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

BERKELEY CITY COUNCIL SPECIAL MEETING

Monday, June 17, 2019
1:00 PM

2180 Milvia Street, 6th Floor - Redwood 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 for Approval - June 6, 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

3a. 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

3b. 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

4. 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

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

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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
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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.

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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 June 13, 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.
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BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE, TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE REGULAR MEETING MINUTES

BERKELEY CITY COUNCIL SPECIAL MEETING MINUTES

Thursday, June 6, 2019
2:00 PM

2180 Milvia Street, 1st Floor - Cypress Room

Committee Members:

Councilmembers Cheryl Davila, Kate Harrison, and Rigel Robinson

Roll Call: 2:07 p.m. All present.

Public Comment on Non-Agenda Matters – 1 speaker

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - May 2, 2019

Action: M/S/C (Robinson/Harrison) to approve the minutes from May 2, 2019.
Vote: All Ayes.

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

Action: 2 speakers. Discussion held.

The committee requested the following information from staff:

- Program and staffing costs

Item continued to June 17, 2019.

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

Action: 0 speakers. Discussion held.

Item continued to June 17, 2019.

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

Committee Action Items

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

Action: 5 speakers. Presentation made and discussion held.

The committee requested the following information from staff:

- Full list of scheduled events related to the item
- List of current work and estimated completion dates
- Recommendations to create an ordered/tiered list of projects/recommendations in the Energy Commission report

Items 4a and 4b continued to June 17, 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.

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

Action: M/S/C (Harrison/Robinson) to adjourn the meeting.
Vote: All Ayes.

Adjourned at 3:40 p.m.

I hereby certify that this is a true and correct record of the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee meeting held on June 6, 2019.

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April Richardson, Assistant City Clerk

02

Kate Harrison
Councilmember District 4

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]

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[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]

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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&sectionNum=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. *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&sectionNum=18909~~

[6] California Code, Public Utilities Code - PUC § 963, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=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

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[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

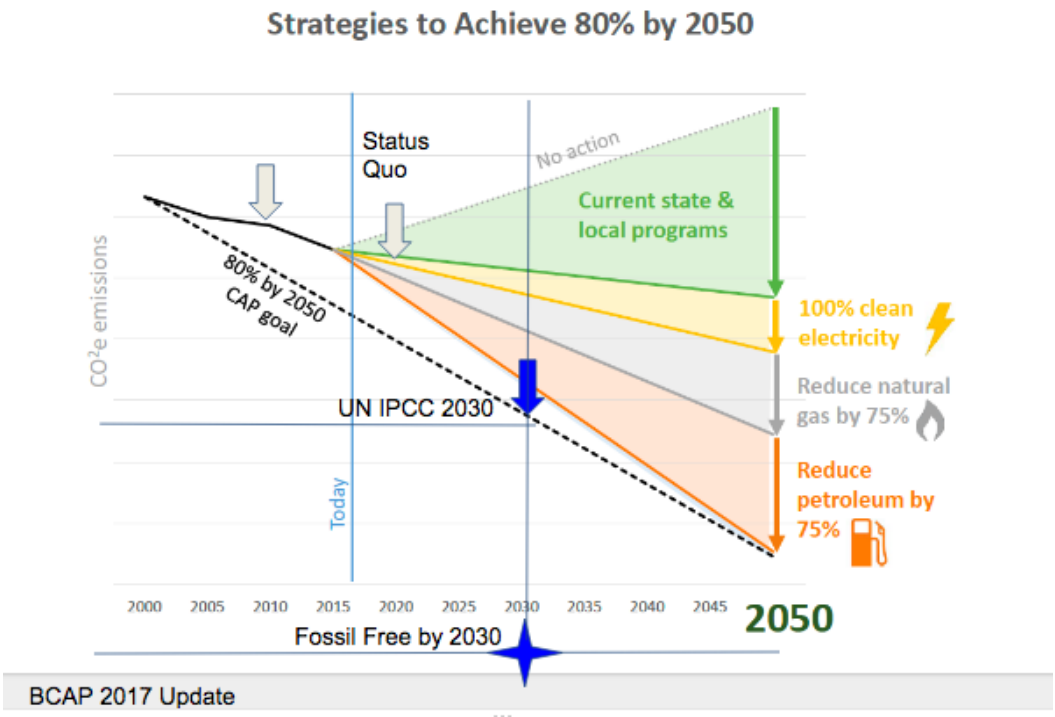
[9] IPCC Press Release, Summary for Policymakers of IPCC Special Report on Global Warming of 1.5ºC approved by Governments, 8 October 2018, http://www.ipcc.ch/pdf/session48/pr_181008_P48_spm_en.pdf

[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

[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 initiative~~s~~ facilitate~~s~~ the electrification and energy efficiency in new buildings, ~~they~~ it do~~es~~ 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

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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-Prescott, "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 share~~s~~ the Rocky Mountain Institute's general outlook on heat~~p~~ pump technology, having ~~years ago officially endorsed heat pumps as a~~recommended 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,

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[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 prod4uce

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[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

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[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.
The Council finds and expressly declares as follows:

A. Available scientific evidence suggests that natural gas combustion, procurement and transportation produce~~s~~ 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 [____].

