



**BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE,
TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE
REGULAR MEETING**

BERKELEY CITY COUNCIL SPECIAL MEETING

**Thursday, June 6, 2019
2:00 PM**

2180 Milvia Street, 1st Floor - Cypress Room

Committee Members:

Councilmembers Cheryl Davila, Kate Harrison, and Rigel Robinson

AGENDA

Roll Call

Public Comment on Non-Agenda Matters

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - May 2, 2019

Committee Action Items

The public may comment on each item listed on the agenda for action as the item is taken up. The Chair will determine the number of persons interested in speaking on each item. Up to ten (10) speakers may speak for two minutes. If there are more than ten persons interested in speaking, the Chair may limit the public comment for all speakers to one minute per speaker. Speakers are permitted to yield their time to one other speaker, however no one speaker shall have more than four minutes.

Following review and discussion of the items listed below, the Committee may continue an item to a future committee meeting, or refer the item to the City Council.

Committee Action Items

2. **Adopt an Ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code Prohibiting Natural Gas Infrastructure in New Buildings** *(Item contains revised materials)*
From: Councilmembers Harrison, Davila, Bartlett and Hahn
Referred: February 25, 2019
Due: July 15, 2019
Recommendation: Adopt an ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code (BMC) prohibiting natural gas infrastructure in new buildings with an effective date of [].
Financial Implications: See report
Contact: Kate Harrison, Councilmember, District 4, 981-7140
3. **Transition to Zero-Emission Refuse Trucks**
From: Councilmembers Robinson, Harrison, and Davila
Referred: May 13, 2019
Due: October 28, 2019
Recommendation: Refer to the City Manager to draft a plan to phase out diesel, biodiesel, and natural gas powered trucks in all fleets used for refuse collection (both City-owned and contracted) and replace them with zero-emission refuse trucks.
Financial Implications: See report
Contact: Rigel Robinson, Councilmember, District 7, 981-7170
- 4a. **Recommendations for a Fossil Fuel Free Berkeley**
From: Energy Commission
Referred: May 14, 2019
Due: October 29, 2019
Recommendation: The Berkeley Energy Commission recommends the City Council refer to the City Manager to implement the recommendations listed below as well as additional measures outlined in the attached report to aggressively reduce greenhouse gas (GHG) emissions in the city and the region.
Financial Implications: Unknown
Contact: Billi Romain, Commission Secretary, 981-7400
- 4b. **Companion Report: Recommendations for a Fossil Fuel Free Berkeley**
From: City Manager
Referred: May 14, 2019
Due: October 29, 2019
Recommendation: Refer to the City Manager to continue to implement existing policies and programs that are consistent with the recommendations in the Berkeley Energy Commission's Fossil Fuel Free Berkeley Report, such as the Building Energy Saving Ordinance and development of new building codes that promote building electrification, and also to complete new evaluations and analyses of current and potential future greenhouse gas reduction programs and policies in order to inform next steps for accelerating progress to a Fossil Fuel Free Berkeley.
Financial Implications: See report
Contact: Timothy Burroughs, Planning and Development, 981-7400

Unscheduled Items

These items are not scheduled for discussion or action at this meeting. The Committee may schedule these items to the Action Calendar of a future Committee meeting.

- 5. Considering Multi-year Bidding Processes for Street Paving**
From: Mayor Arreguin, Councilmembers Hahn, Harrison and Davila
Referred: March 11, 2019
Due: September 15, 2019
Recommendation: 1. Restate the recommendation approved at the December 11, 2018 Council meeting to create a two-year bidding process for street paving to realize savings by (a) reducing by 50% City staff time devoted to bidding and contracting processes over each two year period and (b) benefitting from reduced pricing which may be available for larger contracts that offer greater economies of scale and reduce contractors' bidding and contracting costs.
2. Short-term referral to the City Manager to explore the possibility, feasibility, costs, and benefits of bidding in increments of up to 5 years to encompass entire 5-year paving plans, or other ideas to more rationally and cost-effectively align the paving plan with budget cycles and reduce costs associated with frequent bid cycles for relatively small contracts.
Financial Implications: See report
Contact: Jesse Arreguin, Mayor, 981-7100

Items for Future Agendas

- Discussion of items to be added to future agendas

Adjournment

~~~~~  
*This is a meeting of the Berkeley City Council Facilities, Infrastructure, Transportation, Environment & Sustainability Committee. Since a quorum of the Berkeley City Council may actually be present to discuss matters with the Council Facilities, Infrastructure, Transportation, Environment & Sustainability Committee, this meeting is being noticed as a special meeting of the Berkeley City Council as well as a Council Facilities, Infrastructure, Transportation, Environment & Sustainability Committee meeting.*

*Written communications addressed to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee and submitted to the City Clerk Department will be distributed to the Committee prior to the meeting.*

*This meeting will be conducted in accordance with the Brown Act, Government Code Section 54953. Any member of the public may attend this meeting. Questions regarding this matter may be addressed to Mark Numainville, City Clerk, 981-6900.*



### COMMUNICATION ACCESS INFORMATION:

This meeting is being held in a wheelchair accessible location. To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services specialist at 981-6418 (V) or 981-6347 (TDD) at least three business days before the meeting date. Attendees at public meetings are reminded that other attendees may be sensitive to various scents, whether natural or manufactured, in products and materials. Please help the City respect these needs.

~~~~~  
I hereby certify that the agenda for this special meeting of the Berkeley City Council was posted at the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way, as well as on the City's website, on May 30, 2019.



Mark Numainville, City Clerk

Communications

Communications submitted to City Council Policy Committees are on file in the City Clerk Department at 2180 Milvia Street, 1st Floor, Berkeley, CA.

**BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE,
TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE
REGULAR MEETING MINUTES**

BERKELEY CITY COUNCIL SPECIAL MEETING MINUTES

Thursday, May 2, 2019

2:00 PM

2180 Milvia Street, 1st Floor - Cypress Room

Committee Members:

Councilmembers Cheryl Davila, Kate Harrison, and Rigel Robinson

AGENDA

Roll Call: 2:01 p.m.

Present: Davila, Robinson, and Harrison

Public Comment on Non-Agenda Matters – 2 speakers

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - April 4, 2019

Action: M/S/C (Robinson/Davila) to approve the minutes as presented.

Vote: All Ayes.

Committee Action Items

Following review and discussion of the items listed below, the Committee may continue an item to a future committee meeting, or refer the item to the City Council.

Committee Action Items

2. **Adopt an Ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code Prohibiting Natural Gas Infrastructure in New Buildings** *(Item contains revised materials)*

From: Councilmembers Harrison, Davila, Bartlett and Hahn

Referred: February 25, 2019

Due: July 15, 2019

Recommendation: Adopt an ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code (BMC) prohibiting natural gas infrastructure in new buildings with an effective date of [].

Financial Implications: See report

Contact: Kate Harrison, Councilmember, District 4, 981-7140

Action: 8 speakers. Presentation made discussion held. Continued to June 6, 2019 meeting.

Vote: All Ayes.

Committee Action Items

- 3a. **Referral Response: Mandatory and Recommended Green Stormwater Infrastructure in New and Existing Redevelopments or Properties** (*Contains supplemental materials*)

From: Community Environmental Advisory Commission

Referred: January 22, 2019

Due: June 11, 2019

Recommendation: Since the drought-storm-flooding cycle is predicted to get worse, refer to the City Manager to develop and implement measures to help reduce runoff from private property when rain exceeds two inches in a 24-hour period. The City Manager and staff should consider the following: - Comply beyond the State and Alameda County current requirements; -Encourage the treating and detaining of runoff up to approximately the 85th per-centile of water deposited in a 24-hour period; -Establish site design measures that include minimizing impervious surfaces; -Require homeowners to include flooding offsets in preparing properties for sale; - Offer option(s) for property owners to fund in-lieu centralized off-site storm-water retention facilities that would hold an equivalent volume of runoff; -Require abatements for newly paved areas over a specific size; -Make exceptions for properties that offer significantly below-market rent or sale prices; -Authorize a fee for all new construction or for title transfer to cover the cost of re-quired compliance inspections. -Incorporate these measures for private property with similar measures for Public Works, while coordinating with EBMUD, BUSD, UCB and LBNL.

Financial Implications: See report

Contact: Viviana Garcia, Commission Secretary, 981-7460

Action: 3 speakers. M/S/C (Harrison/Davila) to recommend to adopt an amended version of Mayor Arreguin' s supplemental item to the original Community Environmental Advisory Committee (CEAC) report be submitted to the City Council with a Positive Recommendation.

Vote: All Ayes.

- 3b. **Companion Report to Referral Response: Mandatory and Recommended Green Stormwater Infrastructure in New and Existing Redevelopments or Properties**

From: City Manager

Referred: January 22, 2019

Due: June 11, 2019

Recommendation: Express appreciation for the intent of the Community Environmental Advisory Commission (CEAC) recommendation to develop and implement measures to help reduce runoff from private property when rain exceeds two inches in a 24-hour period, and allow staff to continue existing efforts to implement Municipal Regional Stormwater Permit regulations in coordination with the 14 other local governments and agencies that participate in the Alameda Countywide Clean Water Program.

Financial Implications: See report

Contact: Timothy Burroughs, Planning and Development, 981-7400; Phillip Harrington, Public Works, 981-6300

Committee Action Items

4. Considering Multi-year Bidding Processes for Street Paving

From: Mayor Arreguin, Councilmembers Hahn, Harrison and Davila

Referred: March 11, 2019

Due: September 15, 2019

Recommendation: 1. Restate the recommendation approved at the December 11, 2018 Council meeting to create a two-year bidding process for street paving to realize savings by (a) reducing by 50% City staff time devoted to bidding and contracting processes over each two year period and (b) benefitting from reduced pricing which may be available for larger contracts that offer greater economies of scale and reduce contractors' bidding and contracting costs.

2. Short-term referral to the City Manager to explore the possibility, feasibility, costs, and benefits of bidding in increments of up to 5 years to encompass entire 5-year paving plans, or other ideas to more rationally and cost-effectively align the paving plan with budget cycles and reduce costs associated with frequent bid cycles for relatively small contracts.

Financial Implications: See report

Contact: Jesse Arreguin, Mayor, 981-7100

Action: Continued to next meeting – May 16, 2019.

Unscheduled Items

These items are not scheduled for discussion or action at this meeting. The Committee may schedule these items to the Action Calendar of a future Committee meeting.

None

Adjournment

Action: M/S/C (Harrison/Davila) to adjourn the meeting.

Vote: All Ayes.

Adjourned at 3:36 p.m.

I hereby certify that this is a true and correct record of the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee meeting held on May 2, 2019.

Deon Sailes, Assistant City Clerk



Kate Harrison
Councilmember District 4

02

ACTION CALENDAR
[], 2019

To: Honorable Mayor and Members of the City Council
From: Councilmembers Harrison, Davila, Bartlett and Hahn
Subject: Adopt an Ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code Prohibiting Natural Gas Infrastructure in New Buildings

RECOMMENDATION

Adopt an ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code (BMC) prohibiting natural gas infrastructure in new buildings with an effective date of [].

POLICY COMMITTEE TRACK

Facilities, Infrastructure, Transportation, Environment & Sustainability Policy Committee

BACKGROUND

The Community Environmental Advisory Commission (CEAC) unanimously recommended in 2016 that the Council consider prohibiting phasing out new natural gas infrastructure in buildings ~~in 2016~~.¹ That year, Council endorsed the recommendation and directed the CEAC and the Energy Commission to “develop and evaluate a proposal for requiring installations of new cooking, water heating, and/or building heating systems to use technologies which do not burn natural gas.”²

The Berkeley Energy Commission subsequently investigated adopting a ‘reach’ building ordinance mandating use of more efficient electric heat-pump water heaters in new construction, which would have the effect of phasing out natural gas for that purpose, but concluded that California Energy Commission (CEC) policies at the time precluded doing so because of the difficulty of proving that the proposed new requirement will be both cost-effective and at least as efficient as the existing state and federal standards.³

¹ Phasing Out Natural Gas for Heating and Cooking, Community Environmental Advisory Commission, November 1, 2016, https://www.cityofberkeley.info/Clerk/City_Council/2016/11_Nov/Documents/2016-11-01_Item_10_Phasing_Out_Natural_Gas.aspx.

