural gas), they would have a point. However, that's a straw man argument.

I don't know how long it would take for existing construction to phase out gas-burning appliances and other features (my building didn't use the opportunity when their system failed earlier this year to switch to electric water heating), but eventually we want to get rid of natural gas. Not just because of the undeniable effects on air quality and greenhouse gas emissions, but because the natural gas infrastructure owned and operated by PG&E is poorly maintained and unsafe--as demonstrated by the tragedy in San Bruno a decade ago. We should not be wasting any resources on perpetuating natural gas use.

Thank you for your leadership in fighting climate change by making all new homes all-electric. Let's continue that trend with commercial development too. Don't let developers bully the City into bowing to their demands.

Kind regards,  
Kathryn Hedges



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# Fw: In Support of Staff Memorandum from November 16, 2020

Gregory, Barbara

Tue 12/1/2020 7:25 AM

To: Agendadesk <[REDACTED]>

Thank You,

*Barb Gregory*



**Analyst II**

**Office of the City Clerk**

**200 E Santa Clara St FL T-14**

**San Jose, C-A 95112**

**408-535-1272 Fax: 408-292-6207**

**e-mail:** [REDACTED]

**[How is our service? Please take our short survey.](#)**

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**From:** Jamie Funk <[REDACTED]>

**Sent:** Monday, November 30, 2020 9:05 PM

**To:** City Clerk <[REDACTED]>

**Subject:** In Support of Staff Memorandum from November 16, 2020

[External Email]

Hello – I’m writing in support of the Supplemental Staff Memorandum from November 16, 2020. While well intentioned, a complete ban on natural gas prohibits the adoption of low carbon, zero pollution technologies like fuel cells. Today, fuel cells on natural gas are like a Toyota Prius: while not zero carbon, they are substantially better than the alternative since they displace a less efficient marginal power generator from the electric grid. Further, fuel cells provide companies with resiliency alternatives to PG&E that are far cleaner than diesel generators. Lastly, fuel cell technology has the potential to be the lowest cost producer (as an electrolyzer) or consumer (substituting natural gas with hydrogen to make zero carbon 24/7 base load power) of hydrogen. It has become clear that hydrogen is critical to a zero carbon future because wind/solar + batteries alone cannot cost effectively or reliably power the grid & the transportation economy. That is why the EU and Asian countries are aggressively leading the way for developing hydrogen. We need to be putting policies in place that help fuel cell technology grow and scale to achieve a zero carbon future – not prevent its adoption through short sighted regulation that subverts its intended goals.

James Funk



November 30, 2020

Re: **Our response to Supplemental Memo of 11/25/20 re. Agenda Item 6.1: Pass Updated Gas Ban Ordinance, Reject exemption for gas-powered fuel cells**

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Foley, Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, and Khamis,

As you know, we **strongly support the updated gas ban infrastructure prohibition ordinance.** We commend you for your very important leadership in declaring a climate emergency and transitioning new buildings from dirty gas to clean electricity, essential to meeting our Climate Smart goals.

We also **strongly oppose the proposed exemption for fossil gas-powered fuel cells,** and were very disappointed with the Supplemental Memo of November 25th. Rather than responding to our concerns about this exemption, the exemption is now being proposed for an additional year, through the end of 2024: **four entire years!**

In climate years, this is an eternity. Given that approximately 14 commercial projects are developed in San José each year, even if only a few of these employ gas fuel cell power, they would **lock in hundreds of thousands of additional tons of carbon pollution per year for a decade or more to come, stranding assets along the way.**

We also find part of the Analysis in the Memo to be misleading in important areas, perhaps because staff did not have adequate time to prepare it. We ask you to consider our response to the key points of the Supplemental Memo, summarized on this chart and the **Infographic** attached at the end:

Supplemental Memo of 11/25/20	Our response
Staff recommends that City Council consider the following alternative as a replacement for	DERs are <b>not necessary</b> for public health, safety or economic welfare. There are other reliable

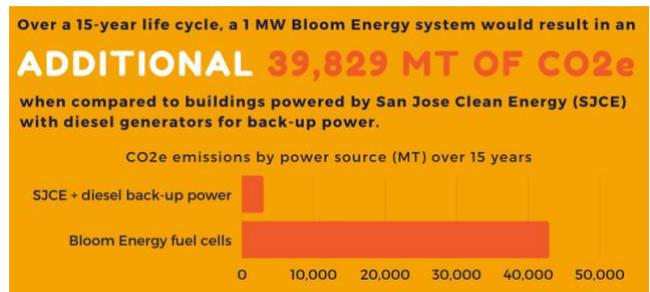
<p>exemption number 4 in the November 16, 2020 Supplemental Memorandum:</p> <p>Facilities with a Distributed Energy Resource [DER] that is necessary for the public health, safety, or economic welfare in the event of an electric grid outage, until December 31, 2024. The Director will report to Council no later than December 31, 2023 with analysis of the availability of fuel substitutes for natural gas and whether or not to transition this section to a Hardship Exemption, effective January 1, 2025.</p>	<p>sources of backup power in the event of a power shut off, which on average affect each San Jose business for approximately 126 minutes per year.</p> <p>If there is truly a hardship in securing backup power, facilities that absolutely need always-on power should be <b>required to apply for a Hardship Exemption now</b>, rather than receiving a blanket exemption for four years.</p> <p>Note that all of the other exemptions sunset by the end of 2022: <b>why allow an extra two years beyond that for the continued build out of fossil gas infrastructure?</b></p>
<p><b>ANALYSIS</b></p> <p>Staff acknowledges concerns raised by San José’s environmental advocacy community around the proposed exemption for Distributed Energy Systems that operate using fossil fuels that was included in the November 16, 2020 Supplemental Memo, specifically that the exemption runs counter to the City’s stated climate objectives, and allows for an expansion of gas infrastructure in use in some settings that may potentially be in place for the foreseeable future.</p> <p>Central to the discussion is the availability of back-up electrical power in the event of a Public Safety Power Shutdown. This power has predominantly been provided in the past by the presence of a back-up diesel generator, but other strategies for avoiding the impacts of power outages have emerged on the market, including the installation of fuel cell systems that operate on natural gas and provide “baseload” power to a facility, with the electric grid serving in a back-up role.</p>	<p>We do not feel that our concerns have been addressed. In fact, the exemption has gotten worse.</p> <p>Staff are correct that fuel cell systems are used to provide <b>baseload power</b> to a facility, relegating the electric grid (i.e., SJCE or PG&amp;D) to a back-up role. Given their high costs, fuel cell systems are NOT used only for backup power.</p> <p>On the contrary, to be economically viable, fuel cell systems operate <b>24/365, providing continuous, always-on power, which means that fuel cells powered with “natural” gas generate a tremendous amount of carbon emissions</b>. These fuel cell systems cannot be accurately described as back-up power.</p> <p>Another solution is through SJCE, which has partnered with 7 other CCAs to <b>purchase battery backed up power and long term storage</b>. (<a href="https://www.svcleanenergy.org/joint-lds-rfo/">https://www.svcleanenergy.org/joint-lds-rfo/</a>)</p>
<p>The emissions profiles of diesel generators are well-documented, and their siting is subject to</p>	<p>It’s important here to compare apples to apples. If diesel generators were allowed to operate</p>

review and permitting by the Bay Area Air Quality Management District. Diesel generators produce more pounds of CO2 per megawatt-hour than their natural gas fuel cell counterparts.

24/365, as fuel cell systems do, then of course the generators would produce more CO2 than fuel cells.

However, because diesel generators are **only permitted for use during the few hours of power shut offs** and for routine testing and maintenance, they produce **far fewer emissions** on a yearly basis than do “natural” gas fuel cell systems running continuously.

To put it in other words, diesel emergency backup generators **only run a few days per year**, while fuel cells run continuously every day of the year. Therefore the CO2e per megawatt-hour metric is misleading; they should be compared on the basis of average annual emissions:



Staff recommends that the exemption for a facility served by a Distributed Energy Resource sunset on December 31, 2024. The prior recommendation language of an expiration when “low or zero carbon fuels are commercially available for the supply pipeline” does not provide a clear end date. Further research into the existing natural gas infrastructure determined that the pipeline most likely will not accommodate low or zero carbon fuels in the near horizon. As a result, staff believes it is important to continue the City’s progress towards its Climate Smart goals and provide a more specific end date.

Experts advise that it will not be financially feasible to simply switch fuel cells from running on “natural” gas to renewable hydrogen.