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]

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[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.

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http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=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&sectionNum=18909

[6] California Code, Public Utilities Code - PUC § 963, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=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 1.5ºC approved by Governments, 8 October 2018, http://www.ipcc.ch/pdf/session48/pr_181008_P48_spm_en.pdf

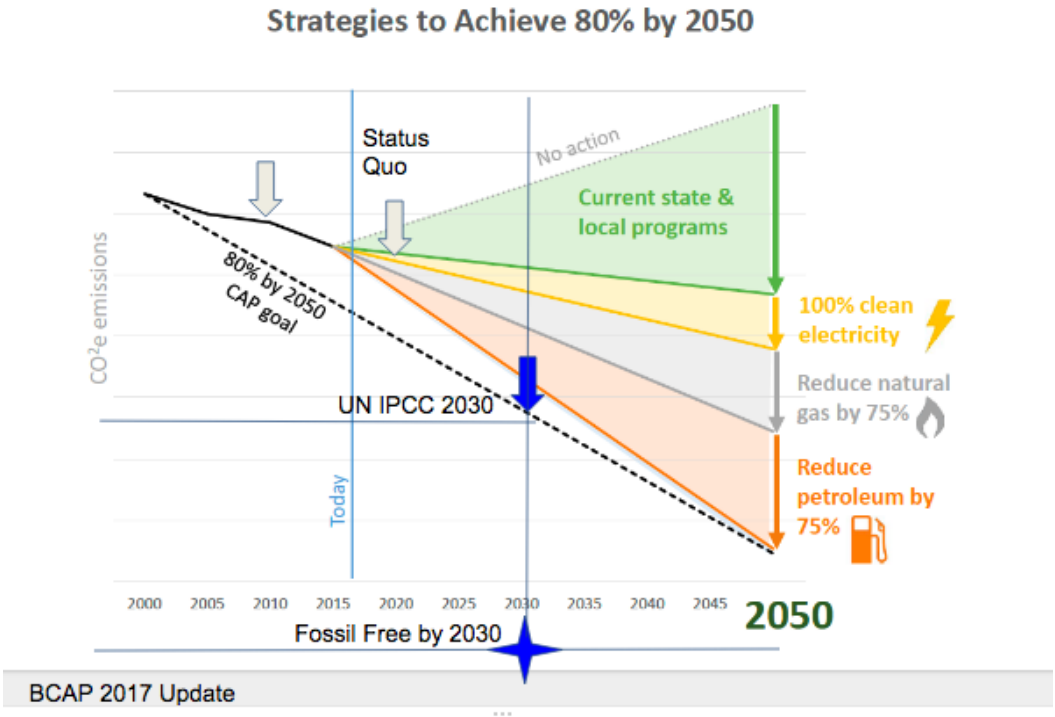
[10] Resolution Submitting Measure G, Berkeley City Council, July 18, 2006, https://www.cityofberkeley.info/citycouncil/resos/2006/63396.pdf; Ballotpedia, Berkeley Greenhouse Gas Emissions, Measure G (November 2006), November 7, 2006, https://ballotpedia.org/Berkeley_Greenhouse_Gas_Emissions,_Measure_G_(November_2006)#cite_note-quotedisclaimer-1

[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.



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

_Energy_and_Sustainable_Development/2017-12-07%20WS%20Item%2001%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

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[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

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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]

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[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.
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 [____].

Energy Commission

3a

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.

Fossil Free Berkeley Report

Berkeley Energy Commission January 23, 2019

Council Referral

On June 12, the Berkeley City Council passed item 30 “Fossil Free Berkeley” which refers “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, the Berkeley City Council also passed item 49 “Declaration of a Climate Emergency” which refers “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.

This Report is the Energy Commission’s response to Council’s June 12 referrals.