² Annotated Agenda Berkeley City Council Meeting, City Clerk’s Office, November 1, 2016, http://www.cityofberkeley.info/Clerk/City_Council/2016/11_Nov/Documents/11-01_Annotated.aspx.

³ Response to Referral to Community Environmental Advisory Committee (CEAC) and the Berkeley Energy Commission to Evaluate Phasing-out Natural Gas, CEAC Berkeley Energy Commission, December 19, 2017, https://www.cityofberkeley.info/Clerk/City_Council/2017/12_Dec/Documents/2017-12-19_Item_17_Response_to_Referral_to_CEAC_and_BEC.aspx; See also, Local Ordinances Exceeding the 2016 Building Energy Efficiency Standards, California Energy Commission,

Berkeley's ~~Energy Commission found that a reach heat pump code did not pass the cost-effectiveness test due to meet an outdated federal baseline for efficiency calculations restrictive state policies requirements.~~ Consequently, at the time it was determined infeasible to adopt such a reach code under Title 24 Part 6 of the 2016 state Energy Code. Since then, Berkeley's Office of Energy and Sustainable Development (OESD) has been actively ~~lobbying the CEC to adopt working to present~~ energy code amendments ~~to state authorities~~ that facilitate ~~all~~-electric designs, and ~~signed on in support of comments before~~ the California Public Utilities Commission (CPUC) ~~to adopt regulations allowing regarding~~ utility incentives ~~to subsidize for~~ fuel-switching in existing buildings.⁴

This ordinance differs in its approach by acting within the City's authority to prohibit installation of harmful gas infrastructure when issuing building permits for new buildings, and as a result avoids CEC regulations associated with asking to amend efficiency standards. ~~It also avoids the jurisdiction of the California Building Code Commission because this ordinance does not interfere with existing building standards as laid out in the 2016 California Energy Code and as defined by California Building Standards Law Health and Safety Code.~~⁵ Finally, ~~it avoids the jurisdiction of the CPUC. With respect to the CPUC's jurisdiction, A~~although the legislature empowered the Commission to "require each gas corporation to provide bundled basic gas service to all core customers in its service territory," it did not require customers to ~~install fuel gas piping in or in connection with a building, structure or within the property lines of premises behind the gas meter establish gas service with a gas corporation, or preclude cities from prohibiting gas infrastructure within new buildings associated with connection to that service.~~⁶

<https://www.energy.ca.gov/title24/2016standards/ordinances/>; See also, CA Public Resources Code Section 25402.1(h)2,

http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC§ionNum=25402.1.; CA Building Energy Efficiency Standards Section 10-106

<https://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf>

⁴ "Berkeley Support to Phase Out Fossil Fuels with Clean Electrification," OESD, CEC Docket 18-IEPR-09, June 28, 2018,

https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Commissions/Commission_for_Energy/EC2018-07-25_Item%20c-Combined_Comments%20to%20CEC%20and%20CPUC.pdf. See also, "Comments of The Natural Resources Defense Council (NRDC) and Sierra Club On The Administrative Law Judge's Ruling Seeking Comments On The Three-Prong Test,"

⁵ California Building Standards Law Health and Safety Code, Division 13, Part 2.5 § 18909, http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC§ionNum=18909

⁶ California Code, Public Utilities Code - PUC § 963, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&art=1.&chapter=4.5.&article=2.

This new approach also has the endorsement of the present Berkeley Energy Commission. In December 2018, the Energy Commission presented a draft response to the Council's June 2018 Fossil Free Resolution. As part of a broader strategy to eschew fossil fuels from Berkeley, it recommended that the Council "[p]rohibit gas cooktops and dryers in new residences or a moratorium on new gas hook ups if possible."⁷ Adoption of this ordinance would fulfil this recommendation.

In June 2018 the Berkeley City Council declared a city-wide Climate Emergency (Resolution No. 68,486-N.S.), aimed at reviewing the City's greenhouse gas emission reduction strategies, commitments and progress in light of recent political, scientific and climatic developments.⁸ A 2018 U.N. Intergovernmental Panel on Climate Change (IPCC) report suggested that in order to keep warming under 1.5 degrees Celsius, governments must initiate a dramatic 45% cut in global carbon emissions from 2010 levels by 2030 and reach global 'net zero' around 2050. The time for incremental emissions reduction strategies is over—policymakers must begin implementing "far-reaching and unprecedented changes in all aspects of society."⁹

Berkeley became a climate leader when voters overwhelmingly passed Measure G (Resolution No. 63,518-N.S.) in 2006, calling for the City to reduce greenhouse gas emissions by 33% below 2000 levels by 2020, and 80% by 2050.¹⁰ Measure G resulted in the City Council adopting the 2009 Berkeley Climate Action Plan (Resolution No. 64,480-N.S.), which was written through a community-wide process.¹¹ The plan identified buildings as major contributors to greenhouse gas emissions, representing 26% of community-wide emissions, and recommended the implementation of aggressive building codes favoring low carbon space and water heating

⁷ Fossil Free Berkeley Subcommittee Draft Report for 12/5/2018 Commission Meeting, Berkeley Energy Commission, December, 5, 2018,
https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Commissions/Commission_for_Energy/FFB%20Draft%20report%20for%20Dec%205%202018%20Commission%20Meeting%20Final.pdf

⁸ Resolution Endorsing a Climate Emergency, Berkeley City Council, June 12, 2018,
https://www.cityofberkeley.info/uploadedFiles/Council_2/Level_3_-_General/Climate%20Emergency%20Declaration%20-%20Adopted%2012%20June%202018%20-%20BCC.pdf

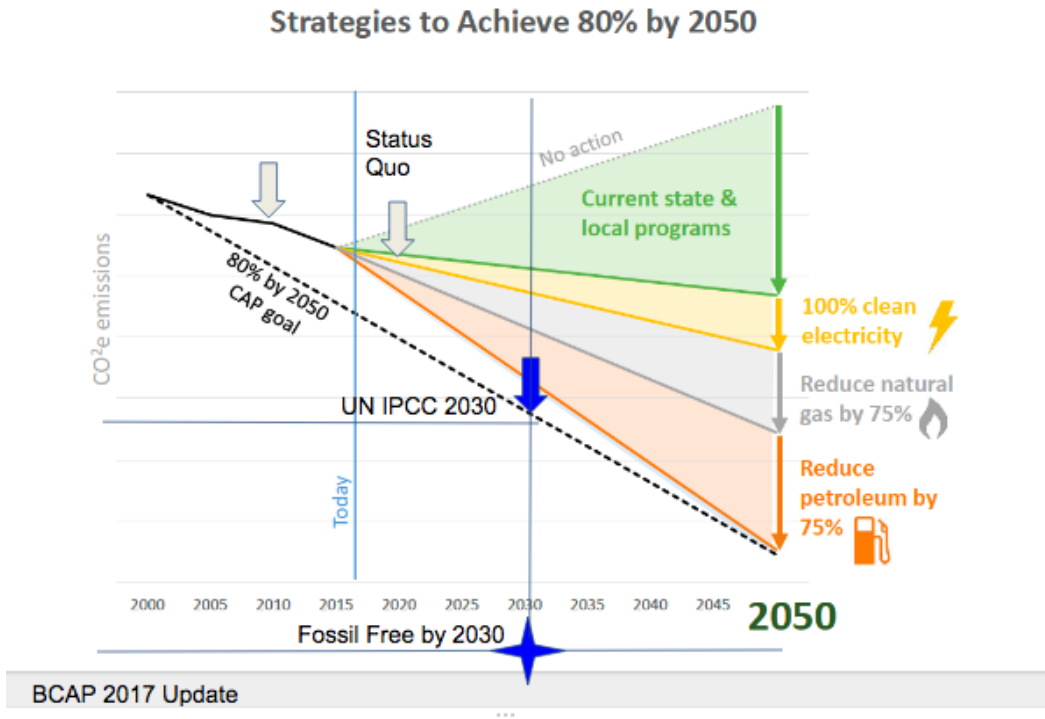
⁹ IPCC Press Release, Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by Governments, 8 October 2018,
http://www.ipcc.ch/pdf/session48/pr_181008_P48_spm_en.pdf

¹⁰ Resolution Submitting Measure G, Berkeley City Council, July 18, 2006,
<https://www.cityofberkeley.info/citycouncil/resos/2006/63396.pdf>; Ballotpedia, Berkeley Greenhouse Gas Emissions, Measure G (November 2006), November 7, 2006,
[https://ballotpedia.org/Berkeley_Greenhouse_Gas_Emissions,_Measure_G_\(November_2006\)#cite_note-quotedisclaimer-1](https://ballotpedia.org/Berkeley_Greenhouse_Gas_Emissions,_Measure_G_(November_2006)#cite_note-quotedisclaimer-1)

¹¹ Office of Energy & Sustainable Development, Berkeley Climate Action Plan Information Page,
<https://www.cityofberkeley.info/climate/>.

appliances/infrastructure in new buildings.¹² A 2018 Climate Action Plan progress update presented by Berkeley’s OESD reported that “[c]ombustion of natural gas within Berkeley buildings accounted for 27% of total GHG emissions in 2016 and 73% of building sector GHG emissions.”¹³

According to OESD, the latest and best available data suggest that Berkeley’s 2016 community-wide GHG emissions, including emissions from transportation, building energy use, and solid waste disposal, are approximately 15% below 2000 baseline levels, despite a population increase of approximately 18% in that same time period. Therefore, according to 2016 data, the City is approximately 18% behind its 2020 goal.¹⁴



¹² City of Berkeley, Berkeley Climate Action Plan, June 2009, https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Berkeley%20Climate%20Action%20Plan.pdf, p. 59.

¹³ 2018 Berkeley Climate Action Plan Update, Office of Energy and Sustainable Development, December 6, 2018, https://www.cityofberkeley.info/Clerk/City_Council/2018/12_Dec/Documents/2018-12-06_WS_Item_01_Climate_Action_Plan_Update_pdf.aspxhttps://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/2017-12-07%20WS%20Item%2001%20Climate%20Action%20Plan%20Update.pdf, p. 10.

¹⁴ *Id.*, p. 2.

Specifically, progress towards lowering emissions in new buildings has been encouraging but incremental. To date, the federal, state and local approach to energy use in new buildings has largely been to mandate greater building efficiency and energy conservation, which indirectly results in lower emissions, but does not directly phase out fossil fuel consumption in new buildings. With regard to energy efficiency, Berkeley is in the process of adopting the ambitious, but voluntary, Green Building Standards. ~~In addition, the Planning Department is actively lobbying various California state agencies to level the regulatory playing field for all electric buildings vis-à-vis gas by developing all electric codes and lobbying the CPUC to expand utility incentives for fuel switching.~~¹⁵ In short, while ~~both this~~ initiatives facilitates the electrification and energy efficiency in new buildings, ~~they it~~ does not explicitly and directly prohibit builders from constructing buildings with natural gas infrastructure, a potent and persistent source of greenhouse gas pollution.¹⁶

According to the November 2017 Planning Department Bi-Annual Housing Pipeline Report, the City approved building permits for 525 residential units between January 1, 2014 and November 2017. An additional 952 units received their certificate of occupancy during the same period.¹⁷ Presumably, the vast majority of these units feature natural gas infrastructure. This gas-related emissions problem has been compounded by regional population and job growth coinciding with a considerable 18% rise in Berkeley's population since 2000 as well as the multi-decade useful life of natural gas appliances.¹⁸ As a result, the city has 'locked in' decades of additional carbon pollution, and stands to continue doing so with each new building permit application. The persistence of fossil fuel industry marketing, the regional housing affordability crisis and the associated effort to expand the housing stock will continue to drive local and regional increases in natural gas infrastructure and consumption unless we act now.

This ordinance recognizes that all-electric heating technologies are cost-competitive substitutes to their natural gas counterparts (especially when installed during new construction) and seeks to halt the expansion of natural gas into new buildings in order to stave off the risk of locking in significant additional greenhouse emissions. In the interim between adoption and the effective date, City staff can continue to design and seek approval of all-electric codes to help guide home builders in constructing new buildings with emissions and efficiency best practices.¹⁹

¹⁵ ~~Id., p. 12.~~

¹⁶ The forthcoming 2019 California Energy Code allows for significant natural gas usage.