Hydrogen can be blended up to 7% (by mass, 20% by volume) in existing gas pipes, but beyond that the pipes would need to be replaced. **This would require massive investments that would get stranded.**

In addition, after December 31, 2024, a facility that requires the Distributed Energy

Why wait until 2025 to require facilities to apply for a “hardship exemption”? Why not use the

<p>Resource for necessary operational requirements may apply for a “hardship exemption” under the proposed language of Section 17.845.050. Staff will report back to Council by the end of 2023 with a recommendation on whether the hardship exemption should be modified.</p>	<p>hardship exemption to start with, and only grant it to facilities for whom diesel backup power is not feasible?</p>
<p>In addition to providing a positive benefit on indoor air quality, updating the current natural gas infrastructure prohibition will have a significant positive impact on future GHG emissions from the building sector.</p> <p>Based on the City’s latest five-year development forecast, the projected GHG emissions offset over the estimated 50-year lifecycle of these buildings via this update is approximately 608,000 tons of CO2 emissions. Continuing installations of fossil fuel technologies will reduce those offsets, potentially significantly.</p>	<p>We agree that the updated gas ban ordinance will ensure significantly improved indoor air quality than if the new facilities used “natural” gas appliances, which are highly polluting.</p> <p><b><u>Continuing installations of fossil fuel technologies will reduce those offsets, potentially significantly.</u></b> <i>Shouldn’t we take the time to evaluate the extent to which these fossil fuel cells could undermine the 600,000 tons of CO2 reductions and <b>analyze the impacts to Climate Smart San Jose and our ability to achieve those climate goals?</b></i></p>
<p>The City remains a leader in addressing the global environmental crisis at a local level, from its approval of Climate Smart San José, to the adoption of Reach Code and Natural Gas Infrastructure Prohibition ordinances. Replacing natural gas ultimately with carbon-free electricity in new buildings will help the City to mitigate the impact of climate change on local conditions, while also continuing to set an example for other cities to follow.</p>	<p>Yes, but adding an exemption for large amounts of fossil gas use in fuel cells (generating methane which is 84 times more potent than CO2) undermines this ordinance. Other large cities, including San Francisco and Oakland, are not considering this type of exemption; we know of no other similar exemption under consideration by another city.</p> <p><b>To truly set an example for other cities to follow, San Jose should resist any loopholes that allow for the continued expansion of fossil gas infrastructure and stranded assets.</b></p>

We, and our many allies, urge that **any additional backup power exemption:**

- Not allow for the construction of new fossil fuel pipelines.
- Not allow for the continuous use of fossil fuels for baseload energy.

- Not allow a backup power source to be connected to the gas grid infrastructure.

In this way, you will honor the entire purpose of the gas ban infrastructure prohibition.

**One further point:** Experts predict that data centers will consume 20% of the world's power by 2025. If San Jose allows data centers to be powered with “natural” gas fuel cells, *it may well be impossible to meet our emissions reduction goals*. Refer to SVCE's excellent [Building Decarb Joint Action Plan](#) and watch Panama Bartholomy's [riveting presentation](#) (or view the [slide deck here](#)) to see how vital it is to decarbonize our buildings.

**Bottom line:** This is obviously a complicated issue with serious implications. Exemptions whose consequences are not fully understood should not be rushed. Therefore, we urge the Council to simply **approve the already well-vetted Update Gas Prohibition Ordinance** and **postpone any consideration of a possible hardship exemption for fuel cells** until the implications are fully studied and understood.

**Final plea:** Please don't grant a hasty exemption now that could lock in high carbon emissions for four years, halfway through the “climate decade.” Our children's futures are too precious to gamble with, and your leadership on the national, even global stage, is too important to water down.

Thank you for your attention to this very important issue. We trust you'll continue to display the climate leadership worthy of the Capital of Silicon Valley, and incentivize clean-energy solutions rather than fossil gas. Our children and grandchildren deserve no less.

Sincerely,

Linda Hutchins-Knowles, Co-founder, Mothers Out Front Silicon Valley

Diane Bailey, Executive Director, Menlo Spark

Dashiell Leeds, Conservation Assistant, Sierra Club Loma Prieta Chapter

# KEEP SAN JOSE'S FUTURE FOSSIL-FUEL FREE

Bloom Energy is seeking a last-minute special exemption to the expanded all-electric new buildings ordinance for their fossil gas-powered fuel cells. Here's what that could mean for your community:



For a 1 megawatt (MW) system, Bloom Energy fuel cells produce an additional

## 2,085 MT\*

or metric tons of CO<sub>2</sub>e\*\* annually when compared to San Jose Clean Energy with diesel generators for back-up power.



That's equivalent to

## 450

passenger vehicles being driven for one year.

\* Emissions from Bloom Energy fuel cells operating with a 95% capacity factor, as recommended by manufacturer. This number is expected to increase as San Jose Clean Energy's power mix transitions to 100% carbon free.

\*\* CO<sub>2</sub>e refers to carbon dioxide equivalent, including emissions from carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).

While Bloom Energy markets its fuel cells as "back-up power," the fuel cells are actually designed to run continuously.

Even traditional diesel-powered back-up generators are **less harmful to GHG emission levels than** Bloom Energy fuel cells.

In fact, a diesel-powered back-up generator, designed to run only during power outages and for maintenance, would produce less GHG emissions over a 15 year span when compared with Bloom fuel cells.

Over a 15-year life cycle, a 1 MW Bloom Energy system would result in an

## ADDITIONAL 39,829 MT OF CO<sub>2</sub>e

when compared to buildings powered by San Jose Clean Energy (SJCE) with diesel generators for back-up power.



This special exemption will keep San Jose dependent on dirty fossil fuels.

Contact your council member and urge them to support the expanded ordinance to electrify new buildings and oppose the gas-powered fuel cell exemption to keep San Jose's future clean.

# Yes to San Jose REACH codes No to Bloom Boxes

Bruce Naegel <[REDACTED]>

Tue 12/1/2020 8:29 AM

To: Sean Armstrong <[REDACTED]> Liccardo, Sam <[REDACTED]> Davis, Dev  
<[REDACTED]> Perez, Raul <[REDACTED]> Diep, Lan <[REDACTED]> Arenas, Sylvia  
<[REDACTED]> Esparza, Maya <[REDACTED]> Jones, Chappie <[REDACTED]>  
Jimenez, Sergio <[REDACTED]> Carrasco, Magdalena <[REDACTED]> Foley, Pam  
<[REDACTED]> Khamis, Johnny <[REDACTED]> Agendadesk <[REDACTED]> City  
Clerk <[REDACTED]>

[External Email]

We appreciate the new REACH code with its wider reach to eliminate natural gas use in San Jose. Unfortunately one provision of the bill supporting Bloom Fuel Cells will increase the amount of Natural gas used. More natural gas used means more chances for leakage. We need the REACH code without the provision for Bloom Fuel Cells. Here is why:

California has experienced some very large gas safety events. If we do not want to increase the odds of that happening in San Jose, we will not increase natural (e.g fossil) gas. The large events are the Aliso Canyon gas leak and the San Bruno Gas Leak and explosion. Aliso Canyon has been listed as the worst natural gas leak in US history. The fire and explosion in San Bruno killed 8 people and destroyed a neighborhood.

Some further information is below on each of these two catastrophic events. The message is, please vote for the REACH code, but eliminate the rider that will permit Bloom Energy boxes. We do not need more gas consumption.

Thanks in advance for your consideration.

## Aliso Canyon Leak

The Aliso Canyon gas leak affected a large part of Southern CA. It was widely reported to have been the worst single natural gas leak in U.S. history in terms of its environmental impact.[9][10][11] By comparison, the entire rest of the South Coast Air Basin combined, with a population of about 18 million people, emits approximately 413,000 tonnes of methane and 23,000 tonnes of ethane annually

[https://en.wikipedia.org/wiki/Aliso\\_Canyon\\_gas\\_leak](https://en.wikipedia.org/wiki/Aliso_Canyon_gas_leak)

We also had a leak and explosion that killed 8 people in San Bruno 10 years ago.