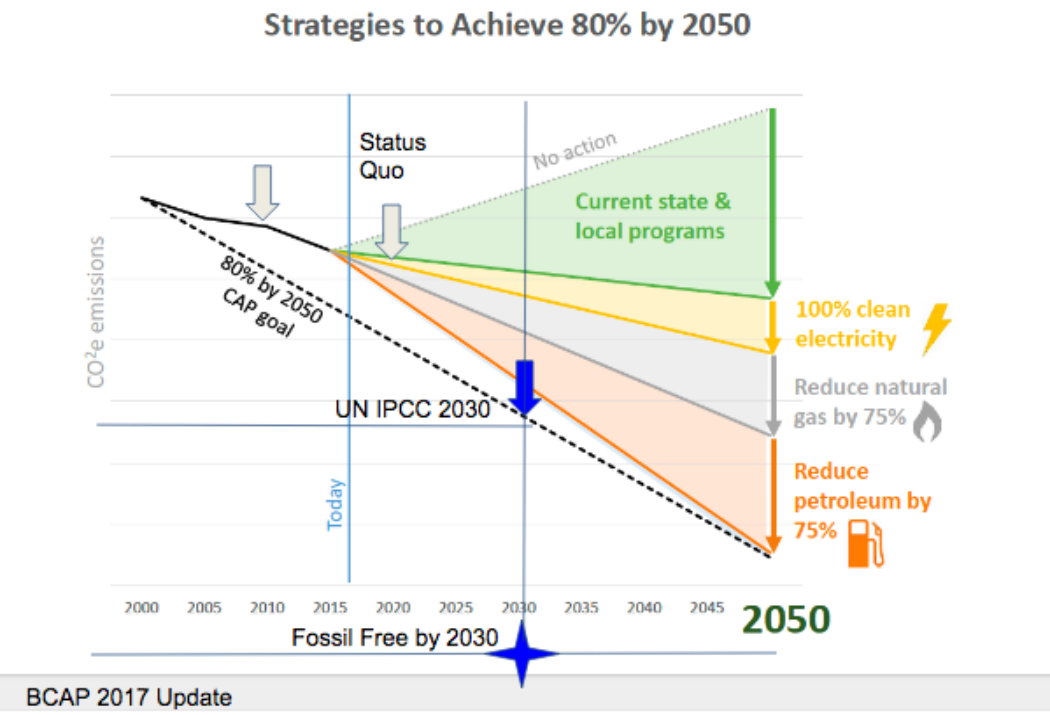
Executive Summary

The City Council's Climate Emergency Resolution lists record breaking climate related catastrophes and urges 'out of the box' thinking for solutions.

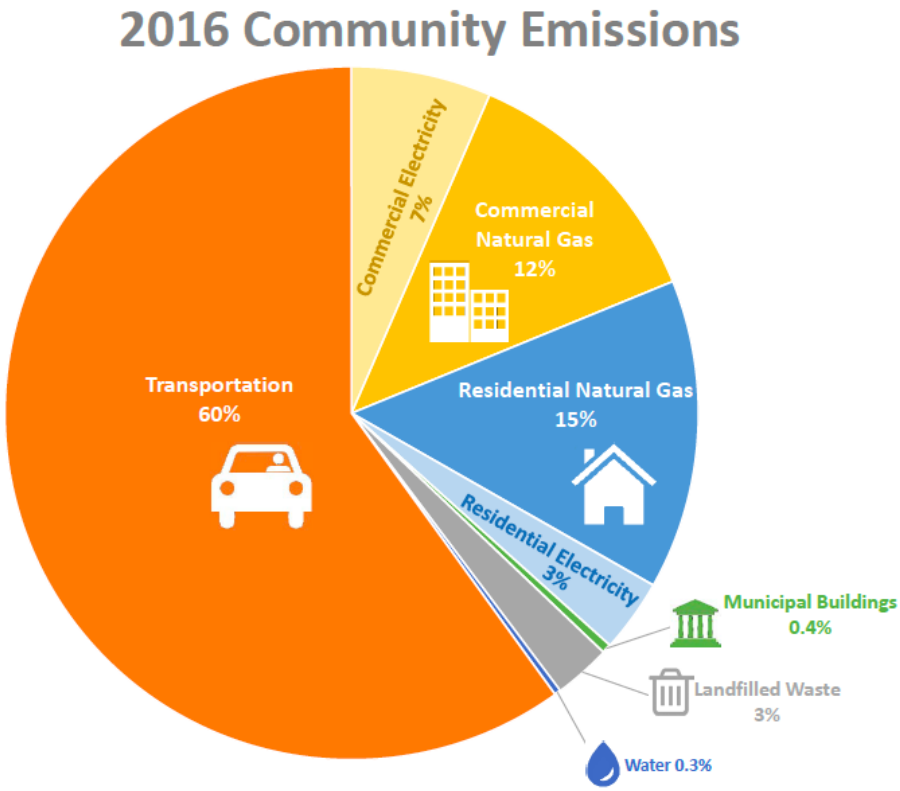
As if intended to support the Council's climate emergency declaration, the UN IPCC issued a heart rattling Special Report (IPCC-SR15, 10/9/2018) noting global temperatures are rising faster than predicted an myriad of cascading effects are happening sooner, and reiterating a worldwide goal to keep warming to no more than 1.5 °C. It asserts Greenhouse pollution must be reduced 45 percent from 2010 levels by 2030 and 100 percent by 2050.

The trajectory of the Berkeley Climate Action Plan's 2020 emission reduction targets, extended to 2030, is roughly in line with the IPCC-SR15 goal. However, according to the city's 2018 Annual Progress Update Berkeley is significantly behind in achieving the Climate Action Plan 2020 reduction goals, let alone extending that trajectory through 2030 as recommended by IPCC-SR15, or doubling down to become 100% fossil free by 2030 as to be considered in the Fossil Fuel Free Berkeley Resolution Council adopted in June.