¹⁷ Referral Response: Bi-Annual Housing Pipeline Report, Planning Department, November 11, 2017, https://www.cityofberkeley.info/Clerk/City_Council/2017/11_Nov/Documents/2017-11-28_Item_21_Referral_Response_Bi-Annual.aspx

¹⁸ 2018 Berkeley Climate Action Plan Update, p. 1.

¹⁹ OESD reported in December 2018 that "Berkeley has worked with other local governments to create a joint cost-effectiveness study request for the California Codes and Standards Program, seeking the

This approach is borne out by recent economic analysis. For example, the Rocky Mountain Institute's 2018 report entitled *The Economics of Electrifying Buildings: How Electric Space and Water Heating Supports Decarbonization of Residential Buildings* considered the carbon emissions reduction opportunities and cost-effectiveness associated with all-electric space and water heating in new single-family construction in Oakland.²⁰ As a direct neighbor, the Oakland study is a useful reference point as Berkeley shares many of its characteristics, including its climate, architecture, the electric and natural gas utility, the Pacific Gas and Electric Company, and membership in East Bay Community Energy.

The report found that “[i]n Oakland, [electric] heat pumps produce universally less carbon emissions compared to natural gas systems.”²¹ Heat pumps are functionally air conditioners that operate in reverse; they capture ambient heat from the air and transfer it inside the building where it can be used to heat water and space. They generate renewable solar energy from the air, and they are so efficient that the Rocky Mountain Institute argues that heat pumps are superior to natural gas appliances on all electric grids except those with the highest coal power content.²² Fortunately, the California grid does not run on coal and features relatively low greenhouse gas emissions.²³ Therefore, heat pumps offer exponential emissions reduction potential in both new and existing buildings, and they are poised to result in additional benefits overtime as tomorrow's electricity becomes substantially less carbon intensive due to market forces, implementation of California State Senate Bill 100 and wider adoption of Community Choice Aggregator renewable electricity services.

The report also found that for new single-family buildings in Oakland, “[electric] heat pumps are universally more cost-effective” than natural gas space and water heaters due to their superior energy efficiency, cost-competitiveness, built-in air conditioning capability, and the avoided cost of connecting to the Pacific Gas & Electric Company's procurement and natural gas distribution system.²⁴ Specifically, the report found that new single-family developments avoiding gas could “save \$1,000 to more than \$24,000

maximum cost-effective efficiency for mixed-fuel and all-electric new construction over a representative sample of building sizes and uses...The findings from this cost-effectiveness study request are expected in early 2019 and will be shared with the Energy Commission and other stakeholders, to evaluate options and opportunities for local amendments to promote deep energy savings and electrification.” See, 2018 Berkeley Climate Action Plan Update, p. 12.

²⁰ Sherri Billimoria, Mike Henchen, Leia Guccione, and Leah Louis-Priscott, “The Economics of Electrifying Buildings: How Electric Space and Water Heating Supports Decarbonization of Residential Buildings,” Rocky Mountain Institute, June 14, 2018, https://rmi.org/wp-content/uploads/2018/06/RMI_Economics_of_Electrifying_Buildings_2018.pdf

²¹ *Id.*, p. 29.

²² *Id.*

²³ *Id.*, p. 9.

²⁴ *Id.*

per single-family home, with a median value of \$8,800.”²⁵ Similarly, in 2017 Stone Energy Associates and Redwood Energy submitted letters to the CEC advising the commission of the significant net cost savings per unit in multi-family projects due to avoiding costly trenching and gas infrastructure.²⁶ In addition, a 2018 Natural Resources Defense Council-commissioned report found that all-electric new multi-family construction “sees upfront capital savings, partly [as] a result of not piping for gas.”²⁷

~~The~~ Berkeley’s Office of Energy and Sustainable Development (OESD) appears to shares the Rocky Mountain Institute’s general outlook on heatpump technology, having ~~years ago officially endorsed heat pumps as arecommended it as a~~ critical means of meeting the goals of envisioned by city’s climate action plan.²⁸

The Environmental Protection Agency, Rocky Mountain Institute, and Berkeley’s OESD staff also emphasize the carbon emissions associated with natural gas stemming from methane leaks. For example, methane gas is released into the atmosphere through hydraulic fracking and other drilling methods.²⁹ Transporting and distributing natural gas through pipelines also can lead to additional leaks, explosions and fires.³⁰ According to the EPA, “[p]ound for pound, the comparative impact of CH₄ [methane] is more than 25 times greater than CO₂ over a 100-year period.”³¹ In addition, according to the Environmental Defense Fund (EDF), “[i]n the first two decades after its release, methane is 84 times more potent than carbon dioxide.” Methane’s enhanced potency,

²⁵ *Id.*, p. 47.

²⁶ CEC Docket No. 17-BSTD-01, Letter from Sean Armstrong, Redwood Energy, to CEC Re: 2019 Building Energy Efficiency Standards Pre-Rulemaking, October 11, 2017, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=221464&DocumentContentId=27248>; CEC Docket No. 16-BSTD-06, Letter from Nehemiah Stone, Stone Energy Associates, to CEC Re: 2019 Building Energy Efficiency Standards Development, April 4, 2017.

²⁷ Asa S. Hopkins, PhD, Kenji Takahashi, Devi Glick, Melissa Whited, “Decarbonization of Heating Energy Use in California Buildings: Technology, Markets, Impacts, and Policy Solutions,” Synapse Energy Economics, Inc., October 16, 2018, <http://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf>.

²⁸ 2017 Berkeley Climate Action Plan Update, Office of Energy and Sustainable Development, December 7, 2017, https://www.cityofberkeley.info/Clerk/City_Council/2017/12_Dec/Documents/2017-12-07_WS_Item_01_Climate_Action_Plan_Update.aspx; See also, Residential Heat Pump Water Heaters: Replacing a Gas Water Heater, OESD, <https://www.cityofberkeley.info/HPWH/>. According to OESD, heat pumps “use electricity instead of gas and therefore have the potential to use renewable energy...[and] work like a refrigerator in reverse — they use electricity and a refrigerant to take heat from the air and transfer” it to the hot water tank or heating ducts.

²⁹ The Economics of Electrifying Buildings, p. 26.

³⁰ See e.g., Rebecca Bowe, Lisa Pickoff-White, Five Years After Deadly San Bruno Explosion: Are We Safer?, KQED, September 8, 2015, <https://www.kqed.org/news/10667274/five-years-after-deadly-san-bruno-explosion-are-we-safer>; See also, David Siders, Jerry Brown declares emergency around Southern California gas leak, January 6, 2016, <https://www.sacbee.com/news/politics-government/capitol-alert/article53353615.html>.

³¹ “Overview of Greenhouse Gases,” U.S. Environmental Protection Agency, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane>

particularly in the short term, results in more immediate warming and thus warrants greater urgency. EDF estimates that “[a]bout 25% of the manmade global warming we’re experiencing is caused by methane emissions.”³² Consequently, the Rocky Mountain Institute report called upon cities to immediately “[s]top supporting the expansion of the natural gas distribution system, including for new homes.” Furthermore, the report cautioned that natural gas “infrastructure will be obsolete in a highly electrified future, and gas ratepayers face significant stranded asset [financial] risk” by staying on natural gas.³³

The proposed ordinance prohibits builders from applying for building permits that include establishing new or connecting to existing gas utility service for heat water, space, food etc. This legislation will have the effect of ushering in all-electric new buildings in the City of Berkeley, avoiding significant new greenhouse emissions and diverting City attention and resources to other critical sources of emissions.

The ordinance will help prevent deadly home fires that start from an open flame and are fueled by gas lines. For example, the City of Santa Rosa is actively reconsidering the role of natural gas in new buildings because of the destructive 2017 Tubbs firestorm.³⁴ In 2017 the U.S. Geological Survey conducted the *HayWired Scenario* simulating “a 7.0 quake on the Hayward fault line with the epicenter in Oakland.” The agency’s report predicted that “about 450 large fires could result in a loss of residential and commercial building floor area equivalent to more than 52,000 single-family homes and cause property (building and content) losses approaching \$30 billion.”³⁵ The report identified ruptured gas lines as a key fire risk factor. This finding mirrors the gas fires resulting from the Loma Prieta (1989) and Northridge (1994) earthquakes.

The ordinance will also improve indoor and outdoor air quality by eliminating toxic byproducts of natural gas. A 2013 Lawrence Berkeley National Laboratory study found that “60 percent of homes in the state that cook at least once a week with a gas stove” produce toxic levels of nitrogen dioxide, formaldehyde and carbon monoxide exceeding federal standards for outdoor air quality. Although electric stoves generate toxic particulate matter resulting from the cooking process and dust volatilization, researchers found that gas stoves are more detrimental to indoor air quality because they produce

³² “Methane: The other important greenhouse gas,” Environmental Defense Fund, <https://www.edf.org/climate/methane-other-important-greenhouse-gas>.

³³ The Economics of Electrifying Buildings, p. 10.

³⁴ Will Schmitt, Santa Rosa council considers requirement for new homes to be independent of natural gas, Press Democrat, November 10, 2018, <https://www.pressdemocrat.com/news/8899687-181/santa-rosa-council-considers-requirement>.

³⁵ “The HayWired earthquake scenario—Engineering implications,” U.S. Geological Survey, April 18, 2018, <https://pubs.er.usgs.gov/publication/sir20175013v2>.

significant toxic fossil fuel combustion byproducts not associated with electric stoves.³⁶
This issue is compounded by state efficiency standards, which are designed to trap air indoors.

Rapid improvements in electric cooktop technology suggest that the City of Berkeley can simultaneously maintain its rich culinary culture while taking action to reduce fossil fuel emissions in new buildings.³⁷

Emergency action and leadership is needed to prevent the locking in of additional natural gas greenhouse gasses from new buildings. By adopting this ordinance, the City of Berkeley has an opportunity to make further progress towards delivering upon its responsibilities under Measure G, the 2009 Climate Action Plan, Fossil Fuel Berkeley Resolution (as referred), and the Climate Emergency Declaration.

FINANCIAL IMPLICATIONS

Staff time will be necessary to implement the new building permit regulations.

ENVIRONMENTAL SUSTAINABILITY

Prohibiting natural gas infrastructure in new buildings will prevent the release of significant additional natural gas-related greenhouse gasses from new buildings.

CONTACT PERSON

Councilmember Kate Harrison, Council District 4, (510) 981-7140

Attachments:

1. Proposed Ordinance Adding BMC Chapter 19.84

³⁶ "Pollution in the Home: Kitchens Can Produce Hazardous Levels of Indoor Pollutants," Julie Chao, Lawrence Berkeley National Laboratory, July 23, 2013, <https://newscenter.lbl.gov/2013/07/23/kitchens-can-produce-hazardous-levels-of-indoor-pollutants/>.

³⁷ While natural gas ranges are often regarded by home cooks as superior to electric ranges, modern induction range technology offers a cooking experience that arguably provides faster heat response, easier clean up and more temperature precision than gas. See e.g., Cooktop Showdown – Gas vs. Electric vs. Induction, A Finer Touch Construction, <https://aftconstruction.com/cooktop-showdown-electric-vs-gas-vs-induction/>. Appliance manufacturer Samsung introduced a new induction cooktop featuring a "virtual" LED flame that mimics the visual response of a gas flame. See also, 36" Induction Cooktop with Virtual Flame™, Samsung US, <https://www.samsung.com/us/home-appliances/cooktops-and-hoods/induction-cooktops/36--built-in-induction-cooktop-with-flex-cookzone-nz36k7880ug-aa/>.

ORDINANCE NO. –N.S.