It took crews nearly an hour to determine it was a gas pipeline explosion.[6] As of September 29, 2010, the death toll was eight people.[7] The United States Geological Survey registered the explosion and resulting shock wave as a magnitude 1.1 earthquake.[8][9] Eyewitnesses reported the initial blast "shot a fireball more than 1,000 feet (300 m) in the air".[10][11][12][13]

[https://en.wikipedia.org/wiki/San\\_Bruno\\_pipeline\\_explosion](https://en.wikipedia.org/wiki/San_Bruno_pipeline_explosion)

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# Re: [CA-BD] Methane leakage is as large a GHG impact as combustion-- please don't exempt methane/hydrogen fuel cells

Bruce Naegel <[REDACTED]>

Tue 12/1/2020 8:40 AM

To: Sean Armstrong <[REDACTED]>

Cc: Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul <[REDACTED]>  
Diep, Lan <[REDACTED]> Arenas, Sylvia <[REDACTED]> Esparza, Mava <[REDACTED]>  
Jones, Chappie <[REDACTED]> Jimenez, Sergio <[REDACTED]> Carrasco, Magdalena  
<[REDACTED]> Foley, Pam <[REDACTED]> Khamis, Johnny <[REDACTED]>  
Agendadesk <[REDACTED]> City Clerk <[REDACTED]>

[External Email]

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[https://en.wikipedia.org/wiki/Aliso\\_Canyon\\_gas\\_leak](https://en.wikipedia.org/wiki/Aliso_Canyon_gas_leak)

We also had a leak and explosion that killed 8 people in San Bruno 10 years ago.

It took crews nearly an hour to determine it was a gas pipeline explosion.[6] As of September 29, 2010, the death toll was eight people.[7] The United States Geological Survey registered the explosion and resulting shock wave as a magnitude 1.1 earthquake. [8][9] Eyewitnesses reported the initial blast "shot a fireball more than 1,000 feet (300 m) in the air".[10][11][12][13]

[https://en.wikipedia.org/wiki/San\\_Bruno\\_pipeline\\_explosion](https://en.wikipedia.org/wiki/San_Bruno_pipeline_explosion)

Thanks in advance for your consideration.

Aliso Canyon Leak

The Aliso Canyon gas leak affected a large part of Southern CA. It was widely reported to have been the worst single natural gas leak in U.S. history in terms of its environmental impact.[9][10][11] By comparison, the entire rest of the South Coast Air Basin combined, with a population of about 18 million people, emits approximately 413,000 tonnes of methane and 23,000 tonnes of ethane annually

[https://en.wikipedia.org/wiki/Aliso\\_Canyon\\_gas\\_leak](https://en.wikipedia.org/wiki/Aliso_Canyon_gas_leak)

We also had a leak and explosion that killed 8 people in San Bruno 10 years ago.

It took crews nearly an hour to determine it was a gas pipeline explosion.[6] As of September 29, 2010, the death toll was eight people.[7] The United States Geological Survey registered the explosion and resulting shock wave as a magnitude 1.1 earthquake.[8][9] Eyewitnesses reported the initial blast "shot a fireball more than 1,000 feet (300 m) in the air".[10][11][12][13]

[https://en.wikipedia.org/wiki/San\\_Bruno\\_pipeline\\_explosion](https://en.wikipedia.org/wiki/San_Bruno_pipeline_explosion)Thanks in advance for your consideration.

Gas needs to be stored in large facilities like Aliso Canyon. The leaks from that facility required evacuations of a large

On Tue, Dec 1, 2020 at 12:04 AM Sean Armstrong <[REDACTED]> wrote:  
Honorable San Jose Councilmembers,

You may not know that "natural gas" has two profound, roughly equal impacts on our climate. Combustion is well understood, but "natural gas" that is leaked rather than burned is 34 times more powerful than CO2 over 20 years, like a magnifying glass compared to a dirty greenhouse window.

**Leaking more than 3% means just the leaked methane is equal to the GHGs cause by burning the other 97%**, and sadly it appears from the studies summarized below that **methane leaks at 2.2%-17.3% from natural gas fields**. Hydrogen/methane fuel cells still contribute dramatically to our climate crisis.

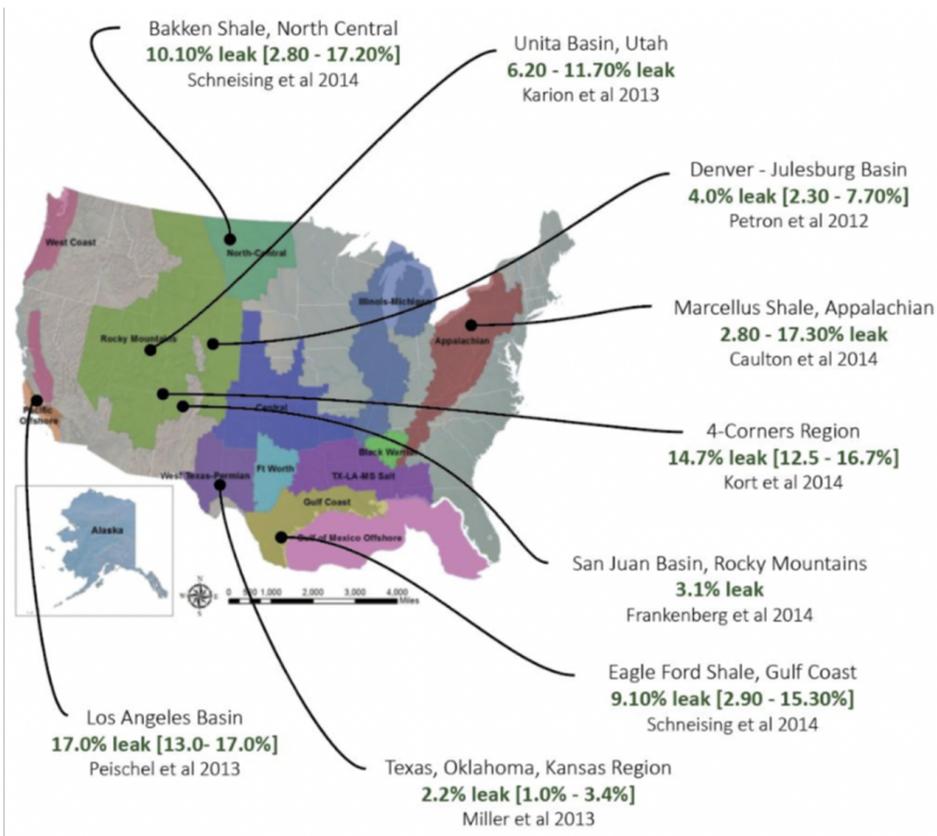
Below is an image from an [expose in the New York Times](#) of methane leakage nation-wide, and below that is a map of all the natural gas fields that are physically delivering natural gas to hydrogen fuel cells and other natural gas uses in California. Because we import almost 90% of California's gas, our state uses fracked gas all the way from Pennsylvania and from offshore wells in Oklahoma, and every state in between.

Please end this natural disaster from natural gas. There is no clean way to extract it, no safe way to deliver it, and no final use that is so essential that it cannot be met by other, better means.

Thank you!  
Sean Armstrong



Here, methane escapes from a device meant to be burning it off.



Managing Principal  
Redwood Energy

Schedule a meeting with me at: [calendly.com/seanarmstrong](https://calendly.com/seanarmstrong)



Grand Prize Winner of the United Nations World Habitat Awards-2017  
Grand Prize Winner of the International PCBC Gold Nugget Awards-2016  
Winner of the Sustainability Award of the Building Industry Association of Southern California-2017  
Winner of the Department of Energy Innovation Award-2015 and 2020  
Awards of Merit from the International PCBC Gold Nugget Awards-2016, 2017, 2018 and 2019

--  
You received this message because you are subscribed to the Google Groups "CA Building Decarbonization" group.  
To unsubscribe from this group and stop receiving emails from it, send an email to [ca-building-decarbonization+](mailto:ca-building-decarbonization+)   
To view this discussion on the web visit [https://groups.google.com/d/msgid/ca-building-decarbonization/CAMr-5Nz4Ete%3D2J6qh5iW3kF\\_HuUC-54H8rTChJMenow1pXRgQ%40mail.gmail.com](https://groups.google.com/d/msgid/ca-building-decarbonization/CAMr-5Nz4Ete%3D2J6qh5iW3kF_HuUC-54H8rTChJMenow1pXRgQ%40mail.gmail.com).