IPCC and Fossil Free by 2030 goals superimposed on 2017 CAP update



Clearly in order to meet any of these 2030 goals we need a sea change in commitment. Specifically, we must exert the will to honestly accept and meet the challenge we face. The 2018 CAP Update shows where we need to act:



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.

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 doesn't soft pedal very challenging proposals and why they are necessary. A successful referendum campaign would provide the platform for massive public education and

support Council decision making. This referendum would be submitted to the voters in November 2020 and would include binding mandates and specific priorities for emissions reductions.

- 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. Once complete, the City should submit a referendum to voters that would raise the tax on natural gas usage and dedicate the funds to decarbonization 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. Adopt financial incentives and disincentives to reduce transportation carbon emissions such as: 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.

3. Explore developing Berkeley shuttle services similar to the Emery Go-Round using EVs.

4. Develop effective communication and education strategies. Continue to expand programs that encourage residents to shift to fossil fuel free modes of transport.

Residential and Commercial Buildings

1. Opt all accounts in Berkeley up to 100% renewable EBCE electricity 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 immediate thing the city can to do reduce greenhouse gas emissions. A ton of GHG gases eliminated in 2019 is far more impactful in slowing climate change than a ton eliminated in 2025 or even in 2020 because of the impact of positive feedback loops.

2. Expand BESO and include electrification along with energy efficiency. Consider instituting more triggers that require an energy audit, more detailed energy audits, not allowing the seller to transfer the audit to the buyer, and required implementation of some of the measures recommended in the energy audit.

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, such as density and/or parking requirements, or accelerated review 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 website to reflect the City's prioritization of electrification, and low carbon footprint and low toxic construction. Updated green building information should be easily found on the Permit Service Center home page. 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. It is time to look aggressively for the necessary funds and initiate the process. Once complete, the City should submit a referendum to voters that would raise the tax on natural gas usage and dedicate the funds to decarbonization 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. Prohibiting sale of gas powered appliances would support electrification.

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 be adopted throughout the region to reduce development pressure on open spaces, provide more housing near jobs, and provide the density to support expansion of regional transit.

Analysis

I. Establishing a date by which we are committed to being a Fossil Fuel Free City

Recommendations

1. Consider a new ballot initiative for updating the Climate Action Plan in order to engage Berkeley residents in the comprehensive and ambitious efforts that will be needed.

2. The City should take aggressive, immediate, and sustained action to achieve the goal of a fossil free Berkeley to the fullest extent possible while simultaneously calling for necessary and immediate complementary emergency actions by other local, regional (e.g. MTC/ABAG, BAAQMD, RayREN) state and federal governmental bodies.

Discussion

The Energy Commission believes that the Berkeley Residents who initiated "Fossil Free Berkeley" intend it to apply to the entire city, not just municipal operations. Our comments reflect this point of view.

The two Council items 30 and 49 taken together suggest a goal of 2030 for Berkeley to become fossil free. It should be noted that this is far more ambitious than recommendations by the IPCC and recently adopted state laws[1] which taken together would suggest a goal of 50% reduction of greenhouse gas (GHG) emissions by 2030.

In some ways, Berkeley is better positioned than many cities to take the initiative to make accelerated and meaningful reductions in fossil fuel consumption.

- Unlike many other GHG emissions sectors, techniques for eliminating building GHGs--specifically improving energy efficiency, electrifying remaining energy uses, and using renewably generated electricity--are all commercially available, and can improve comfort and safety and offer property owners economic savings over time. Energy efficiency programs have been around for decades and the city's unique BESO energy audit program helps property owners prioritize efficiency upgrade spending. Because of recent developments in heat pump technologies making electric heat pump space and water heating more than 3 times as efficient as their gas equivalents and the dramatic

[1] SB 100 commits state utilities to provide 60% renewable electricity by 2030, and zero carbon electricity by 2045.
AB 3232 charges the California Energy Commission with assessing how to reduce emissions from the state's building stock by 40 percent below 1990 levels by 2030.
SB 1477 will expand the accessibility of clean heating technologies by promoting them in the market with incentives and training.
Executive Order B-55-18 commits California to economy-wide carbon neutrality by 2045.

increase of renewables on the electricity grid, all electric homes, even without solar panels, can produce substantially less GHGs than natural gas powered ones.

- Berkeley's size, density, mild and dry climate, and mass transit infrastructure make it ideally suited for an accelerated reduction in transportation related GHGs. The recent commercial introduction of vehicle sharing programs and proliferation of small electric vehicles such as electric bikes, scooters, and tricycles solve two of the main long time challenges to rethinking the transportation picture in Berkeley. They dramatically reduce costs of electric transport and offer small scale power assisted options, particularly for hills residents.

  According to the 2017 Bicycle Plan a "2015 survey of Berkeley residents showed 90 percent of Berkeley residents already bicycle or would consider bicycling if the right bikeway facility or roadway conditions were available. That is a larger percentage than any other city that has conducted a similar study, including Portland…."