ADDING A NEW CHAPTER 19.84 TO THE BERKELEY MUNICIPAL CODE
PROHIBITING NATURAL GAS INFRASTRUCTURE IN NEW BUILDINGS EFFECTIVE
[]

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Chapter 19.84 of the Berkeley Municipal Code is added to read as follows:

Chapter 19.84

PROHIBITION OF NATURAL GAS INFRASTRUCTURE IN NEW BUILDINGS

Sections:

19.84.010 Findings and Purpose.

19.84.020 Applicability.

19.84.030 Definitions.

19.84.040 Prohibited Natural Gas Infrastructure in New Buildings

19.81.050 Exception.

19.81.060 Severability.

19.81.070 Effective Date.

19.84.010 Findings and Purpose.

The Council finds and expressly declares as follows:

- A. Available scientific evidence suggests that natural gas combustion, procurement and transportation produces significant greenhouse gas emissions that contribute to global warming and climate change.
- B. The following addition to the Berkeley Municipal Code is reasonably necessary because of local climatic, geologic and health and safety conditions as listed below:
 - (1) As a coastal city located on the San Francisco Bay, Berkeley is vulnerable to sea level rise, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, which contribute to melting of glaciers and thermal expansion of ocean water – resulting in rising sea levels.
 - (2) Berkeley is already experiencing the repercussions of excessive greenhouse gas emissions as rising sea levels threaten the City’s shoreline and infrastructure, have caused significant erosion, have increased impacts to infrastructure during extreme tides, and have caused the City to expend funds to modify the sewer system.
 - (3) Berkeley is situated along a wildland-urban interface and is extremely vulnerable to wildfires and firestorms, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, drought conditions, vegetative fuel, and length of fire seasons—all of which contribute to the likelihood and consequences of fire.
 - ~~(3)~~(4) Berkeley’s natural gas building infrastructure, a potentially significant source of fire during earthquakes and other fire events, is precariously situated along or near the Hayward fault, which is likely to produce a large earthquake in the Bay Area.
 - ~~(4)~~(5) Some subpopulations of Berkeley residents are especially vulnerable to heat events.
 - ~~(5)~~(6) Berkeley residents disproportionately suffer from asthma and other health conditions associated with poor indoor and outdoor air quality due ~~exacerbated~~ by ~~to~~ the combustion of natural gas fossil fuel.
- C. The people of Berkeley, as codified through Measure G (Resolution No. 63,518-N.S.), the City of Berkeley Climate Action Plan (Resolution No. 64,480-N.S.), and Berkeley Climate Emergency Declaration (Resolution No. 68,486-N.S.) all recognize that rapid, far-reaching and unprecedented changes in all aspects of society are required to limit global warming and the resulting environmental threat posed by climate change, including the prompt phasing out of natural gas as a fuel for heating and cooling infrastructure in new buildings.
- D. Substitute electric heating and cooling infrastructure in new buildings fueled by less greenhouse gas intensive electricity is linked to significantly lower greenhouse gas emissions and is cost competitive because of the cost savings associated with all-electric designs that avoid new gas infrastructure.
- E. All-electric building design benefits the health, welfare, and resiliency of Berkeley and its residents.

- F. The most cost-effective time to integrate electrical infrastructure is during building construction because workers are already on-site, utility service upgrade costs are lower, permitting and administrative costs are lower, natural gas piping costs are avoided, and it is more cost-effective to include such systems in construction financing.
- G. It is the intent of the council to eliminate obsolete natural gas infrastructure and associated greenhouse gas emissions in new buildings where all-electric infrastructure can be most practicably integrated, thereby reducing the environmental and health hazards produced by the consumption and transportation of ~~fossil fuel~~natural gas.

19.84.020 Applicability.

- A. The requirements of this Chapter shall apply to all building permit applications for New Buildings proposed to be located in whole or in part within the City. However, it shall not apply to agencies that are not subject to City authority.
- B. The requirements of this Chapter shall not apply to the use of portable propane appliances for outdoor cooking and heating.

19.84.030 Definitions.

- A. “Accessory Dwelling Unit” shall have the same meaning as specified in Section 65852.2 of the Government Code.
- A.B. “Greenhouse Gas Emissions” mean gases that trap heat in the atmosphere.
- B. ~~“Gas Service” shall have the same meaning as specified in the Pacific Gas and Electric Company’s 2017-2018 Electric & Gas Service Requirements (TD-7001M) Greenbook.~~
- C. “Natural Gas” shall have the same meaning as “Fuel Gas” as defined in section 208.0 of the 2016 California Plumbing Code.
- D. “Natural Gas Infrastructure” shall be defined as fuel gas piping, other than service pipe, in or in connection with a building, structure or within the property lines of premises, extending from the point of delivery at the gas meter as specified in sections 1301.0 and 1302.1 of the 2016 California Mechanical Code. ~~new natural gas piping and equipment associated with establishing new, or connecting to existing Gas Service, and appliances fueled by Natural Gas.~~
- E. “New Building” shall be defined as ~~a~~ new buildings or accessory buildings associated with a valid building permit application on or after the effective date of this chapter.

19.84.040 Prohibited Natural Gas- Infrastructure in New Buildings

No building permit shall be issued for the construction of a New Building featuring the installation of ~~new~~ Natural Gas Infrastructure ~~associated with new Gas Service or connection to existing Gas Service.~~

19.84.050 Exception.

- A. The requirements of this Chapter shall not apply to Accessory Dwelling Units.
- A.B. Notwithstanding the requirements of this chapter and the Greenhouse Gas Emissions associated with Natural Gas Infrastructure~~natural Gas Service and infrastructure~~, the City Manager or their authorized representative may issue a

building permit provided that a majority of the Mayor and Council finds that the permit serves the public interest.

19.84.060 Severability.

If any word, phrase, sentence, part, section, subsection, or other portion of this Chapter, or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the prescribed application thereof, shall be severable, and the remaining provisions of this Chapter, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect. The City Council hereby declares that it would have passed this title, and each section, subsection, sentence, clause and phrase of this Chapter, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases is declared invalid or unconstitutional.

19.84.070 Effective date.

The provisions of this chapter shall become effective on [REDACTED].



Kate Harrison
Councilmember District 4

ACTION CALENDAR
March 12, 2019

To: Honorable Mayor and Members of the City Council
From: Councilmembers Harrison, Davila, Bartlett and Hahn
Subject: Adopt an Ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code Prohibiting Natural Gas Infrastructure in New Buildings

RECOMMENDATION

Adopt an ordinance adding a new Chapter 19.84 to the Berkeley Municipal Code (BMC) prohibiting natural gas infrastructure in new buildings with an effective date of [].

POLICY COMMITTEE TRACK

Facilities, Infrastructure, Transportation, Environment & Sustainability Policy Committee

BACKGROUND

The Community Environmental Advisory Commission (CEAC) unanimously recommended prohibiting natural gas in buildings in 2016.¹ That year, Council endorsed the recommendation and directed the CEAC and the Energy Commission to “develop and evaluate a proposal for requiring installations of new cooking, water heating, and/or building heating systems to use technologies which do not burn natural gas.”²

The Berkeley Energy Commission subsequently investigated adopting a ‘reach’ building ordinance mandating use of more efficient electric heat-pump water heaters in new construction, which would have the effect of phasing out natural gas for that purpose, but concluded that California Energy Commission (CEC) policies at the time precluded doing so because of the difficulty of proving that the proposed new requirement will be both cost-effective and at least as efficient as the existing state and federal standards.³

¹ Phasing Out Natural Gas for Heating and Cooking, Community Environmental Advisory Commission, November 1, 2016, https://www.cityofberkeley.info/Clerk/City_Council/2016/11_Nov/Documents/2016-11-01_Item_10_Phasing_Out_Natural_Gas.aspx.

² Annotated Agenda Berkeley City Council Meeting, City Clerk’s Office, November 1, 2016, http://www.cityofberkeley.info/Clerk/City_Council/2016/11_Nov/Documents/11-01_Annotated.aspx.

³ Response to Referral to Community Environmental Advisory Committee (CEAC) and the Berkeley Energy Commission to Evaluate Phasing-out Natural Gas, CEAC, December 19, 2017, https://www.cityofberkeley.info/Clerk/City_Council/2017/12_Dec/Documents/2017-12-19_Item_17_Response_to_Referral_to_CEAC_and_BEC.aspx. See also, Local Ordinances Exceeding the 2016 Building Energy Efficiency Standards, California Energy Commission, <https://www.energy.ca.gov/title24/2016standards/ordinances/>; See also, CA Public Resources Code Section 25402.1(h)2,

Berkeley's proposed reach heat pump code could not pass the cost-effectiveness test due to an outdated federal baseline for efficiency calculations. Consequently, at the time it was determined infeasible to adopt such a reach code under Title 24 Part 6 of the 2016 state Energy Code. Since then, Berkeley's Office of Energy and Sustainable Development (OESD) has been actively lobbying the CEC to adopt energy code amendments that facilitate all-electric designs, and the California Public Utilities Commission (CPUC) to adopt regulations allowing utility incentives to subsidize fuel-switching in existing buildings.⁴

This ordinance differs in its approach by acting within the City's authority to prohibit installation of harmful gas infrastructure when issuing building permits for new buildings, and as a result avoids CEC regulations associated with asking to amend efficiency standards. It also avoids the jurisdiction of the California Building Code Commission because this ordinance does not interfere with existing building standards as laid out in the 2016 California Energy Code and as defined by California Building Standards Law Health and Safety Code.⁵ Finally, it avoids the jurisdiction of the CPUC. Although the legislature empowered the Commission to "require each gas corporation to provide bundled basic gas service to all core customers in its service territory," it did not require customers to establish gas service with a gas corporation, or preclude cities from prohibiting gas infrastructure associated with connection to that service.⁶

This new approach also has the endorsement of the present Berkeley Energy Commission. In December 2018, the Energy Commission presented a draft response to the Council's June 2018 Fossil Free Resolution. As part of a broader strategy to eschew fossil fuels from Berkeley, it recommended that the Council "[p]rohibit gas cooktops and dryers in new residences or a moratorium on new gas hook ups if possible."⁷ Adoption of this ordinance would fulfil this recommendation.

http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC§ionNum=25402.1.; CA Building Energy Efficiency Standards Section 10-106

<https://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf>

⁴ Berkeley Support to Phase Out Fossil Fuels with Clean Electrification, OESD, CEC Docket 18-IEPR-09, June 28, 2018, https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Commissions/Commission_for_Energy/EC2018-07-25_Item%207c-Combined_Comments%20to%20CEC%20and%20CPUC.pdf.

⁵ California Building Standards Law Health and Safety Code, Division 13, Part 2.5 § 18909, http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC§ionNum=18909

⁶ California Code, Public Utilities Code - PUC § 963, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&art=1.&chapter=4.5.&article=2.

⁷ Fossil Free Berkeley Subcommittee Draft Report for 12/5/2018 Commission Meeting, Berkeley Energy Commission, December, 5, 2018, https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-

In June 2018 the Berkeley City Council declared a city-wide Climate Emergency (Resolution No. 68,486-N.S.), aimed at reviewing the City's greenhouse gas emission reduction strategies, commitments and progress in light of recent political, scientific and climatic developments.⁸ A 2018 UN Intergovernmental Panel on Climate Change (IPCC) report suggested that in order to keep warming under 1.5 degrees Celsius, governments must initiate a dramatic 45% cut in global carbon emissions from 2010 levels by 2030 and reach global 'net zero' around 2050. The time for incremental emissions reduction strategies is over—policymakers must begin implementing “far-reaching and unprecedented changes in all aspects of society.”⁹

Berkeley became a climate leader when voters overwhelmingly passed Measure G (Resolution No. 63,518-N.S.) in 2006, calling for the City to reduce greenhouse gas emissions by 33% below 2000 levels by 2020, and 80% by 2050.¹⁰ Measure G resulted in the City Council adopting the 2009 Berkeley Climate Action Plan (Resolution No. 64,480-N.S.), which was written through a community-wide process.¹¹ The plan identified buildings as major contributors to greenhouse gas emissions, representing 26% of community-wide emissions, and recommended the implementation of aggressive building codes favoring low carbon space and water heating appliances/infrastructure in new buildings.¹² A 2018 Climate Action Plan progress update presented by Berkeley's OESD reported that “[c]ombustion of natural gas within Berkeley buildings accounted for 27% of total GHG emissions in 2016 and 73% of building sector GHG emissions.”¹³

[_Commissions/Commission_for_Energy/FFB%20Draft%20report%20for%20Dec%205%202018%20Commission%20Meeting%20Final.pdf](#)

⁸ Resolution Endorsing a Climate Emergency, Berkeley City Council, June 12, 2018,

https://www.cityofberkeley.info/uploadedFiles/Council_2/Level_3_-_General/Climate%20Emergency%20Declaration%20-%20Adopted%2012%20June%202018%20-%20BCC.pdf

⁹ IPCC Press Release, Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by Governments, 8 October 2018,

http://www.ipcc.ch/pdf/session48/pr_181008_P48_spm_en.pdf

¹⁰ Resolution Submitting Measure G, Berkeley City Council, July 18, 2006,

<https://www.cityofberkeley.info/citycouncil/resos/2006/63396.pdf>; Ballotpedia, Berkeley Greenhouse Gas Emissions, Measure G (November 2006), November 7, 2006, [https://ballotpedia.org/Berkeley_Greenhouse_Gas_Emissions,_Measure_G_\(November_2006\)#cite_note-quotedisclaimer-1](https://ballotpedia.org/Berkeley_Greenhouse_Gas_Emissions,_Measure_G_(November_2006)#cite_note-quotedisclaimer-1)

¹¹ Office of Energy & Sustainable Development, Berkeley Climate Action Plan Information Page,

<https://www.cityofberkeley.info/climate/>.