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[Additional resource regarding hydrogen] Re: Our response to Supplemental Memo of 11/25/20 (Agenda Item 6.1--gas ban)

Diane Bailey <[REDACTED]>

Tue 12/1/2020 9:07 AM

To: Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul <[REDACTED]>  
Diep, Lan <[REDACTED]> Arenas, Sylvia <[REDACTED]> Esparza, Mava <[REDACTED]>  
Jones, Chappie <[REDACTED]> Jimenez, Sergio <[REDACTED]> Carrasco, Maaddalena  
<[REDACTED]> Foley, Pam <[REDACTED]> Khamis, Johnny <[REDACTED]>

Cc: Agendadesk <[REDACTED]> City Clerk <[REDACTED]> Linda Hutchins-Knowles  
<[REDACTED]>

[External Email]

Honorable Mayor, Vice Mayor, and Council Members, please accept this additional article published this morning that illustrates the complication of using renewable hydrogen. Power resources served by conventional gas require entirely new pipelines and distribution for renewable hydrogen. Please see the article below for further information.

Thank you for your consideration.

Sincerely,

Diane Bailey, Menlo Spark and the Campaign for Fossil Free Buildings in Silicon Valley.

# Green Hydrogen in Natural Gas Pipelines: Decarbonization Solution or Pipe Dream?

Hydrogen blending projects across the world must contend with engineering, energy-density and supply challenges.

[JEFF ST. JOHN](#) NOVEMBER 30, 2020

*Utilities around the world are testing the effects of increasing the share of green hydrogen in natural gas pipelines.*

· [10](#)

Can carbon-free hydrogen augment, or even replace, the fossil natural gas running through pipelines to fuel furnaces, boilers, stoves and other building applications today?

Or will the effort get bogged down in challenges related to pipeline safety and upgrade costs, loss of energy density, the long-term cost discrepancies compared to electrifying natural-gas-fired heat and appliances in buildings, or the pressure to direct green hydrogen to hard-to-decarbonize sectors?

Natural-gas utilities around the world are seeking real-world answers to these kinds of questions. Some of the most advanced efforts are underway in the U.K., where utilities including [National Grid](#) and [Scottish Gas Network](#) are blending hydrogen into pipelines not just to fuel power plants or industrial processes but also to serve homes and businesses.

“We’ve got hydrogen in 20 percent blend already going into one very small network in the U.K., and consumers are saying they notice no difference” in terms of performance of gas-fired appliances, Antony Green, National Grid U.K.’s hydrogen project director, said in an October interview. “That’s a good sign.”

While early-stage tests are keeping hydrogen concentrations below 20 percent, U.K. utilities hope to carry 100 percent hydrogen in future years as part of the country’s emphasis on finding green replacements for fuel supplies as well as electricity. “It’s a very, very ambitious program across all the gas networks,” Green said.

Similar efforts are underway across Europe to build on the European Union’s [massive green hydrogen targets](#) over the coming decade. In the Netherlands, the site of what could be the [world’s largest green hydrogen](#) production hub powered by offshore wind intends to run 100 percent hydrogen [through pipelines](#) to fuel industrial uses. Oil giants including Shell, BP and Total are promising major investments to meet decarbonization goals.

“Pipeline injection is a national hydrogen strategy for the Netherlands, for Germany, for France, [for Australia](#), for South Korea, for Japan,” said Mona Dajani, head of the renewable energy and green hydrogen practice of law firm Pillsbury Winthrop Shaw Pittman. “There are a number of pilot projects exploring the impacts of hydrogen blending around the world.”

## U.S. green hydrogen pilots and proposals

U.S. utilities with net-zero carbon goals are starting to catch up, bolstered by [federal funding to solve](#) challenges with increased hydrogen concentrations in existing pipelines. Green hydrogen to replace natural gas for power generation is likely the first cost-effective application.

Gulf Coast [utility Entergy](#) wants to use existing oil industry hydrogen pipeline networks and underground salt caverns to ship and store hydrogen to replace natural-gas-fired power. A similar underground cavern in Utah could be the site of a [regionwide green hydrogen](#) production and storage complex being planned by a consortium including Mitsubishi Power, the state-owned Intermountain Power Agency and the Los Angeles Department of Water and Power.

But hydrogen in distribution pipelines could also help decarbonize industrial processes dependent on natural gas, or even building heating and cooking, utilities contend. In New York, National Grid has [launched a project](#) with the New York State Energy Research and Development Authority and Stony Brook Institute to study the potential to integrate and store renewable hydrogen in its existing gas infrastructure.

And this week, Southern California Gas and San Diego Gas & Electric, subsidiaries of the California utility holding company Sempra Energy, asked the California Public Utilities Commission to [approve a pilot project](#) that would test pipeline injection of green hydrogen blends from 1 percent to 20 percent, starting next year.

The CPUC is one of several state utility regulators considering hydrogen blending strategies, and projects like Sempra's are a "big deal, because they're developing a hydrogen injection standard," Dajani said. As efforts like these expand, federal agencies — namely, the Federal Energy Regulatory Commission — will need to manage how this could become part of the interstate natural-gas pipeline network, she added.

## Hydrogen pipeline challenges: Engineering, safety and costs

But replacing natural gas with hydrogen has its pitfalls, starting with how it affects the pipelines it travels in and the appliances that use it. On the pipeline front, "hydrogen embrittlement" can weaken metal or polyethylene pipes and increase leakage risks, particularly in high-pressure pipes, according to [a 2013 study](#) from the U.S. Energy Department's National Renewable Energy Laboratory (NREL).

"Hydrogen can attack the metal structure under certain circumstances, certain pressures, certain concentrations," National Grid's Green said. "That's an area the materials scientists are trying to tackle" as part of the U.K.'s hydrogen research.

In the U.S., the [HyBlend project](#) involving NREL and five other DOE labs intends to examine the long-term effects of hydrogen at different blends on different pipeline materials and create publicly available models for industry use. This kind of research will help determine how much it will cost to upgrade existing pipeline networks to make the shift.

Hydrogen also "burns very differently" than methane, said Jussi Heikkinen, the Americas director of growth and development for Wärtsilä Energy, which is investing in engines that can [run on 100 percent hydrogen](#). "It burns almost as an explosion. [...] It's a blast, and then it's done." That's good for efficient conversion of gas into heat, but it also brings safety and engineering challenges, he said.

"When you go beyond 25 percent hydrogen in the fuel, in most places in the world, you're no longer able to use the same equipment. Electronics, for example, must be explosion-proof. [...] There should be no sparks because hydrogen ignites with almost any air-to-fuel ratio."

Hydrogen is also about three times less energy-dense than methane. That means that as the ratio of hydrogen rises, the volume of energy being delivered through the same pipelines decreases, he said.

## Green hydrogen versus building electrification

Making green hydrogen using carbon-free electricity also [costs four to six times more](#) than making hydrogen from fossil fuels. Those costs are expected to fall with advances in electrolysis efficiency, lower costs of renewable energy to power them, and economies of scale from the industrial hubs being built around the world.

Even so, governments and industry partners will be hard-pressed to direct green hydrogen to its cost-effective uses. Its combination of low energy density and high cost in pipelines could make it a tough sell compared to electrifying heating, cooking and other typical uses of natural gas in homes and businesses.



Diane Bailey (Menlo Spark)  
Dashiell Leads (Sierra Club, Loma Prieta Chapter)

Linda Hutchins-Knowles  
California Senior Organizer

**Mothers Out Front**

Pronouns: She/her/hers

[www.mothersoutfront.org](http://www.mothersoutfront.org)

Live in San José? Join the [Climate Smart Challenge](#)! Connect with friends & neighbors to learn easy ways to save energy, lower your bills, and get fit—all while helping to preserve a livable climate. Learn how [you can help us make this program a big success](#)! Let's do this!

\*\*\*\*\*

“When you see something that is not right, you must say something.  
You must do something.”  
-John Lewis

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# Pass gas ban; reject Bloom Energy's request for an exemption (Agenda Item 6.1)

Mary Williams <[REDACTED]>

Tue 12/1/2020 10:28 AM

To: Liccardo, Sam <[REDACTED]> Jones, Chappie <[REDACTED]> Jimenez, Sergio  
<[REDACTED]> Peralez, Raul <[REDACTED]> Diep, Lan <[REDACTED]> Carrasco,  
Maqdalena <[REDACTED]> Davis, Dev <[REDACTED]> Esparza, Mava  
<[REDACTED]> Arenas, Sylvia <[REDACTED]> Foley, Pam <[REDACTED]> Khamis,  
Johnny <[REDACTED]>  
Cc: Agendadesk <[REDACTED]> City Clerk <[REDACTED]>

[External Email]

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, Foley, and Khamis,

As a Bay Area resident and member of The Climate Reality Project, Santa Clara County chapter, I am very concerned about the climate crisis and San José has a unique opportunity to lead in the vital push for all-electric buildings running on clean, renewable energy. I urge you to reject Bloom Energy's request for an exemption from the Updated Natural Gas Infrastructure Prohibition Ordinance.