- Finally, residents voted overwhelming in favor of the Berkeley Climate Action plan in 2006 and are likely to support new targeted programs to accelerate reductions in GHGs.

The challenges to accelerating GHG reductions cannot be overstated. They are technological, political and social. And, the more ambitious the reduction goals the greater the challenges. While Berkeley is better set up to meet a goal of 100% reduction by 2030 than many communities, it is still a very difficult task.

- The vast majority of buildings rely on natural gas for operation. Every one of them will need to be shifted from gas to all electric operation. Every fossil fuel operated vehicle on the roads will need to be eliminated. How do we motivate ourselves to electrify our buildings and give up our fossil fuel vehicles?

- As much as a quarter of Berkeley's past GHG reductions are a result of state programs such as the renewable fuels portfolio standard. To push ahead with an accelerated GHG reduction goal, the city will need to rely on local programs.

- There are real technological hurdles that need to be solved before complete electrification of the California or US economy can occur. It is hoped these problems will be solved by 2030 or much sooner. While they do not prohibit Berkeley from being fossil free by 2030 as an isolated entity, they do drive up the cost for some of the needed technologies, particularly in relationship to vehicles and battery storage. In addition, regional and state governments will be reluctant to set goals without confidence that the technologies are in place to meet them, so Berkeley will likely be out of step with others the more aggressively it pursues accelerated GHG reductions.

Finally, the urgency of the climate crisis requires use of the simplest, cheapest and most available tools at hand to achieve high early results. A ton of GHG gases eliminated in 2019 is far more impactful in slowing climate change than a ton eliminated in 2025 or even in 2020. Because of positive feedback loops, the effects of GHG emissions are amplified. For example warmer, dryer forests burn more which releases more CO2 which contributes to more forest fires. Establishment of new manufacturing facilities and a city scale power company would take decades. It will be far more effective to work with existing programs such as East Bay Community Choice Energy, BESO, and the Berkeley Bicycle Plan.

II. Opposing further transportation of oil, gas, and coal

Recommendations

1. In order to put the brakes on the transport of refinery feedstock and refined products traveling though Berkeley, call for a plan to a responsibly wind down all Bay Area refineries as California demand wanes.

2. Consider a ban on the storage and transport of coal within the City

Discussion

It should be noted that the City of Berkeley has already adopted a more specific position in opposition to transport of oil, gas and coal: joining neighboring communities in September in calling for a ban on coal shipments through East Bay Communities.

Unfortunately, the Federal Government has jurisdiction over rail transport limiting the City's options for preventing travel by rail through Berkeley.

Eliminating transport of fossil fuels would require the shutdown of all Bay Area oil refineries, because their products are trucked to and through Berkeley for cars, trucks, planes and trains operating in the Bay Area. It would also mean that all ground vehicles, including trains would have to be converted to run on 100% carbon-free electricity, and air transport be fueled by bio-fuel or by imported fossil fuels.

Regarding the shutdown of local refineries, Communities for a Better Environment has drafted a California Refinery Study and will soon launch a campaign to responsibly wind down all California refineries by 2035, by requiring annual emission reductions of 5% beginning in 2020. Mayors of Benicia and Richmond, home to the Valero and Chevron refineries, are already making public statements in support of winding down Bay Area refineries. As California electrifies it vehicles, we must ensure refineries are not permitted to maintain or increase refining activities such that fossil fuel exports increase and frontline communities remain subject to the health consequences of this dirty, outdated industrial sector.

III. Fully implementing Berkeley Deep Green Building plan, raising the citywide LEED certification requirement above the current LEED Silver,

and applying the same requirements to newly constructed city facilities, and major renovations

Municipal Buildings Recommendations

1. Immediately convene a citywide departmental summit including Public Works and Planning and Development to establish a timeline and budget for electrifying all city owned buildings and installing solar plus storage at City buildings wherever possible.

2. Review and re-prioritize all funds currently earmarked for capital improvements to facilitate rapid electrification of municipal buildings.

3. Work with East Bay Community Energy to secure grants for solar with storage.

4. Use the 2 x 2 process to coordinate with BUSD in establishing a fossil fuel free goal and providing BUSD with technical and policy assistance to achieve it.

5. Set higher goals for municipal buildings related to indoor air quality, lowered carbon footprint, and all electric as outlined in Berkeley Deep Green Building and Healthy Building Network's HomeFree Spec guidance.[2] In addition to developing expertise that can be shared with Berkeley residents and property owners, these changes would have health, environmental, and economic benefits. The City can decide the standards which municipal buildings must be built or remodeled to. It is our understanding that currently, there is no requirement beyond meeting minimum state building codes.

Residential and Commercial Buildings Recommendations

1. Develop options for expanding the coverage of the current LEED requirements to other areas of the City including mandatory points in certain sections.

2. Strategically relax the Planning Code, such as density and/or parking requirements or accelerated permit review in exchange for electrification and energy efficiency measures.