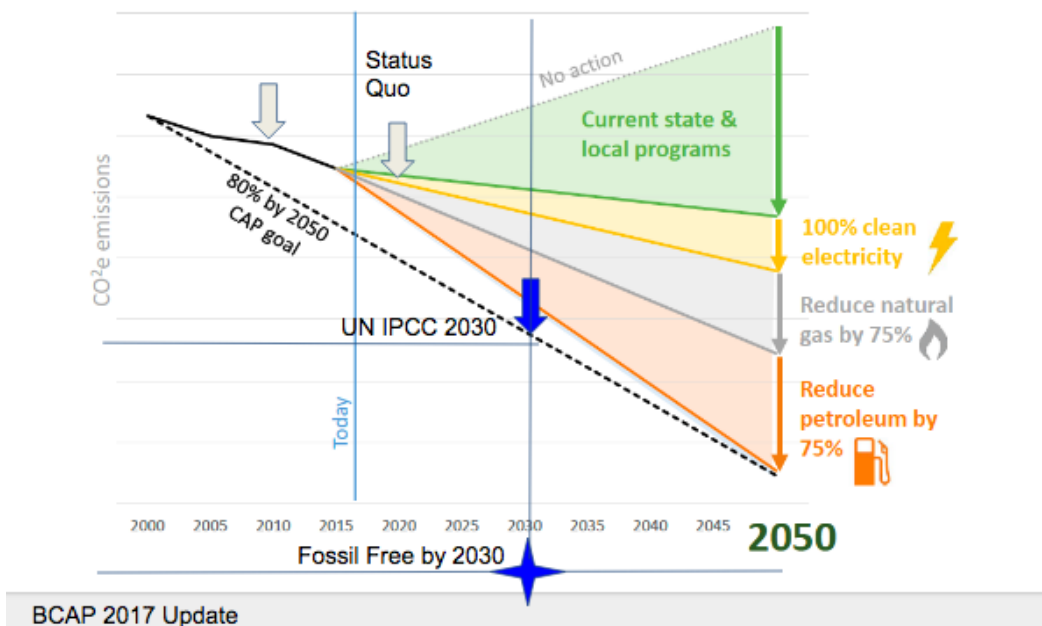
¹² City of Berkeley, Berkeley Climate Action Plan, June 2009,

https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Berkeley%20Climate%20Action%20Plan.pdf, p. 59.

¹³ 2018 Berkeley Climate Action Plan Update, Office of Energy and Sustainable Development, December 6, 2018, https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-

According to OESD, the latest and best available data suggest that Berkeley’s 2016 community-wide GHG emissions, including emissions from transportation, building energy use, and solid waste disposal, are approximately 15% below 2000 baseline levels, despite a population increase of approximately 18% in that same time period. Therefore, according to 2016 data, the City is approximately 18% behind its 2020 goal.

Strategies to Achieve 80% by 2050



Specifically, progress towards lowering emissions in new buildings has been encouraging but incremental. To date, the federal, state and local approach to energy use in new buildings has largely been to mandate greater building efficiency and energy conservation, which indirectly results in lower emissions, but does not directly phase out fossil fuel consumption in new buildings. With regard to energy efficiency, Berkeley is in the process of adopting the ambitious, but voluntary, Green Building Standards. In addition, the Planning Department is actively lobbying various California state agencies to level the regulatory playing field for all-electric buildings vis-à-vis gas by developing all-electric codes and lobbying the CPUC to expand utility incentives for fuel switching.¹⁴ In short, while both initiatives facilitate the electrification and energy efficiency in new buildings, they do not explicitly and directly prohibit builders from constructing buildings

¹⁴ [Energy_and_Sustainable_Development/2017-12-07%20WS%20Item%20001%20Climate%20Action%20Plan%20Update.pdf](#), p. 10.
¹⁴ *Id.*, p. 12.

with natural gas infrastructure, a potent and persistent source of greenhouse gas pollution.¹⁵

According to the November 2017 Planning Department Bi-Annual Housing Pipeline Report, the City approved building permits for 525 residential units between January 1, 2014 and November 2017. An additional 952 units received their certificate of occupancy during the same period.¹⁶ Presumably, the vast majority of these units feature natural gas infrastructure. This gas-related emissions problem has been compounded by regional population and job growth coinciding with a considerable 18% rise in Berkeley's population since 2000 as well as the multi-decade useful life of natural gas appliances.¹⁷ As a result, the city has 'locked in' decades of additional carbon pollution, and stands to continue doing so with each new building permit application. The persistence of fossil fuel industry marketing, the regional housing affordability crisis and the associated effort to expand the housing stock will continue to drive local and regional increases in natural gas infrastructure and consumption unless we act now.

This ordinance recognizes that all-electric heating technologies are cost-competitive substitutes to their natural gas counterparts (especially when installed during new construction) and seeks to halt the expansion of natural gas into new buildings in order to stave off the risk of locking in significant additional greenhouse emissions. In the interim between adoption and the effective date, City staff can continue to design and seek approval of all-electric codes to help guide home builders in constructing new buildings with emissions and efficiency best practices.¹⁸

This approach is borne out by recent economic analysis. For example, the Rocky Mountain Institute's 2018 report entitled *The Economics of Electrifying Buildings: How Electric Space and Water Heating Supports Decarbonization of Residential Buildings* considered the carbon emissions reduction opportunities and cost-effectiveness associated with all-electric space and water heating in new single-family construction in Oakland.¹⁹ As a direct neighbor, the Oakland study is a useful reference point as

¹⁵ The forthcoming 2019 California Energy Code allows for significant natural gas usage.

¹⁶ Referral Response: Bi-Annual Housing Pipeline Report, Planning Department, November 11, 2017, https://www.cityofberkeley.info/Clerk/City_Council/2017/11_Nov/Documents/2017-11-28_Item_21_Referral_Response_Bi-Annual.aspx

¹⁷ 2018 Berkeley Climate Action Plan Update, p. 1.

¹⁸ OESD reported in December 2018 that "Berkeley has worked with other local governments to create a joint cost-effectiveness study request for the California Codes and Standards Program, seeking the maximum cost-effective efficiency for mixed-fuel and all-electric new construction over a representative sample of building sizes and uses...The findings from this cost-effectiveness study request are expected in early 2019 and will be shared with the Energy Commission and other stakeholders, to evaluate options and opportunities for local amendments to promote deep energy savings and electrification." See, 2018 Berkeley Climate Action Plan Update, p. 12.

¹⁹ Sherri Billimoria, Mike Henchen, Leia Guccione, and Leah Louis-Prescott, *The Economics of Electrifying Buildings: How Electric Space and Water Heating Supports Decarbonization of*

Berkeley shares many of its characteristics, including its climate, architecture, the electric and natural gas utility, the Pacific Gas and Electric Company, and membership in East Bay Community Energy.

The report found that “[i]n Oakland, [electric] heat pumps produce universally less carbon emissions compared to natural gas systems.”²⁰ Heat pumps are functionally air conditioners that operate in reverse; they capture ambient heat from the air and transfer it inside the building where it can be used to heat water and space. They generate renewable solar energy from the air, and they are so efficient that the Rocky Mountain Institute argues that heat pumps are superior to natural gas appliances on all electric grids except those with the highest coal power content.²¹ Fortunately, the California grid does not run on coal and features relatively low greenhouse gas emissions.²² Therefore, heat pumps offer exponential emissions reduction potential in both new and existing buildings, and they are poised to result in additional benefits overtime as tomorrow’s electricity becomes substantially less carbon intensive due to market forces, implementation of California State Senate Bill 100 and wider adoption of Community Choice Aggregator renewable electricity services.

The report also found that for new single-family buildings in Oakland, “[electric] heat pumps are universally more cost-effective” than natural gas space and water heaters due to their superior energy efficiency, cost-competitiveness, built-in air conditioning capability, and the avoided cost of connecting to the Pacific Gas & Electric Company’s procurement and natural gas distribution system.²³ Specifically, the report found that new single family developments avoiding gas could “save \$1,000 to more than \$24,000 per single-family home, with a median value of \$8,800.”²⁴ Similarly, in 2017 Stone Energy Associates and Redwood Energy submitted letters to the CEC advising the commission of the significant net cost savings per unit in multi-family projects due to avoiding costly trenching and gas infrastructure.²⁵

The Berkeley’s Office of Energy and Sustainable Development (OESD) shares the Rocky Mountain Institute’s general outlook on heap pump technology, having years ago

Residential Buildings. Rocky Mountain Institute, June 14, 2018, https://rmi.org/wp-content/uploads/2018/06/RMI_Economics_of_Electrifying_Buildings_2018.pdf

²⁰ *Id.*, p. 29.

²¹ *Id.*

²² *Id.*, p. 9.

²³ *Id.*

²⁴ *Id.*, p. 47.

²⁵ CEC Docket No. 17-BSTD-01, Letter from Sean Armstrong, Redwood Energy, to CEC Re: 2019 Building Energy Efficiency Standards Pre-Rulemaking, October 11, 2017, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=221464&DocumentContentId=27248>; CEC Docket No. 16-BSTD-06, Letter from Nehemiah Stone, Stone Energy Associates, to CEC Re: 2019 Building Energy Efficiency Standards Development, April 4, 2017.

officially endorsed heat pumps as a critical means of meeting the goals of envisioned by city's climate action plan.²⁶

The Environmental Protection Agency, Rocky Mountain Institute, and Berkeley's OESD staff also emphasize the carbon emissions associated with natural gas stemming from methane leaks. For example, methane gas is released into the atmosphere through hydraulic fracking and other drilling methods.²⁷ Transporting and distributing natural gas through pipelines also can lead to additional leaks, explosions and fires.²⁸ According to the EPA, "[p]ound for pound, the comparative impact of CH₄ [methane] is more than 25 times greater than CO₂ over a 100-year period."²⁹ In addition, according to the Environmental Defense Fund (EDF), "[i]n the first two decades after its release, methane is 84 times more potent than carbon dioxide." Methane's enhanced potency, particularly in the short term, results in more immediate warming and thus warrants greater urgency. EDF estimates that "[a]bout 25% of the manmade global warming we're experiencing is caused by methane emissions."³⁰ Consequently, the Rocky Mountain Institute report called upon cities to immediately "[s]top supporting the expansion of the natural gas distribution system, including for new homes." Furthermore, the report cautioned that natural gas "infrastructure will be obsolete in a highly electrified future, and gas ratepayers face significant stranded asset [financial] risk" by staying on natural gas.³¹

The proposed ordinance prohibits builders from applying for building permits that include establishing new or connecting to existing gas utility service for heat water, space, food etc. This legislation will have the effect of ushering in all-electric new buildings in the City of Berkeley, avoiding significant new greenhouse emissions and diverting City attention and resources to other critical sources of emissions. The ordinance will also improve indoor and outdoor air quality by eliminating toxic byproducts of natural gas combustion and will help prevent deadly home fires that start

²⁶ Residential Heat Pump Water Heaters: Replacing a Gas Water Heater, OESD, <https://www.cityofberkeley.info/HPWH/>. According to OESD, heat pumps "use electricity instead of gas and therefore have the potential to use renewable energy...[and] work like a refrigerator in reverse — they use electricity and a refrigerant to take heat from the air and transfer" it to the hot water tank or heating ducts.

²⁷ The Economics of Electrifying Buildings, p. 26.

²⁸ See e.g., Rebecca Bowe, Lisa Pickoff-White, Five Years After Deadly San Bruno Explosion: Are We Safer?, KQED, September 8, 2015, <https://www.kqed.org/news/10667274/five-years-after-deadly-san-bruno-explosion-are-we-safer>; See also, David Siders, Jerry Brown declares emergency around Southern California gas leak, January 6, 2016, <https://www.sacbee.com/news/politics-government/capitol-alert/article53353615.html>.