I strongly support the Updated Natural Gas Infrastructure Prohibition Ordinance. If not watered down, this forward-thinking ordinance will go a long way toward meeting our climate-smart goals, preserving a livable climate for all children and providing a blueprint for other cities in California and beyond.

**But I am strongly opposed to Bloom Energy's request for an unwarranted exemption that would allow for the use of fuel cells powered by liquified "natural" gas. Natural gas is mostly methane, a greenhouse gas up to \*84 times\* more potent than CO2.**

Allowing an exemption for fuel cells is unnecessary and would:

Violate the goals of the gas ban prohibition, allowing gas to be used in new buildings.

Harm the climate and make it harder to achieve our climate goals.

Set a bad precedent for other cities as they seek to electrify their buildings, essentially greenwashing a technology that's powered by dirty gas.

Since the fuel cells used in Bloom Boxes are currently powered by fracked gas, **the energy they supply is much dirtier than the energy provided by either San José Clean Energy or PG&E.** If Bloom Box fuel cells were only used on the few days each year when a power outage occurs, that might be acceptable.

However, Bloom Boxes are not economically feasible if used only to provide back-up power. On the contrary, **Bloom Boxes only make sense economically if used 24/7 every day of the year, providing baseload energy** to the buildings where they are installed.

Yes, some businesses need continuous power and cannot afford a power shutoff. However, allowing Bloom Boxes to be used to provide “back-up” power is like killing a flea with a tank. In fact, *it would take 150 days of diesel generator use to produce the same CO<sub>2</sub>e emissions as the Bloom Boxes would produce each year, yet businesses would likely only need diesel back-up for less than a dozen hours per year.*

If new buildings are allowed to use Bloom Boxes, San José’s use of fossil gas will increase, not decrease. **This is destabilizing to the climate and threatens San Jose’s ability to achieve our climate smart goals.** Bloom should be required to power its fuel cells with clean energy, not fracked gas.

San José should not throw away its climate goals in order to appease one company. **We cannot afford to water down our essential climate policies by allowing the continued buildout of gas infrastructure until halfway through this decade.**

We need you, the leaders responsible for our safety, to hold the line and insist on the **strongest possible gas ban ordinance** so that San José can continue to provide the climate-smart leadership so essential to preserving a livable climate.

Sincerely,

Mary Williams

Former District 1 resident, 1989-2020

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# SIERRA CLUB

LOMA PRIETA CHAPTER

SAN MATEO, SANTA CLARA & SAN BENITO COUNTIES

December 1, 2020

San José City Council  
200 E. Santa Clara Street  
San José, CA 95113

RE: 12.1.2020 Agenda Item 6.1: Support for Natural Gas Prohibition Ordinance, Opposition to the Gas Fuel Cell Exemption

Dear Mayor Liccardo and San José City Councilmembers,

The Sierra Club Loma Prieta Chapter would like to thank the Mayor and Council for taking this two-week deferral to consider the concerns raised by environmental groups and community members regarding the blanket exemption for gas fuel cells introduced in the 11.16 supplemental memorandum. However, two weeks is not enough time to analyze the significant and widespread impacts of gas fuel cells. It is alarming to see that an exemption for gas fuel cells has resurfaced in the 11.25 supplemental memorandum.

The process by which these exemptions were included is extremely concerning. The City has effectively been ambushed at the last minute by natural gas lobbyists. The City has not had the time to consider how many gas fuel cells are expected to be built in San José, what their cumulative GHG emissions would be over time, and how that would impact San José's Climate Smart goals.

What we do know is that gas fuel cells emit methane constantly and require the expansion of new gas pipelines to supply them with a consistent source of fuel. The increased emissions and construction of new gas pipelines directly contradict the purpose of this gas prohibition. The Loma Prieta Chapter has co-signed a letter with Mothers Out Front and Menlo Spark, which provides a breakdown of the significant increase of emissions that we can expect from gas fuel cells.

**The Loma Prieta Chapter is in full support of the Natural Gas Prohibition Ordinance originally written in the November 2d memorandum, which has been vetted by a long and thorough public stakeholder process. We ask Council to motion to pass the ordinance without the addition of the supplemental memorandums.**

**We strongly believe that gas fuel cells should not be given an exemption. However, if Council still wishes to explore a gas fuel cell exemption, that exploration should be undertaken as a separate process.**

A separate process to explore the exemption would give staff, Council, and the public time to study the negative impacts of gas fuel cells. We believe that if gas fuel cells are fully analyzed by the City, it will become clear that they are not needed for backup power, that they are a constant source of pollution in the City, and that they contradict San José's Climate Smart goals.

Sincerely,

Dashiell Leeds, Conservation Assistant, Sierra Club Loma Prieta Chapter

# PASS gas ban; REJECT Bloom Energy exemption (Agenda Item 6.1)

Nassim Nouri <[REDACTED]>

Tue 12/1/2020 9:23 AM

To: Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul <[REDACTED]>  
Diep, Lan <[REDACTED]> Arenas, Sylvia <[REDACTED]> Esparza, Mava <[REDACTED]>  
Jones, Chappie <[REDACTED]> Jimenez, Sergio <[REDACTED]> Carrasco, Magdalena  
<[REDACTED]> Foley, Pam <[REDACTED]> Khamis, Johnny <[REDACTED]>  
Cc: Agendadesk <[REDACTED]> City Clerk <[REDACTED]>

[External Email]

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, Foley, and Khamis,

**As a San Jose resident I urge you to support the gas ban and to reject Bloom Energy's request for an exemption from the Updated Natural Gas Infrastructure Prohibition Ordinance.**

**I strongly support the Updated Natural Gas Infrastructure Prohibition Ordinance. This forward-thinking ordinance will go a long way toward meeting our climate-smart goals and preserving a livable climate for all children, unless you allow it to be watered down and circumvented by corporations like Bloom Energy.**

**I am strongly opposed to Bloom Energy's request for an unwarranted exemption that would allow for the use of fuel cells powered by liquified "natural" gas, violating the gas ban prohibition and derailing our city's climate goals.**

You must not allow the greenwashing of the Bloom Box technology that's powered by dirty fracked gas producing energy that is much dirtier than that provided by either San Jose Clean Energy or PG&E. We cannot afford to water down our essential climate policies by allowing the continued buildout of gas infrastructure until halfway through this decade.

I ask you, the city's leaders responsible for our safety, to hold the line and insist on the strongest possible gas ban ordinance so that San Jose can continue to provide the climate-smart leadership so essential to preserving a livable climate for all children. What could be more important?

Sincerely,

*Nassim Nouri*  
*San Jose District 4, 95131*

*Green Party of Santa Clara County Council member*

# PASS gas ban; REJECT Bloom Energy exemption (Agenda Item 6.1)

Christine Pepin <[REDACTED]>

Tue 12/1/2020 9:53 AM

To: Liccardo, Sam <[REDACTED]> Davis, Dev <[REDACTED]> Peralez, Raul <[REDACTED]>  
Diep, Lan <[REDACTED]> Arenas, Sylvia <[REDACTED]> Esparza, Mava <[REDACTED]>  
Jones, Chappie <[REDACTED]> Jimenez, Sergio <[REDACTED]> Carrasco, Maaddalena  
<[REDACTED]> Foley, Pam <[REDACTED]> Khamis, Johnny <[REDACTED]>  
Cc: Agendadesk <[REDACTED]> City Clerk <[REDACTED]>

[External Email]

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, Foley, and Khamis,

I urge you to support the gas ban and to reject Bloom Energy's request for an exemption from the Updated Natural Gas Infrastructure Prohibition Ordinance.

I strongly support the Updated Natural Gas Infrastructure Prohibition Ordinance. This forward-thinking ordinance will go a long way toward meeting our climate-smart goals and preserving a livable climate for all children, unless you allow it to be watered down and circumvented by corporations like Bloom Energy.

I am strongly opposed to Bloom Energy's request for an unwarranted exemption that would allow for the use of fuel cells powered by liquified "natural" gas, violating the gas ban prohibition and derailing our city's climate goals.

You must not allow the greenwashing of the Bloom Box technology that's powered by dirty fracked gas producing energy that is much dirtier than that provided by either San Jose Clean Energy or PG&E. We cannot afford to water down our essential climate policies by allowing the continued buildout of gas infrastructure until halfway through this decade.