3. Place moratorium on natural gas cooktops and dryers in new residences or on new gas hook ups if possible.

4. Institute a transfer tax rebate for energy efficiency upgrades and electrification at time of sale.

5. Ensure every plan checker is trained in methods of electrification, and instructed to present that information to property owners at the beginning of the permit application process. In this way, every interaction with property owners becomes an opportunity to educate them on their options for home energy efficiency and

[2] https://homefree.healthybuilding.net/reports

electrification and their importance. Building owners need to understand the importance of reducing energy consumption and electrification and to switch out fossil fuel appliances for electric whenever possible.

6. Expand BESO and shift focus to include electrification along with energy efficiency. To be considered are: instituting more triggers that require an energy audit, more detailed energy audits, not allowing the seller to transfer the audit to the buyer, and required implementation of some of the measures recommended in energy audit.

7. Develop an effective communication and education strategy that reaches the Berkeley community at large. This strategy should include updating the City's website to reflect the City's prioritization of electrification, and low carbon footprint and low toxic construction. Updated green building information should be easily found on the Permit Service Center home page. Many architects, builders and homeowners begin the design process online, making key decisions based on information found online. It is critical the City's website offer clear guidance reflecting the urgency of the climate crisis.

8. Work with PG&E to develop a plan for eventually shutting down natural gas service in Berkeley. Priority should be given to areas most vulnerable to the effects of climate change and earthquakes and those where infrastructure has not yet been upgraded to plastic. Funds that would be spent on upgrading gas infrastructure can instead be used for electrifying buildings and under-grounding electrical lines.

9. Consider the development of a long term funding plan such as a very low interest revolving loan fund to assist property owners to decarbonize their buildings.

10. The City should work with the BAAQMD to adopt rules with future effective dates to prohibit sale of gas powered appliances.

11. Increase regional and support state efforts to expand availability of low global warming potential refrigerant heat pumps space and water heaters for retrofit markets.

Discussion

The Berkeley Deep Green Building (BDGB) initiative, adopted by the City Council in 2017, outlines best practices for green building including zero net energy and all electric construction, low carbon footprint and low toxicity building materials, and water conservation. City staff has provided a detailed analysis and review of progress in implementation. See the Energy Commission Agenda from 4-25-18 for copy of this review.

Energy efficiency measures including: low toxic, low carbon footprint insulation, air sealing, and replacing incandescent with LED lights, have long been recognized as important to greenhouse gas reduction. BDGB argues in addition that going all electric is foundational to achieving fossil fuel free goals. Historically energy efficiency standards and incentive programs have been based on the assumption that natural

gas appliances have lower environmental impacts than electric appliances. However, this is no longer the case. The dramatic increase of renewables in supplying electricity and the development of heat pump technologies for space and water heating, which are more than 3 times as efficient as their gas equivalents, have turned this balance around. If the significant fugitive emissions from gas infrastructure and their concomitant climate changing and indoor air quality impacts are added to the equation, the scale definitely tips in favor of all electric buildings.

Natural gas is also a safety issue in Berkeley. The recent gas line explosions around Lawrence Massachusetts are only the most recent in a long line of such incidents. Even though PG&E is working to upgrade existing infrastructure, rising sea levels in West Berkeley and the overdue earthquake on the Hayward fault threaten Berkeley. Electricity infrastructure has its safety issues as well. Money saved on gas infrastructure could be used on improving the safety and reliability of electric power.

One of the stumbling blocks to a fossil free California is energy storage. All electric, energy efficient buildings can be key in addressing this problem by reducing overall energy demand and drawing energy for space and water heating in the middle of the day when it is most abundant and storing it for use in the evening after the sun goes down. As a quarter of all energy used in the home is for water heating, state policymakers and manufacturers are already working on ways to incorporate tanked electric water heaters into energy management programs.

Heat pump space and water heaters are commercially available and can be economical. Recent studies of homes by Rocky Mountain Institute and NRDC[3] have found that all electric construction can be cost effective, especially in new construction where there are significant savings from not installing natural gas plumbing and infrastructure. All electric construction can also be economical in remodels in cases were natural gas equipment is older and needs replacing and where electrification is coupled with solar PV installation.

As the city is largely built out, construction tends to focus on remodels and new construction of high rise apartment buildings. Every effort needs to be made to guide these projects to be all electric. Currently it appears the economics for high rise residential buildings in Berkeley favor electric heating and air conditioning paired with central gas heat for water. Though adding significant cost to construction, some developers will run natural gas to individual units for the perceived increased value of a gas cooktop. It should be noted that building owners who install natural gas heating and appliances now will be left with stranded assets as society is quickly shifting to all electric operation.