²⁹ "Overview of Greenhouse Gases," U.S. Environmental Protection Agency, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane>

³⁰ "Methane: The other important greenhouse gas," Environmental Defense Fund, <https://www.edf.org/climate/methane-other-important-greenhouse-gas>.

³¹ The Economics of Electrifying Buildings, p. 10.

from an open flame and are fueled by gas lines. For example, the City of Santa Rosa is actively reconsidering the role of natural gas in new buildings because of the destructive 2017 Tubbs firestorm.³²

Rapid improvements in electric cooktop technology suggest that the City of Berkeley can simultaneously maintain its rich culinary culture while taking action to reduce fossil fuel emissions.³³

Emergency action and leadership is needed to prevent the locking in of additional natural gas greenhouse gasses from new buildings. By adopting this ordinance, the City of Berkeley has an opportunity to make further progress towards delivering upon its responsibilities under Measure G, the 2009 Climate Action Plan, Fossil Fuel Berkeley Resolution (as referred), and the Climate Emergency Declaration.

FINANCIAL IMPLICATIONS

Staff time will be necessary to implement the new building permit regulations.

ENVIRONMENTAL SUSTAINABILITY

Prohibiting natural gas infrastructure in new buildings will prevent the release of significant additional natural gas-related greenhouse gasses from new buildings.

CONTACT PERSON

Councilmember Kate Harrison, Council District 4, (510) 981-7140

Attachments:

1. Proposed Ordinance Adding BMC Chapter 19.84

³² Will Schmitt, Santa Rosa council considers requirement for new homes to be independent of natural gas, Press Democrat, November 10, 2018, <https://www.pressdemocrat.com/news/8899687-181/santa-rosa-council-considers-requirement>.

³³ While natural gas ranges are often regarded by home cooks as superior to electric ranges, modern induction range technology offers a cooking experience that arguably provides faster heat response, easier clean up and more temperature precision than gas. See e.g., Cooktop Showdown – Gas vs. Electric vs. Induction, A Finer Touch Construction, <https://aftconstruction.com/cooktop-showdown-electric-vs-gas-vs-induction/>. Appliance manufacturer Samsung introduced a new induction cooktop featuring a “virtual” LED flame that mimics the visual response of a gas flame. See also, 36" Induction Cooktop with Virtual Flame™, Samsung US, <https://www.samsung.com/us/home-appliances/cooktops-and-hoods/induction-cooktops/36--built-in-induction-cooktop-with-flex-cookzone-nz36k7880ug-aa/>.

ORDINANCE NO. –N.S.

ADDING A NEW CHAPTER 19.84 TO THE BERKELEY MUNICIPAL CODE
PROHIBITING NATURAL GAS INFRASTRUCTURE IN NEW BUILDINGS EFFECTIVE



BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Chapter 19.84 of the Berkeley Municipal Code is added to read as follows:

Chapter 19.84

PROHIBITION OF NATURAL GAS INFRASTRUCTURE IN NEW BUILDINGS

Sections:

19.84.010 Findings and Purpose.

19.84.020 Applicability.

19.84.030 Definitions.

19.84.040 Prohibited Natural Gas Infrastructure in New Buildings

19.81.050 Exception.

19.81.060 Severability.

19.81.070 Effective Date.

19.84.010 Findings and Purpose.

The Council finds and expressly declares as follows:

- A. Available scientific evidence suggests that natural gas combustion, procurement and transportation produces significant greenhouse gas emissions that contribute to global warming and climate change.
- B. The following addition to the Berkeley Municipal Code is reasonably necessary because of local climatic conditions as listed below.
 - (1) As a coastal city located on the San Francisco Bay, Berkeley is vulnerable to sea level rise, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, which contribute to melting of glaciers and thermal expansion of ocean water – resulting in rising sea levels.
 - (2) Berkeley is already experiencing the repercussions of excessive greenhouse gas emissions as rising sea levels threaten the City’s shoreline and infrastructure, have caused significant erosion, have increased impacts to infrastructure during extreme tides, and have caused the City to expend funds to modify the sewer system.
 - (3) Berkeley is situated along a wildland-urban interface and is extremely vulnerable to wildfires and firestorms, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, drought conditions, vegetative fuel, and length of fire seasons—all of which contribute to the likelihood and consequences of fire.
 - (4) Some subpopulations of Berkeley residents are vulnerable to heat events.
 - (5) Berkeley residents disproportionately suffer from asthma and other health conditions associated with poor air quality due to the combustion of fossil fuel.
- C. The people of Berkeley, as codified through Measure G (Resolution No. 63,518-N.S.), the City of Berkeley Climate Action Plan (Resolution No. 64,480-N.S.), and Berkeley Climate Emergency Declaration (Resolution No. 68,486-N.S.) all recognize that rapid, far-reaching and unprecedented changes in all aspects of society are required to limit global warming and the resulting environmental threat posed by climate change, including the prompt phasing out of natural gas as a fuel for heating and cooling infrastructure in new buildings.
- D. Substitute electric heating and cooling infrastructure in new buildings fueled by less greenhouse gas intensive electricity is linked to significantly lower greenhouse gas emissions and is cost competitive because of the cost savings associated with all-electric designs that avoid new gas infrastructure.
- E. All-electric building design benefits the health, welfare, and resiliency of Berkeley and its residents.
- F. The most cost-effective time to integrate electrical infrastructure is during building construction because workers are already on-site, utility service upgrade costs are lower, permitting and administrative costs are lower, natural gas piping costs are avoided, and it is more cost-effective to include such systems in construction financing.
- G. It is the intent of the council to eliminate obsolete natural gas infrastructure and associated greenhouse gas emissions in new buildings where all-electric infrastructure can be most practicably integrated, thereby reducing the

environmental and health hazards produced by the consumption and transportation of fossil fuel.

19.84.020 Applicability.

- A. The requirements of this Chapter shall apply to all building permit applications for New Buildings proposed to be located in whole or in part within the City. However, it shall not apply to agencies that are not subject to City authority.
- B. The requirements of this Chapter shall not apply to the use of portable propane appliances for outdoor cooking and heating.

19.84.030 Definitions.

- A. "Greenhouse Gas Emissions" mean gases that trap heat in the atmosphere.
- B. "Gas Service" shall have the same meaning as specified in the Pacific Gas and Electric Company's 2017-2018 Electric & Gas Service Requirements (TD-7001M) Greenbook.
- C. "Natural Gas" shall have the same meaning as "Fuel Gas" as defined in section 208.0 of the California Plumbing Code.
- D. "Natural Gas Infrastructure" shall be defined as new natural gas piping and equipment associated with establishing new, or connecting to existing Gas Service, and appliances fueled by Natural Gas.
- E. "New Building" shall be defined as a new buildings or accessory buildings associated with a valid building permit application on or after the effective date of this chapter.

19.84.040 Prohibited Natural Gas Infrastructure in New Buildings

No building permit shall be issued for the construction of a New Building featuring the installation of new Natural Gas Infrastructure associated with new Gas Service or connection to existing Gas Service.

19.84.050 Exception.

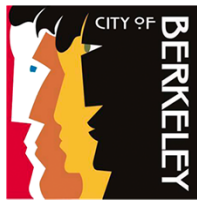
Notwithstanding the requirements of this chapter and the Greenhouse Gas Emissions associated with natural Gas Service and infrastructure, the City Manager or their authorized representative may issue a building permit provided that a majority of the Mayor and Council finds that the permit serves the public interest.

19.84.060 Severability.

If any word, phrase, sentence, part, section, subsection, or other portion of this Chapter, or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the prescribed application thereof, shall be severable, and the remaining provisions of this Chapter, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect. The City Council hereby declares that it would have passed this title, and each section, subsection, sentence, clause and phrase of this Chapter, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases is declared invalid or unconstitutional.

19.84.070 Effective date.

The provisions of this chapter shall become effective on [] .



CITY COUNCILMEMBER
RIGEL ROBINSON
 DISTRICT 7

03

CONSENT CALENDAR
 May 28th, 2019

To: Honorable Mayor and Members of the City Council
 From: Councilmembers Rigel Robinson, Kate Harrison, and Cheryl Davila
 Subject: Transition to Zero-Emission Refuse Trucks

RECOMMENDATION

Refer to the City Manager to draft a plan to phase out diesel, biodiesel, and natural gas powered trucks in all fleets used for refuse collection (both City-owned and contracted) and replace them with zero-emission refuse trucks.

BACKGROUND

With the passage of the Fossil Free Declaration of 2018, the City stated its intent to minimize emissions in the future procurement of vehicles and to adopt a plan for transitioning the City's vehicle fleet to all zero-emission electric vehicles.¹ There is an urgent need for climate and air pollution policies, and zero-emission refuse trucks charged on Berkeley's grid could be an alternative to combustion-based refuse trucks.

Combustion-based refuse trucks frequently stop and start along their routes, releasing greenhouse gasses and air pollutants near homes.² As well as reducing harmful pollutants, zero-emission refuse trucks may be much quieter and reduce noise pollution often burdening residents in the early mornings.³

Low emission refuse trucks are more efficient than both diesel and natural gas powered trucks, so transitioning to zero-emission refuse trucks could present an opportunity for even greater efficiency.⁴ Additionally, the total cost of ownership could also be lower than that of combustion-based refuse trucks due to a reduction in operation and maintenance costs.⁵

Successful pilot demonstrations of zero-emission refuse trucks in normal refuse collecting operations have been implemented in Los Angeles and Sacramento.⁶ The City of Palo Alto recently announced plans to replace its entire fleet with zero emissions,

¹ https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Commissions/Commission_for_Energy/EC2018-12-05_Item%207.pdf

² <https://www.governing.com/topics/transportation-infrastructure/gov-to-save-on-trash-trucks-cities-take-a-look-at-the-gas-tank.html>

³ <https://www.nytimes.com/2018/06/21/business/electric-buses-garbage-trucks.html>

⁴ <https://qz.com/749622/the-economics-of-electric-garbage-trucks-are-awesome/>

⁵ Ibid

⁶ <https://www.waste360.com/trucks/two-california-cities-experiment-electric-refuse-trucks>

all electric trucks within the next few years.⁷ By committing to the orderly retirement of fossil-fueled trucks, the City could further stimulate the market for zero-emission refuse trucks and generate political momentum around zero-emission heavy-duty vehicles.

In their proposal, staff should plan for all future refuse truck purchases to be zero-emission. Additionally, staff should consider an expedited time scale for the transition to zero-emission refuse trucks beyond the current refuse truck replacement rate.

FINANCIAL IMPLICATIONS

Variable. The cost is subject to rate at which zero-emission refuse trucks are procured as replacements to current diesel, biodiesel, and natural gas powered refuse trucks.

ENVIRONMENTAL SUSTAINABILITY

The transition of the City's vehicle fleet to zero-emission refuse trucks could greatly reduce the use of pollution-heavy fossil fuels. In the midst of our urgent climate crisis, only zero-emission vehicles meet the urgent need to address criteria air pollutants in California.

CONTACT PERSON

Councilmember Rigel Robinson, (510) 981-7170
Aoife Megaw, Intern to Councilmember Rigel Robinson

Attachments:

1: Palo Alto Press Release

⁷ See Attachment



PRESS RELEASE

available upon request

Public-Private Partnership to electrify Waste Expo

GreenWaste of Palo Alto, the City of Palo Alto and BYD bring cutting-edge electric collection vehicle to Las Vegas waste industry conference in conjunction with program expansion



MAY 1, 2019, PALO ALTO, CA – In late 2017, GreenWaste of Palo Alto debuted the world’s first full-sized all-electric side-loading refuse truck, manufactured by BYD. The vehicle is cutting edge for all parties involved – GreenWaste of Palo Alto (GWPA), the City of Palo Alto and BYD - and will be on display at the upcoming Waste Expo in Las Vegas.

This first-generation vehicle is operable for 50 miles and has 195 kWh battery capacity. Using this truck saves approximately 6,000 gallons of diesel per year and reduces emissions by about 78 metric tons of carbon dioxide equivalents per year. With a 40-kW charger, the truck takes about 5 hours to charge.