I ask you, the city's leaders responsible for our safety, to hold the line and insist on the strongest possible gas ban ordinance so that San Jose can continue to provide the climate-smart leadership so essential to preserving a livable climate for all children. What could be more important?

Sincerely,

Christine Pepin  
Sunnyvale, 94087

Green Party of Santa Clara County Council member

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# Pass gas ban; reject Bloom Energy's request for an exemption (Agenda Item 6.1)

Tom Kabat [REDACTED]

Tue 12/1/2020 11:32 AM

To: Liccardo, Sam <sam.liccardo@sanjoseca.gov>; Davis, Dev <dev.davis@sanjoseca.gov>; Peralez, Raul <Raul.Peralez@sanjoseca.gov>; Diep, Lan <lan.diep@sanjoseca.gov>; Arenas, Sylvia <sylvia.arenas@sanjoseca.gov>; Esparza, Maya <Maya.Esparza@sanjoseca.gov>; Jones, Chappie <Chappie.Jones@sanjoseca.gov>; Jimenez, Sergio <sergio.jimenez@sanjoseca.gov>; Carrasco, Magdalena <Magdalena.Carrasco@sanjoseca.gov>; Foley, Pam <Pam.Foley@sanjoseca.gov>; Khamis, Johnny <johnny.khamis@sanjoseca.gov>;

Cc: Agendadesk <Agendadesk@sanjoseca.gov>; City Clerk <city.clerk@sanjoseca.gov>;

📎 1 attachments (55 KB)

Fossil Fuel Cells.xlsx;

[External Email]

Dear Mayor Liccardo and Council Members,

As an energy engineer and long time gas and electric utility planner I strongly support the Updated Natural Gas Infrastructure Prohibition Ordinance and I urge you to reject Bloom Energy's request for an exemption.

The ordinance sets the right path for no longer stranding any new gas assets in new construction as it is clear we have to move rapidly toward supplying only climate safe energy to our buildings. Methane (CH<sub>4</sub>) is a particularly damaging super greenhouse gas with a climate disruption impact 86 times higher than an equal weight of CO<sub>2</sub>.

The science on methane is getting stronger and points to its long under-reported impact on the climate and its front loaded damage that is poised to drive the climate systems around a tipping point is not immediately reigned in.

Bloom machines rely on methane and methane's biggest problem is its propensity to leak upstream of usage. That causes 53% of its greenhouse warming. The other 47% of the damage is caused by the 97% of the methane that does not leak, and is oxidized into CO<sub>2</sub> in the fuel processing stage of the fuel cells.

Each 200 kilowatt Bloom machine operating at specifications from their website will release 595 tons per year of onsite CO<sub>2</sub> and 663 tons per year of CO<sub>2</sub>e upstream emissions assuming gas field and system leakage is as low as 3.3%. This is 1,259 tons per year from each Bloom machine.

That means the installation of just 3.2 of the Bloom machines defeats the greenhouse gas reductions of each year's worth of all electric multifamily construction and all electric commercial construction combined. (4055 / 1259)

That's worth repeating. Just over 3 Bloom machines defeat the rest of the savings from the otherwise groundbreaking progress of the gas ban.

This is because methane is a powerful GHG and it leaks upstream of the machine as well as producing CO<sub>2</sub> released from the machine.

I hope all can see the wisdom of transitioning away from base-load simple cycle methane usage, and toward allowing your clean energy electric supply to meet the building needs without gas pipes.

Thank you for considering this analysis of a prudent path forward without dangerous gas to properties.

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

From your May 26 Memorandum Table 1:

The GHG saving of electrifying the construction of all 2375 apartments each year and 1.2 million square feet of commercial buildings each year is calculated by your staff at: 2375 Tons saved from the Apartments and 1680 tons saved from the commercial buildings for a total of 4,055 tons saved per year of new construction in both sectors.

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, Foley, and Khamis,

As a Bay Area resident concerned about the climate crisis, I urge you to reject Bloom Energy's request for an exemption from the Updated Natural Gas Infrastructure Prohibition Ordinance.

I strongly support the Updated Natural Gas Infrastructure Prohibition Ordinance. If not watered down, this forward-thinking ordinance will go a long way toward meeting our climate-smart goals and preserving a livable climate for all children.

**But I am strongly opposed to Bloom Energy's request for an unwarranted exemption that would allow for the use of fuel cells powered by liquified "natural" gas.**

Allowing an exemption for fuel cells is unnecessary and would:

- Violate the goals of the gas ban prohibition, allowing gas to be used in new buildings.
- 
- Harm the climate and make it harder to achieve our climate goals.
- Set a bad precedent for other cities as they seek to electrify their buildings, essentially greenwashing a technology that's powered by dirty gas.

Since the fuel cells used in Bloom Boxes are currently powered by fracked gas, **the energy they supply is much dirtier than the energy provided by either San Jose Clean Energy or PG&E.** If Bloom Box fuel cells were only used on the few days each year when a power outage occurs, that might be acceptable.

However, Bloom Boxes are not economically feasible if used only to provide back-up power. On the contrary, **Bloom Boxes only make sense economically if used 24/7 every day of the year, providing baseload energy** to the buildings where they are installed. This is not acceptable and violates the goal of the gas ban prohibition: to ban gas! Fracked gas is fracked gas, whether it is burnt in a power plant, a building, or a fuel cell. Dirty energy should only be allowed, if needed, to provide temporary, limited back-up power, not baseload energy.

Yes, some businesses need continuous power and cannot afford a power shutoff. However, allowing Bloom Boxes to be used to provide "back-up" power is like killing a flea with a tank. It would be much better for the climate to use back-up diesel power only during power shutoffs than to use fracked gas-powered fuel cells continuously. In fact, *it would take 150 days of diesel generator use to produce the same CO2e emissions as the Bloom Boxes would produce each year.*

In 2019, San Jose's use of fossil gas rose slightly. If new buildings are allowed to use Bloom Boxes, the City's use of fossil gas would go up even more. **This is destabilizing to the climate and threatens San Jose's ability to achieve our climate smart goals.** If Bloom wants to have its Bloom Boxes used in new San Jose buildings, it should be required to power its fuel cells with clean energy, not fracked gas.

San Jose should not throw away its climate goals in order to appease one company. **We cannot afford to water down our essential climate policies by allowing the continued buildout of gas infrastructure until halfway through this decade.**

We need you, the leaders responsible for our safety, to hold the line and insist on the **strongest possible gas ban ordinance** so that San Jose can continue to provide the climate-smart leadership so essential to preserving a livable climate.

Sincerely,

*Your Name*



EXECUTIVE BOARD

Ben Field, EXECUTIVE OFFICER

Sal Ventura, PRESIDENT  
IBEW Local 332

Jean Cohen, 1ST VICE PRESIDENT  
UA Local 393

Jason Hall, 2ND VICE PRESIDENT  
CWA Local 9423

Paul Fong, RECORDING SECT.  
AFT Local 6157

Mark Van Den Heuvel, SERGEANT-AT-ARMS  
Sheet Metal Workers Local 104

Enrique Fernandez, TREASURER  
UNITE HERE! Local 19

Enrique Arguello  
Laborers Local 270

Sergio Arrañaga  
Teamsters Local 350

David Bini  
Building Trades Council

Sheillena Brunston  
ATU Local 265

Charlie Hernandez  
Ironworkers Local 377

Troy Jones  
UFCW Local 5

Sean Kaldor  
IAFF Local 230

Malinda Markowitz  
CNA/NNOC

Riko Mendez  
SEIU Local 521

Jocelyn Merz  
AREA

Dolores Morales  
CEMA

Mark Murray  
AFSCME Local 1587

Patty Picard  
CSEA Chapter 350

Terry Sandoval  
SEIU UHW

Rick Solis  
UBC Carpenters Local 405

Stanley Young  
IFPTE Local 21

Robyn Zamora  
AFSCME Local 101

December 1, 2020

Mayor Sam Liccardo  
San Jose City Hall  
200 East Santa Clara Street  
San Jose, CA 95113

RE: Agenda Item 6.1

Dear Mayor and Members of the City Council:

On behalf of over 100,000 union members in Santa Clara County, the South Bay Labor Council supports a process that advances responsible solutions to fight the climate crisis. The complex interconnectedness of the economy, jobs, and the environment requires a coordinated and holistic approach to building a healthy and sustainable future. The impact of your vote today will determine if local union workers will lose their jobs or gain career pathway opportunities for green jobs that pay family sustaining wages.