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[3] https://rmi.org/insight/the-economics-of-electrifying-buildings/
https://www.nrdc.org/experts/pierre-delforge/new-report-heating-next-clean-energy-frontier-ca

The biggest challenge in Berkeley is electrifying existing buildings -- particularly where no work is anticipated or no permit is obtained for the work. This is a major source of greenhouse gases in our city and across the state. Several state level assistance programs can help property owners with improvements. However they generally fall short of amounts needed and currently rebates are not available for switching gas appliances to electric.

California has been a leader in improving energy efficiency and expanding renewable electricity generation. Several state laws from 2018 will continue that effort:

- SB 100 commits state utilities to provide 60% renewable electricity by 2030, and zero carbon electricity by 2045.
- AB 3232 charges the California Energy Commission with assessing how to reduce emissions from the state's building stock by 40 percent below 1990 levels by 2030.
- SB 1477 will expand the accessibility of clean heating technologies by promoting them in the market with incentives and training.
- Executive Order B-55-18 commits California to economy-wide carbon neutrality by 2045.

While California has been a leader in improving energy efficiency, state laws and regulations have been slow to guide and in some cases act as barriers to the transition to all-electric construction. Many of these barriers are obscure and buried deep in regulatory policy:

- 3 prong test. The 3 prong test is policy established in the early 1990s originally intended to ensure fuel switching did not occur that caused adverse effects on the environment. At the time it generally meant discouraging shifts from natural gas to electric. However the policy assumptions continue to serve the same purpose even as the climate impacts of the two fuels have completely changed places. This policy is the core of why PG&E will not provide energy upgrade rebates when changing gas to electric heat.
- Title 24 assumptions. Title 24 is the shorthand name for the energy efficiency standards of the California Building Code. These are updated every 3 years and currently include several assumptions that favor gas heating and air conditioning over electric.
- Energy rate structure. Retail prices for natural gas do not reflect the GHG emissions of gas compared to electricity, or the grid benefits of flexible electric loads like tanked electric water heaters.

Of these barriers, only the assumptions in title 24 have begun to shift in PG&E territory. The standards that will go into effect in 2020 will no longer penalize use of

heat pump water heaters in low rise residential construction. However many other assumptions within the new standards will continue to support use of natural gas such as the climate benefits of electricity in the TDV and the lack of credit given to tanked electric water heaters for energy storage.

At the regional level, BAAQMD has the authority to regulate air pollution including GHGs. It has used the authority in the past to prohibit the sale of polluting products like high VOC paints. It could prohibit sale of gas powered appliances to support electrification and elimination of GHG emissions.

Working within state level constraints, planning staff have developed and pushed policies that improve the energy efficiency of buildings in Berkeley and encourage a shift to all electric, carbon free operation. Policies they have developed unique to Berkeley include:

- New non-residential construction and additions in the downtown area need to be LEED Gold or equivalent.
- Free advice and consultation on green building design and strategies.
- Building renovation and new construction over 10,000 square feet needs to have an energy analysis and a completed green building checklist.
- Under the BESO program, at time of sale for residences and more frequently for commercial properties, owners must complete an energy audit of the building.

City staff are pursuing many additional efforts:

- Reviewing the BESO program to improve effectiveness. Scope of review to include requiring energy audits sooner for more properties, expanding the triggers that require an audit to include remodeling, more detailed energy audits including electrification, elimination of the option of allowing the buyer to perform the audit, and implementation of some of the upgrades recommended by the energy audits.
- Expanding heat pump water heater availability through collaboration on BayRen's mid-market expansion grant program.
- Pursuing "reach" building codes for the 2020 building codes that give regulatory advantage to all electric construction. The most important priority for this effort is new multi-unit high rise apartment buildings and major remodels.
- Advocating for state level policies that allow building owners to receive energy efficiency rebates when switching fuels.

- Advocating for removal of all biases against electrification within the state building energy codes including Total Daily Value (TDV) and computer modeling assumptions.

Care should be taken that solutions do not create additional problems. Many building materials are coming under increasing scrutiny for their long trail of environmental and health impacts, such as polystyrene and PVC plastics and organo-halogenated materials. Others have such a high global warming footprint, such as certain foam plastic insulations that their use minimizes the GHG reduction benefits of the projects. The refrigerants commonly used in most heat pumps in the U.S.A. also have very high global warm potential. While heat pumps still have dramatic energy saving benefits over other options, phase out of these chemicals under state Air Resources Board programs will improve their GHG benefits.

IV. 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

See V. for discussion and recommendation concerning 100% renewable energy for municipal vehicles.

V. Establishing a goal and plan for transitioning to 100% renewable energy for municipal operations and a community wide goal of 100% reductions by 2030.

See III. for discussion and recommendation concerning 100% renewable energy for buildings.

Municipal Transportation Recommendations

1. Assess the city's transportation vehicle needs and develop an aggressive timeline for transitioning to all electric.[4] This assessment would include consideration of: 1) Switching to lower carbon transport options such as electric carts or bicycles where possible and 2) the timing of technology development and commercialization for car batteries.

2. Immediately switch diesel vehicles to run on renewable diesel in the interim until fossil fuel free options are available for the tasks they perform.