In January of 2019, the GWPA contract with the City of Palo Alto was extended by City Council, which incorporated the purchase of additional electric vehicles. In an exciting new development, GWPA signed a contract with BYD on May 1, 2019, to order three additional electric chassis. The new trucks will be used for an expanded residential Clean Up program, commercial bin wash service, and for cart deliveries.

Within the next couple of years, GWPA plans to run its entire residential garbage fleet with electric vehicles. Looking forward, the goal is to have enough onboard battery capacity to completely meet GWPA’s operating requirements using 100% electric vehicles, at which point the entire GreenWaste of Palo Alto fleet could potentially be replaced with all-electric trucks.

“BYD is proud to work with environmental leaders like GreenWaste of Palo Alto and the City of Palo Alto,” stated John Gerra, Director of Business Development at BYD. “They’ve helped us design and build the most reliable electric refuse truck in the world. We’re excited to continue our work together toward a fleet of 100% electric trucks.”

At the forefront of innovation and proactive sustainability, GWPA and its family of companies develops this type of public-private partnership to push the limits of what is expected by delivering what is important to each community. The electric refuse truck in Palo Alto is evidence of the success of such partnerships.

Those that are not attending Waste Expo 2019, where the truck will be showcased, can still experience the vehicle by viewing this video recently released by GreenWaste of Palo Alto.

www.greenwasteofpaloalto.com



About GreenWaste of Palo Alto

GreenWaste of Palo Alto is the City of Palo Alto’s contracted waste and recycling hauler. GWPA has served the City of Palo Alto since 2009, and is part of a broader GreenWaste Recovery, Inc. and Zanker Recycling family of companies. For more information about GWPA, go to:

www.greenwasteofpaloalto.com

About City of Palo Alto's Sustainability and Zero Waste

The City of Palo Alto has a goal to reduce its greenhouse gas emissions by 80% and to divert 95% of waste generated from landfills by the year 2030. As part of the City’s Sustainability and Climate Action Plan the City aims to minimize energy consumption and pollution from City operations through the expanded use of electric vehicles in the City fleet and in the City’s contracted waste collection services. For more information about Palo Alto’s sustainability programs, go to:

www.cityofpaloalto.org/services/sustainability/default.asp

For more information about Palo Alto’s Zero Waste go to:

www.zerowastepaloalto.org

About BYD

BYD is the world’s largest manufacturer of electric vehicles and the global leader in battery-electric trucks with nearly 10,000 electric trucks in service across North America, South America, Asia and Europe. BYD is a publicly traded company with 60% of its stock owned by North American investors. Berkshire Hathaway is BYD’s largest institutional shareholder.

Media Contact

GreenWaste of Palo Alto | Scott Scholz | sscholz@greenwaste.com

City of Palo Alto | Ron Arp | Ron.Arp@CityofPaloAlto.org

BYD | John Gerra | john.gerra@byd.com

###



Energy Commission

ACTION CALENDAR

May 14, 2019

To: Honorable Mayor and Members of the City Council

From: Berkeley Energy Commission

Submitted by: Ryan Bell, Chairperson, Berkeley Energy Commission

Subject: Recommendations for a Fossil Fuel Free Berkeley

RECOMMENDATION

The Berkeley Energy Commission recommends the City Council refer to the City Manager to implement the recommendations listed below as well as additional measures outlined in the attached report to aggressively reduce greenhouse gas (GHG) emissions in the city and the region.

FISCAL IMPACTS OF RECOMMENDATION

Unknown.

CURRENT SITUATION AND ITS EFFECTS

This report responds to the Fossil Free Berkeley and Climate Emergency referrals from the June 12, 2018 Council meeting sponsored by Council member Davila, Mayor Arreguin and Councilmember Harrison. The Energy Commission has prepared a Fossil Fuel Free Berkeley Report including the following recommendations to achieve the goals outlined by council to address the climate emergency and transition Berkeley away from fossil fuels.

Four Fast Track Proposals

- Opt all East Bay Community Energy accounts to 100% renewable electricity in 2019. This would result in an immediate 10% reduction in GHGs.
- Integrate greenhouse gas (GHG) reduction goals into the objectives and responsibilities of every city department. Amend funding priorities to support this initiative.
- Develop an updated Climate referendum to put before the voters that includes challenging proposals and why they are necessary. A successful referendum campaign would provide the platform for massive public education and support Council decision making.
- Lead a regional effort to change the Utility Users Tax structure in order to assess taxes on natural gas usage separately from electricity usage, followed by a referendum asking voters to approve raising the natural gas usage tax. Funds raised would be dedicated to de-carbonization efforts.

Summary of Recommendations**Citywide Transportation**

1. Accelerate infrastructure changes to support walking, biking, and small electric and human powered vehicles.
 - a. Build all high priority projects in the city's bicycle, pedestrian, and BeST plans including tier 1 projects in the bike plan by 2025.
 - b. Re-prioritize road and sidewalk capital expenditures to accelerate changes in favor of walking, human powered vehicles, and other low carbon footprint mobility alternatives.
 - c. Add 3 FTE to the Transportation Division to expedite implementation.
2. Explore developing Berkeley shuttle services similar to the Emery Go-Round using EVs.
3. Develop effective communication and education strategies. Continue to expand programs that encourage residents to shift to fossil fuel free modes of transport.
4. Consider free transit passes for youth, restricted vehicle access to certain streets, and additional parking fees. Funds raised would be used to support fossil fuel free transportation programs.

Residential and Commercial Buildings

1. Opt all accounts in Berkeley up to 100% renewable EBCE electricity in 2019, with a policy of no added cost for CARE customers and an outreach campaign to enroll all eligible customers in the CARE program. This is the most significant action the city can take to reduce GHGs.
2. Expand BESO and include electrification along with energy efficiency. Consider more triggers that require an energy audit, more detailed energy audits, requiring the seller to complete the audit to the buyer, and requiring implementation of some of audit recommendations.
3. Stop expansion of natural gas infrastructure by prohibiting gas cooktops and dryers in new residences. Place a moratorium on new gas hook ups if possible.
4. Funding options for electrification and energy efficiency upgrades:
 - a. Sales transfer tax rebates, similar to the seismic rebate but tied to implementation of BESO recommendations.
 - b. A new, very low interest revolving loan fund.
 - c. Strategic relaxation of the Planning Code in exchange for electrification and energy efficiency measures.
5. Develop an effective communication and education strategy that reaches the Berkeley community at large. This strategy should include updating the City's permit service center website to reflect the City's prioritization of electrification, and low carbon footprint and low toxic construction. The City's website needs to offer clear guidance reflecting the urgency of the climate crisis.

Regional Action

1. Lead a regional effort to make changes to the Utility Users Tax structure in order to assess taxes on natural gas usage separately from electricity usage. The City Council adopted a resolution in favor of this change and is awaiting support from other cities in the region to share the fees PGE would charge to modify the billing. Once complete, the City should submit a referendum to voters that would raise the tax on natural gas usage and dedicate the funds to de-carbonization efforts.
2. Encourage the Bay Area Air Quality Management District (BAAQMD) to adopt rules with future effective dates to prohibit sale of gas powered appliances. It has used the authority in the past to prohibit the sale of polluting products like high VOC paints and to restrict installation of wood burning fireplaces.
3. Increase regional and support state efforts to expand availability of low global warming potential refrigerant, heat pump space and water heaters for the retrofit markets.
4. Initiate regional policy consistent with fossil free goals for ride hailing services and the introduction of autonomous vehicles. Support state programs that restrict the use of fossil fuel by ride hailing services and autonomous vehicles. Regulate these services to reduce overall per capita VMT.
5. Explore viability of reducing R-1 zoning to increase housing availability, opportunities for home ownership and improve transit access through increasing densification. Such transit oriented development can provide the density to support expansion of regional transit.

Given statutory limitations on specific authorities held by the City, the Energy Commission is not able to determine a date by which Berkeley could be completely fossil fuel free. However, aiming to be fossil fuel free by 2030 to the fullest extent possible is a compelling goal. Urgency prompts the Commission to recommend aggressively prioritizing options with high early impacts. Lastly, Berkeley will only become a carbon sink if it is also virtually fossil free. The City has little capacity to sequester carbon.

At the January 23, 2019 meeting, the commission took the following action:

Action: Motion/Second (Weems/Patel) to approve the Fossil Fuel Report with amendments and recommend City Council refer to the City Manager to implement the recommendations in the report to aggressively reduce GHG emissions in the city and the region.

Vote: Ayes –Leger, Bell, Patel, Weems, Paulos, Stromberg; Noes – None; Abstain – None; Absent – Luce, Schlachter.

BACKGROUND

The Fossil Free Berkeley and Climate Emergency resolutions asked the Energy Commission to consider actions “to further implement the Climate Action Plan and establish the goal of becoming a Fossil Fuel Free Berkeley” and to consider several actions the city might take as part of this review.

ENVIRONMENTAL SUSTAINABILITY

These recommendations are intended to accelerate citywide reductions in GHGs.

RATIONALE FOR RECOMMENDATION

While making recommendations for all of the actions the Council requested that the commission consider, the main recommendations for reducing GHG emissions focus on transportation and residential and commercial buildings as they are responsible for 98% of Berkeley’s GHG emissions.

ALTERNATIVE ACTIONS CONSIDERED

None considered.

CITY MANAGER

See Companion Report.

CONTACT PERSON

Billi Romain, Energy Commission Secretary

Attachments:

- 1: Berkeley Energy Commission Recommendations for a fossil fuel free Berkeley.



Office of the City Manager

ACTION CALENDAR

May 14, 2019

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Timothy Burroughs, Director, Planning and Development Department

Subject: Companion Report: Recommendations for a Fossil Fuel Free Berkeley

RECOMMENDATION

Refer to the City Manager to continue to implement existing policies and programs that are consistent with the recommendations in the Berkeley Energy Commission's Fossil Fuel Free Berkeley Report, such as the Building Energy Saving Ordinance and development of new building codes that promote building electrification, and also to complete new evaluations and analyses of current and potential future greenhouse gas reduction programs and policies in order to inform next steps for accelerating progress to a Fossil Fuel Free Berkeley.

SUMMARY

This report is in response to the excellent "Fossil Fuel Free Berkeley Report" developed by the Berkeley Energy Commission. In response to City Council's Climate Emergency Declaration and "Fossil Fuel Free Berkeley" referral to the Energy and Transportation Commissions, the Energy Commission conducted research and developed a report that makes a range of recommendations for accelerating the community's progress toward becoming fossil fuel free. This item has not yet been reviewed and discussed by the Transportation Commission.

Staff fully agrees with the urgency of the climate crisis and with the intent of the Energy Commission's recommendations to accelerate GHG reductions. However, as always, the challenge with doing more, faster, is that it requires additional staff and other resources to do so.

The Energy Commission report identifies 22 recommendations, all of which require additional staff time to implement. Staff is already advancing several of the Energy Commission's recommendations, including development of new energy "reach" codes that would promote building electrification, evaluating and updating the Building Energy Saving Ordinance (BESO), and expanding clean transportation infrastructure. Further, staff also recently released a "Pathway to Clean Energy" RFP which is designed to dovetail with the Energy Commission report, and focuses on how to equitably transition the existing building stock in Berkeley from natural gas to 100% clean energy. Staff has

also begun work on an Electric Mobility Roadmap, which will include action-oriented next steps for transitioning our transportation sector to clean, active forms of mobility.

FISCAL IMPACTS OF RECOMMENDATION

Staff is undertaking several concrete steps that are consistent with the Energy Commission's recommendation and that are designed to accelerate reductions in GHG emissions and create other co-benefits. Additional staff and other financial resources are required in order to implement new outreach and other programs that go beyond existing efforts. The City's recently released "Pathway to Clean Energy" RFP is designed to dovetail with the Energy Commission report and the work will provide a range of recommendations, including implementation costs and potential funding options, that are designed to accelerate GHG reductions in buildings. The Electric Mobility Roadmap, scheduled for completion in Fall 2019, will also provide action-oriented strategies to reduce transportation related GHG emissions and identify implementation timeline and resources.

CURRENT SITUATION AND ITS EFFECTS

The Energy Commission's report was prepared in response to two referrals adopted by the City Council on June 12, 2018: The Fossil Fuel Free Berkeley referral and Council's Declaration of a Climate Emergency.