We request that you direct staff to:

- 1) Include the recommended exemptions in the Staff Memorandums from Kerrie Romanow allowing for additional time and hardship exemptions in the implementation of the Natural Gas Infrastructure Prohibition Ordinance.
- 2) Convene a Future of Work workshop with key stakeholders from labor, business, and the environmental community as recommended by UA Local Union 393 by March 31<sup>st</sup>, 2021.

Thank you for your leadership and efforts to meet the goals of Climate Smart San Jose. Please support these recommendations, as they allow for key stakeholders to participate in the next phase of this important work.

Sincerely,



Jean Cohen  
Interim Executive Officer  
South Bay Labor Council



Dear Mayor Liccardo & Council members:

Infinera supports the Supplemental Staff Memorandum from November 16, 2020, “to allow for exemptions for facilities with distributed energy resources that meet Section 94203 of Title 17 California Code of Regulation requirements and are necessary for the public health, safety or economic welfare in the event of the ever-increasing electric grid outages facing our state, until December 31, 2023, or until low- or zero-carbon fuels are commercially available for the supply pipeline.” This amendment in the memo will allow companies like ours to continue making investments in their own energy resilience while aiding the city in meeting our collective climate change goals.

Infinera appreciates the San Jose City Council for recognizing the need for resilience, due to the changing climate and impacts from public safety power shutoffs, and the ability for customers to ensure reliable energy. While Infinera does not have any immediate plans to invest in onsite alternative energy sources in our new San Jose HQ, we do see the value in considering these options. By permitting infrastructure to be installed and maintained into the future, you are allowing for a green energy future that will be powered by near- zero and zero emissions fuels while assuring our ability to execute in Silicon Valley today.

Businesses need the ability to invest in technologies that provide clean and consistent power. San Jose can, and should be, a leader in utilizing clean technology solutions to increase energy resiliency. This needs to be done in a business friendly manner. We encourage the Council to support the memo from November 16, 2020.

Sincerely,

Thomas Fallon  
Director  
Infinera

David Heard  
CEO  
Infinera

# Fw: Natural Gas Ban and City Council Meeting Today

Gregory, Barbara

Tue 12/1/2020 1:58 PM

To: Agendadesk <Agendadesk@sanjoseca.gov>;

Thank You,

*Barb Gregory*



**Analyst II**

**Office of the City Clerk**

**200 E Santa Clara St FL T-14**

**San Jose, C-A 95112**

**408-535-1272 Fax: 408-292-6207**

**e-mail: [barbara.gregory@sanjoseca.gov](mailto:barbara.gregory@sanjoseca.gov)**

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**From:** Bruce Kennedy [REDACTED]

**Sent:** Tuesday, December 1, 2020 11:02 AM

**To:** City Clerk <[city.clerk@sanjoseca.gov](mailto:city.clerk@sanjoseca.gov)>

**Subject:** Natural Gas Ban and City Council Meeting Today

[External Email]

Hello,

My family and I are constituents of yours in San Jose. We have lived in the San Jose/Santa Clara area since 1989, and we are happy to call this locality home. My son is attending Challenger Schools and we have a daughter who will be born early next year. We have 3 generations living and thriving here.

Two years ago, I had the great fortune and opportunity to join Bloom Energy. I am the in-house Audio Visual Specialist, responsible for much of the company's communication technology, as well as anything related to audio and video, from software and hardware to live events. It has been a joy to align my efforts with a company so dedicated to the issues of climate change and reliable, affordable power.

We are particularly concerned by the lack of nuance and data motivating the drive to restrict new natural gas installations in San Jose. The goal should be to reduce GHGs and improve air quality, and regulating based on the fuel alone cannot hope to accomplish that goal in a realistic/meaningful way. Bloom's use of Natural Gas in a fuel cell is clean, especially when

compared to the diesel generators that would be necessary without them, which produce far more pollution when they are running. These backup generators are also far less reliable in a power outage. We would like to see a more nuanced approach to this type of legislation that will do the due diligence of determining exactly which technologies should be limited and addressing those specifically. A sweeping change such as this will lead to unforeseen consequences. San Jose promotes itself as a climate conscious city, but we need to find the best mix of solutions and not regulate based solely on fuel, but on the actual performance of a given technology. Bloom is supporting a proposal to overturn the ruling that would restrict new Natural Gas installations, which would allow us to continue providing our clean and reliable energy solution for the needs of San Jose. Please join in overturning the restriction.

Please let me know if you have any questions or concerns.  
Thanks!

Bruce Kennedy



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# Fw: expanded gas ban without exemptions

Gregory, Barbara

Tue 12/1/2020 2:21 PM

To: Agendadesk <Agendadesk@sanjoseca.gov>;

Thank You,

*Barb Gregory*



**Analyst II**

**Office of the City Clerk**

**200 E Santa Clara St FL T-14**

**San Jose, C-A 95112**

**408-535-1272 Fax: 408-292-6207**

**e-mail: [barbara.gregory@sanjoseca.gov](mailto:barbara.gregory@sanjoseca.gov)**

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**From:** Cadena, Holly [REDACTED]  
**Sent:** Tuesday, December 1, 2020 8:00 AM  
**To:** Liccardo, Sam <[sam.liccardo@sanjoseca.gov](mailto:sam.liccardo@sanjoseca.gov)>  
**Cc:** City Clerk <[city.clerk@sanjoseca.gov](mailto:city.clerk@sanjoseca.gov)>  
**Subject:** expanded gas ban without exemptions

[External Email]

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, Foley, and Khamis,

As a member of Mothers Out Front, and also as a public school teacher and parent very concerned for our young people and our endangered planet, I ask that you please stay strong in your resolve to make San Jose a leader in the area of Climate protection and justice. Please resist the influence of Bloom Energy and it's allies and pass the Updated Natural Gas Infrastructure Prohibition Ordinance without allowing exemptions for Bloom Energy.

Thank you,  
Holly Cadena  
[REDACTED]

# Pass gas ban; reject Bloom Energy's request for an exemption (Agenda Item 6.1)

Thomas Habermann [REDACTED]

Tue 12/1/2020 3:34 PM

To: Liccardo, Sam <sam.liccardo@sanjoseca.gov>; Davis, Dev <dev.davis@sanjoseca.gov>; Peralez, Raul <Raul.Peralez@sanjoseca.gov>; Diep, Lan <lan.diep@sanjoseca.gov>; Arenas, Sylvia <sylvia.arenas@sanjoseca.gov>; Esparza, Maya <Maya.Esparza@sanjoseca.gov>; Jones, Chappie <Chappie.Jones@sanjoseca.gov>; Jimenez, Sergio <sergio.jimenez@sanjoseca.gov>; Carrasco, Magdalena <Magdalena.Carrasco@sanjoseca.gov>; Foley, Pam <Pam.Foley@sanjoseca.gov>; Khamis, Johnny <johnny.khamis@sanjoseca.gov>;

Cc: Agendadesk <Agendadesk@sanjoseca.gov>; City Clerk <city.clerk@sanjoseca.gov>;

[External Email]

Dear Mayor Liccardo, Vice Mayor Jones, and Council Members Jimenez, Peralez, Diep, Carrasco, Davis, Esparza, Arenas, Foley, and Khamis,

As a San Jose resident, as a father, and as a supporter of Mothers Out Front, I urge you to reject Bloom Energy's request for an exemption from the Updated Natural Gas Infrastructure Prohibition Ordinance.

I strongly support the Updated Natural Gas Infrastructure Prohibition Ordinance. If not watered down, this forward-thinking ordinance will go a long way toward meeting our climate-smart goals and preserving a livable climate for all children.

**But I am strongly opposed to Bloom Energy's request for an unwarranted exemption that would allow for the use of fuel cells powered by liquified "natural" gas.**

Allowing an exemption for fuel cells is unnecessary and would:

- Violate the goals of the gas ban prohibition, allowing gas to be used in new buildings.
- Harm the climate and make it harder to achieve our climate goals.
- Set a bad precedent for other cities as they seek to electrify their buildings, essentially green washing a technology that's powered by dirty gas.

Since the fuel cells used in Bloom Boxes are currently powered by fracked gas, **the energy they supply is much dirtier than the energy provided by either San Jose Clean Energy or PG&E.** If Bloom Box fuel cells were only used on the few days each year when a power outage occurs, that might be acceptable.