The Energy Commission's "Fossil Fuel Free Berkeley Report" is consistent with several actions already underway, including implementation and evaluation of the Building Energy Savings Ordinance (BESO), efforts to transition municipal buildings away from natural gas, education and outreach on electrification and clean electricity opportunities through East Bay Community Energy and other partners, and analysis of legal opportunities to ban natural gas in new construction. In addition, work is underway that is specifically designed to determine the timing, costs, and prioritization of further measures to transition both buildings and transportation away from fossil fuels. These efforts include the Electric Vehicle Roadmap, BESO Evaluation, the Pathway to Clean Energy Buildings study, and the Building Electrification Initiative. These studies will dovetail with the Energy Commission recommendation and identify the highest value policies and programs to achieve equity in the transition to clean energy in buildings and transportation. The resulting initiatives will provide research-based approaches that foster resilience and promote equity while minimizing unintended consequences.

BACKGROUND

The City of Berkeley has a longstanding commitment to climate action and community resilience. In 2006, Berkeley voters overwhelmingly approved Measure G, which called for reducing the community's GHG emissions by 80% below year 2000 levels by 2050. As a result, the Berkeley Climate Action Plan (CAP) was developed through a community-wide process and adopted by the City Council in 2009. The City achieved 15% reductions in GHG emissions from 2000 to 2016.

On June 12, 2018, City Council referred “to the Energy Commission and Transportation Commission consideration of the proposed resolution or similar action to further implement the Climate Action Plan and establish the goal of becoming a Fossil Fuel Free Berkeley, and further consider:

Establishing a date by which we are committed to being a Fossil Fuel Free City;
Opposing further transportation of oil, gas, and coal;

Fully implementing Berkeley Deep Green Building, raising the citywide LEED certification requirement above the current LEED Silver, and applying the same requirements to newly constructed city facilities, and major renovations;

Requiring all future City government procurements of vehicles to minimize emissions, and establishing a goal and plan for transitioning the city’s vehicle fleet to all electric vehicles;

Establishing a goal and plan for transitioning to 100% renewable energy for municipal operations and a community wide goal of 100% reductions by 2030;
Formally opposing the recent expansion of offshore drilling by the Trump Administration; and

Calling for region-wide solutions to carbon emissions, including rapid adoption of renewable energy sources, affordable densification of cities and low-emissions public transportation infrastructure.”

On June 12, 2018 the City Council also adopted a “Declaration of a Climate Emergency” which referred “to the Energy Commission to study and report back to Council on a path for Berkeley to become a “Carbon Sink” as quickly as possible, and to propose a deadline for Berkeley to achieve this goal,” ideally by 2030.

The Energy Commission’s report was developed in response to those two Council referrals.

Both the Berkeley City Council and the Berkeley Energy Commission have demonstrated leadership and commitment to accelerating bold and transformative reductions in GHG emissions. In response to this urgent priority, staff is addressing many of the recommendations provided by the Energy Commission, and is committed to implementing existing and new ambitious programs and policies to help achieve these goals. Some programs that are currently being implemented to achieve these goals include:

Berkeley’s Building Energy Saving Ordinance: BESO became effective December 1, 2015 as part of the Berkeley Municipal Code chapter 19.81. BESO requires Berkeley building owners to complete energy efficiency opportunity assessments and publicly

report the building's energy efficiency information at time of sale, and on an on-going basis. The City is currently conducting an in-depth evaluation of the program to align it with new electrification priorities and integrate the transfer tax rebate incentives, as referred by Council on November 27, 2018.

Community Choice Energy: East Bay Community Energy (EBCE) is a community-governed, local power supplier that provides cleaner electricity to Alameda County residents and businesses, at rates that are lower or comparable to PG&E. Council approved joining EBCE on November 1, 2016. On April 24, 2018, Council voted to opt up its municipal accounts to EBCE's 100% carbon-free electricity service – Brilliant 100 – to help the city achieve its CAP goals. With Brilliant 100 the City reduced its municipal GHG emissions by more than 50%. Staff has been conducting education and outreach to discourage opt-outs and encourage opt-up to the emissions-free electricity product. This outreach is in collaboration with local community-based organizations and in partnership with the Berkeley Climate Action Coalition.

Building Electrification strategies: Staff is currently conducting outreach and education to support the electrification of buildings, consistent with the Deep Green Building referral put forth by Council on February 28, 2017. In addition, staff is collaborating with other cities and regional agencies to conduct research on regulatory pathways to encourage or mandate electrification in new construction, and on strategies to use the California Environmental Quality Act (CEQA). In addition to the Electrification Expo, attended by over 300 people on February 7, 2019, staff is planning additional community engagement and education events, including technical trainings for building professionals.

Building Electrification Initiative (BEI): The City is currently receiving services through a grant from the Urban Sustainability Directors' Network to support the development of building electrification strategies in the low-rise residential sector through the Building Electrification Initiative. The BEI seeks to achieve large-scale market adoption of air source heat pumps and heat pump water heaters across North America within five years as a critical strategy to reducing GHG emissions from building heating, cooling, and hot water production.

Electric Vehicle (EV) Roadmap Strategic Plan: The City is currently developing a comprehensive action-based EV Roadmap to find opportunities to increase equitable access to EVs within Berkeley's diverse community. This project, to be completed in 2019, will identify specific EV goals and strategies to support Berkeley's climate, resilience, and equity goals with timelines, estimated costs, and opportunities for funding.

Pathway to Clean Energy Buildings RFP and Report: Staff is conducting a procurement process for national experts to conduct a high-level policy analysis and develop a detailed implementation plan for Berkeley to equitably transition existing buildings to be 100% fossil fuel free. This analysis will evaluate options, including those recommended

in the Energy Commission's report. This contract will utilize \$50,000 previously allocated by the City Council to identify and develop a set of high value, cost-effective programs and policies to incentivize residential energy efficiency and electrification investments. This work should be completed in 2020.

Equity: Equity is an essential consideration to determine the most valuable programs and policies to create an inclusive path to a clean energy future in Berkeley. Staff is incorporating an equity-centered approach to evaluate who benefits from City sustainability programs and how to eliminate structural inequality and racism. Engaging communities most impacted in defining the problems and finding the solutions is an essential part of the City's commitment to increasing inclusiveness, accessibility, and equity.

ENVIRONMENTAL SUSTAINABILITY

These recommendations would accelerate reductions in GHG emissions, consistent with Climate Action Plan goals.

RATIONALE FOR RECOMMENDATION

Staff is working at capacity on numerous existing projects and programs that are consistent with the goals and recommendations outlined in the Fossil Fuel Free Berkeley Report. Work is underway to identify and develop strategies that provide the highest value for the community, with multiple benefits in equity and resilience, all consistent with the Energy Commission's recommendations.

ALTERNATIVE ACTIONS CONSIDERED

Significant additional resources would be required to implement the 22 actions identified in the Energy Commission Fossil Fuel Free Berkeley Report. Staff is, however, currently at work on several of the Energy Commission's recommendations, and is also conducting several new analyses that are informed by the Energy Commission's recommendations.

CONTACT PERSON

Billi Romain, Manager, Office of Energy and Sustainable Development,
Planning and Development Department, (510) 981-7432

Attachments:

- 1: "Fossil Fuel Berkeley" referral, June 12, 2018
- 2: "Declaration of a Climate Emergency" referral, June 12, 2018

ACTION CALENDAR

March 26, 2019

To: Honorable Members of the City Council

From: Mayor Jesse Arreguín, and Councilmembers Sophie Hahn, Kate Harrison, and Cheryl Davila

Subject: Considering Multi-year Bidding Processes for Street Paving

RECOMMENDATION

1. Restate the recommendation approved at the December 11, 2018 Council meeting to create a two-year bidding process for street paving to realize savings by (a) reducing by 50% City staff time devoted to bidding and contracting processes over each two year period and (b) benefitting from reduced pricing which may be available for larger contracts that offer greater economies of scale and reduce contractors' bidding and contracting costs.
2. Short-term referral to the City Manager to explore the possibility, feasibility, costs, and benefits of bidding in increments of up to 5 years to encompass entire 5-year paving plans, or other ideas to more rationally and cost-effectively align the paving plan with budget cycles and reduce costs associated with frequent bid cycles for relatively small contracts.

BACKGROUND

In November 2011, the City Auditor provided an analysis of the conditions of Berkeley's 216 miles of streets that showed widespread disrepair resulting from years of underfunding. The impact of the many years of underfunding is compounded by the exponential increase in cost to refurbish streets that have reached "at risk" or "failed" status.

The City of Berkeley's existing Street Rehabilitation and Repair Policy requires that a 5-year Street Rehabilitation Plan be reviewed each year and adopted formally by the City Council. After approval, the City releases bids for one year of paving projects, requiring City Staff and contractors to undertake the bidding process on a yearly basis.

At the December 11, 2018 City Council meeting, Council approved combining the 2018 and 2019 paving projects into the 2019 program after the City was unable to secure a cost effective paving contractor for 2018 in an extremely competitive market.

Permanently moving to a bi-annual or other multi-year bid process will reduce staff time spent on preparing, circulating, evaluating and awarding bids, as well as render Berkeley's projects more attractive to contractors in a very competitive market. It is

expected that larger contracts result in reduced per-mile costs due to better economies of scale and reduced contractor costs associated with yearly bidding processes.

During the December 2018 discussion, Public Works staff suggested that a two year bid process is not only feasible, but also logical as the City's budget and funding processes span two years. While this proposal is already being considered (having been referred by Council at the December 11, 2018 meeting), it is important for Council to reiterate that accelerating paving overall while reducing costs in all ways possible is a key citywide priority, and to include the consideration of longer multi-year bidding cycles to assess whether additional cost savings and integration into existing budget cycles can be achieved.

FINANCIAL IMPLICATIONS

The City is likely to realize long term savings by utilizing two-year or other multi-year bidding processes.

ENVIRONMENTAL SUSTAINABILITY

Improved PCI leads to better fuel efficiency and therefore less greenhouse gas emissions from vehicles.

CONTACT PERSON

Mayor Jesse Arreguin	510-981-7100
Councilmember Sophie Hahn	510-981-7150

Attachments:

1: Annotated Agenda, December 11 2018 Berkeley City Council Meeting, Item 15

Consent Calendar

- 13. Contract: Gallagher & Burk, Inc. for FY 2018 Measure M Street Rehabilitation Project**
From: City Manager
Recommendation: Adopt a Resolution approving plans and specifications for the FY 2018 Measure M Street Rehabilitation Project, Specification No. 18-11179-C (Re-Issued); accepting the bid of Gallagher & Burk, Inc. as the lowest responsive and responsible bidder; and authorizing the City Manager to execute a contract and any amendments, extensions or other change orders until completion of the project in accordance with the approved plans and specifications in an amount not to exceed \$3,863,909.
Financial Implications: Street Capital Improvement Program Fund - \$3,863,909
 Contact: Phillip Harrington, Public Works, 981-6300
Action: Adopted Resolution No. 68,716–N.S.
- 14. Letter of Support on Behalf of SB 3342 - Housing, Opportunity, Mobility, and Equity Act of 2018**
From: Housing Advisory Commission
Recommendation: Direct the City Manager to send a letter of support on behalf of proposed SB 3342, referred to as the HOME Act.
Financial Implications: None
 Contact: Amy Davidson, Commission Secretary, 981-5400
Action: Approved recommendation.
- 15. Public Works Commission Recommendation for the Five-Year Street Rehabilitation Plan**
From: Public Works Commission
Recommendation: Adopt a Resolution that recommends approval of the Five-Year Street Rehabilitation Plan for FY2019 to FY2023 as proposed by Staff.
Financial Implications: See report
 Contact: Nisha Patel, Commission Secretary, 981-6300
Action: Moved to Action Calendar. 8 speakers. M/S/C (Harrison/Droste) to adopt Resolution No. 68,717–N.S. that recommends approval of the Five-Year Street Rehabilitation Plan for FY2019 to FY2023 as proposed by Staff amended to include Milvia Street from Blake Street to Russell Street in FY2019. Provide direction to staff and request additional information from staff as follows:
- Review the Plan after two years
 - Consult the Transportation Commission on the Plan
 - Provide the Lifecycle analysis and the Bike Plan overlay analysis
 - Consider a two-year bid process
 - Annual report to Council on Measure M projects
 - Report to Council on the funding sources for scheduled and completed paving projects
- Vote:** All Ayes.