However, Bloom Boxes are not economically feasible if used only to provide back-up power. On the contrary, **Bloom Boxes only make sense economically if used 24/7 every day of the year, providing base load energy** to the buildings where they are installed. This is not acceptable and violates the goal of the gas ban prohibition: to ban gas! Fracked gas is fracked gas, whether it is burnt in a power plant, a building, or a fuel cell. Dirty energy should only be allowed, if needed, to provide temporary, limited back-up power, not base load energy.

Yes, some businesses need continuous power and cannot afford a power shutoff. However, allowing Bloom Boxes to be used to provide "back-up" power is like killing a flea with a tank. It would be much better for the climate to

use back-up diesel power only during power shutoffs than to use fracked gas-powered fuel cells continuously. In fact, *it would take 150 days of diesel generator use to produce the same CO2e emissions as the Bloom Boxes would produce each year.*

In 2019, San Jose's use of fossil gas rose slightly. If new buildings are allowed to use Bloom Boxes, the City's use of fossil gas would go up even more. **This is destabilizing to the climate and threatens San Jose's ability to achieve our climate smart goals.** If Bloom wants to have its Bloom Boxes used in new San Jose buildings, it should be required to power its fuel cells with clean energy, not fracked gas.

San Jose should not throw away its climate goals in order to appease one company. **We cannot afford to water down our essential climate policies by allowing the continued build out of gas infrastructure until halfway through this decade.**

We need you, the leaders responsible for our safety, to hold the line and insist on the **strongest possible gas ban ordinance** so that San Jose can continue to provide the climate-smart leadership so essential to preserving a livable climate for all children. What could be more important?

Sincerely,

*Thomas Habermann*

Mothers Out Front Silicon Valley  
[www.mothersoutfront.org/team/california/siliconvalley](http://www.mothersoutfront.org/team/california/siliconvalley)

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# Fw: San Jose proposes to Ban Natural Gas

Gregory, Barbara

Wed 12/2/2020 6:43 AM

To: Agendadesk <Agendadesk@sanjoseca.gov>;

Thank You,

*Barb Gregory*



**Analyst II**

**Office of the City Clerk**

**200 E Santa Clara St FL T-14**

**San Jose, C-A 95112**

**408-535-1272 Fax: 408-292-6207**

**e-mail: [barbara.gregory@sanjoseca.gov](mailto:barbara.gregory@sanjoseca.gov)**

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**From:** From the Desk of Puneet Sarin <[REDACTED]>

**Sent:** Tuesday, December 1, 2020 5:23 PM

**To:** Liccardo, Sam <[sam.liccardo@sanjoseca.gov](mailto:sam.liccardo@sanjoseca.gov)>

**Cc:** Jones, Chappie <[Chappie.Jones@sanjoseca.gov](mailto:Chappie.Jones@sanjoseca.gov)>; Jimenez, Sergio <[sergio.jimenez@sanjoseca.gov](mailto:sergio.jimenez@sanjoseca.gov)>; Diep, Lan <[lan.diep@sanjoseca.gov](mailto:lan.diep@sanjoseca.gov)>; City Clerk <[city.clerk@sanjoseca.gov](mailto:city.clerk@sanjoseca.gov)>; Hughey, Rosalynn <[Rosalynn.Hughey@sanjoseca.gov](mailto:Rosalynn.Hughey@sanjoseca.gov)>; Romanow, Kerrie <[Kerrie.Romanow@sanjoseca.gov](mailto:Kerrie.Romanow@sanjoseca.gov)>; Ortbal, Jim <[Jim.Ortbal@sanjoseca.gov](mailto:Jim.Ortbal@sanjoseca.gov)>; Carrasco, Magdalena <[Magdalena.Carrasco@sanjoseca.gov](mailto:Magdalena.Carrasco@sanjoseca.gov)>; Davis, Dev <[dev.davis@sanjoseca.gov](mailto:dev.davis@sanjoseca.gov)>; Esparza, Maya <[Maya.Esparza@sanjoseca.gov](mailto:Maya.Esparza@sanjoseca.gov)>; Arenas, Sylvia <[sylvia.arenas@sanjoseca.gov](mailto:sylvia.arenas@sanjoseca.gov)>; Foley, Pam <[Pam.Foley@sanjoseca.gov](mailto:Pam.Foley@sanjoseca.gov)>; johnnykhamis@sanjoseca.gov <[johnnykhamis@sanjoseca.gov](mailto:johnnykhamis@sanjoseca.gov)>

**Subject:** San Jose proposes to Ban Natural Gas

[External Email]

December 1, 2010

Mayor Sam Liccardo & Council Members

City of San Jose

200 E Santa Clara Street

San Jose, CA 95110

**SUBJECT: SUPPORT OF THE NOVEMBER 16, 2020 SUPPLEMENTAL STAFF MEMORANDUM FOR ORDINANCE OF CITY OF SAN JOSE TO PROHIBIT NATURAL GAS INFRASTRUCTURE IN NEWLY CONSTRUCTED BUILDINGS**

Dear Mayor Liccardo & Councilmembers:

BD Bioscience supports the Supplemental Staff Memorandum (memo) from November 16, 2020, “to allow for exemptions for facilities with distributed energy resources that meet Section 94203 of Title 17 California Code of Regulation requirements and are necessary for the public health, safety or economic welfare in the event of the ever-increasing electric grid outages facing our state, until December 31, 2023, or until low- or zero-carbon fuels are commercially available for the supply pipeline. The Director will report to Council no later than December 31, 2023, on low- and zero-carbon fuel availability.” This amendment in the memo will allow companies like mine to continue making investments in their own energy resilience while aiding the city in meeting our collective climate change goals.

BD Bioscience appreciates the San Jose City Council for recognizing the need for resilience, due to the changing climate and impacts from public safety power shutoffs, and the ability for customers to ensure reliable energy.

Ensuring a steady supply of energy is critical to our daily operations. We are also interested in clean, reliable energy solutions to maintain operations and want to have the options to make these investments in the future for our employees, communities and the state as a whole. By allowing infrastructure to be installed and maintained into the future, we are allowing for a green energy future by powered by near- zero and zero emissions fuels.

Businesses need the ability invest in technologies that provide clean and consistent power San Jose can and should be a leader in utilizing clean technology solutions to increase energy resiliency. We encourage the Council to support the memo from November 16, 2020 to enable businesses to ensure they can operate reliably.

Sincerely

Puneet Sarin,  
WW President  
BD Bioscience



Puneet Sarin  
Worldwide President  
BD Biosciences

2222 Qume Drive

San Jose, CA 95131, USA

tel: +1 408.954.2200; C: +1. 408-759-3027

email: [puneet.sarin@bd.com](mailto:puneet.sarin@bd.com) website: [www.bd.com](http://www.bd.com)

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Corporate Headquarters Mailing Address: BD (Becton, Dickinson and Company) 1 Becton Drive Franklin Lakes, NJ 07417 U.S.A.

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# Agenda Item 6.1: hydrogen embrittlement



Tue 12/1/2020 8:17 PM

To: Liccardo, Sam <sam.liccardo@sanjoseca.gov>; Davis, Dev <dev.davis@sanjoseca.gov>; Peralez, Raul <Raul.Peralez@sanjoseca.gov>; Diep, Lan <lan.diep@sanjoseca.gov>; Arenas, Sylvia <sylvia.arenas@sanjoseca.gov>; Esparza, Maya <Maya.Esparza@sanjoseca.gov>; Jones, Chappie <Chappie.Jones@sanjoseca.gov>; Jimenez, Sergio <sergio.jimenez@sanjoseca.gov>; Carrasco, Magdalena <Magdalena.Carrasco@sanjoseca.gov>; Foley, Pam <Pam.Foley@sanjoseca.gov>; Khamis, Johnny <johnny.khamis@sanjoseca.gov>;  
Cc: Agendadesk <Agendadesk@sanjoseca.gov>;

[External Email]

To San Jose council:

Please see attached a copy of a letter that I just sent to SJMN. I hope this is not too late for your discussion this evening – a wrong decision could be very expensive or even lead to loss of life.

Sincerely, Campbell Scott

To the Editor, San Jose Mercury News

A major premise of the op-ed by Lapsley and Moore in today's SJMN ("How San Jose can ensure reliable, resilient clean energy.") is that the pipes currently providing the infrastructure to distribute natural gas can be easily repurposed for hydrogen in the future. Unfortunately, there is a natural phenomenon that makes this extremely questionable and potentially very dangerous - hydrogen gas causes embrittlement in a wide variety of iron alloys, from cast iron to steel, leaving them susceptible to cracking. Future hydrogen distribution cannot be done safely in old pipes. Do not take my word for it - there are many articles online about this subject.

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