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[4] Ref: San Francisco Ordinance 115-17 Administrative Code Section 4.10-1:

> c) By December 31, 2022, all light duty vehicles in the City fleet must be Zero Emission Vehicles in compliance with Environment Code Section 404, unless there is a waiver. exemption, or applicable exception. detailed in Environment Code Chapter 4.

Citywide Transportation Recommendations

The Energy Commission would like to coordinate recommendations with the Transportation and Public Works Commissions to accelerate a reduction in fossil fuel vehicles in Berkeley. To begin the process, the Energy Commission makes the following recommendations:

1. Re-prioritize road and sidewalk capital expenditures to accelerate changes in favor of walking, human powered vehicles, and other low carbon footprint mobility alternatives. The Council should amend funding priorities to reflect the climate emergency.

2. Adopt financial incentives and disincentives to reduce transportation carbon emissions such as: 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.

3. Develop and implement a transit plan in support of the Climate Action Plan. The transit plan could include detailed accountability metrics such as required dates for identified new routes, dates for replacement of fossil fueled busses and shuttles with electric busses and shuttles, and smaller intra-neighborhood subsidiary transit (shuttles). The city should explore developing its own shuttle services similar to the Emery Go-Round using EVs as part of the transit plan.

4. Add 3 FTE to the Transportation Division to expedite implementation of the city's bicycle, pedestrian, and BeST plans.

5. Build all high priority projects in the city's bicycle, pedestrian, and BeST plans including tier 1 projects in the bike plan by 2025.

6. Develop a communication strategy to inform residents of fossil free and lower carbon footprint personal mobility options and the desirability of prioritizing these options.

7. Continue to develop and expand programs that encourage residents to shift to fossil fuel free modes of transport, such as electric bike and scooter sharing, Waterside Workshop, and Safe Routes to School.

8. Work with State authorities to prohibit operation of autonomous vehicles within city limits unless they are electric vehicles.

9. Use the 2x2 process to encourage the BUSD to develop a plan for phasing out fossil fuel vehicles and supporting families to safely get to and from school without cars.

10. Lobby and work collaboratively with public and private transportation providers and the commercial sector to convert all vehicle fleets to electric power.

11. Support state programs that restrict the use of fossil fuel vehicles by ride hailing services such as Uber and Lyft.

Discussion

One of the greatest challenges we face is how to eliminate emissions from transportation. By far the most promising way to make transportation renewable is with electric vehicles.

The vast majority of fossil fuel powered vehicles operated in the city are owned by individuals and companies and government entities outside of the city simply driving through the city or entering the city for business or pleasure. For the purposes on this report, the fossil fuel free goal will be focused on reducing fossil fueled vehicular traffic on city streets. It should be noted that for Berkeley to be truly fossil free, all ground vehicles, including trains, must be converted to electric power. We recognize the City has no independent way to get Amtrak and freight trains off fossil fuels.

The Commission believes that the goal of 100% emission reduction from vehicles is most likely to happen using batteries. Fuels other than electricity are possible but less likely to be adopted. Biofuels have a limited role because of lack of feedstock availability without associated environmental damage (the food vs. fuel problem).

Electric automobiles are quieter and more economical to operate than gas cars. Although only 2% of new car sales in the United States in 2018 were electric, that represented an 81% increase in sales over 2017. Electric auto sales were about 6% of new cars in California in 2018, and reached 10% in December. Because of their lower operating and maintenance costs, electric cars are competitive in lifetime costs of ownership. Residents of homes without garages (of which there are many in Berkeley), and apartments without charging stations, face a serious challenge to find a place to plug in. We encourage further city action on this.

Another option is hydrogen. To be emission-free the hydrogen has to be produced from renewable electricity or directly from sunlight with a catalyst. The problem is that hydrogen storage is very expensive either as a liquid or as a high pressure gas, both because it is energy intensive and because the container is expensive. Furthermore, the likelihood of leakage is much higher than, say, natural gas and the likelihood of explosive ignition in the presence of oxygen is also much higher than natural gas.

One biofuel that can play a useful role in Berkeley as bridge to electrification is renewable diesel. Renewable diesel though made entirely from vegetable oils is not biodiesel. It is processed to meet the exact performance specifications required for diesel motors. It does not void manufacturer warranties and can be used in any diesel vehicle. The emissions are much cleaner, the carbon footprint is lower and it is cheaper than diesel. While its use should be minimized because of the potential food vs fuel concerns, it can be used immediately in all city diesel vehicles until they can be replaced with fossil fuel free alternatives.

The city already has advocated walking, human powered vehicles, electric vehicles and mass transportation accessibility to all in its 2009 Climate Action Plan. In achieving a fossil fuel free goal, there are important timing issues. Several significant transportation changes are just over the horizon that will dramatically reshape our city street experience including:

- Expanded ride hailing operations such as Uber and Lyft, especially as autonomous vehicle operation is perfected;
- Docked and undocked ride sharing vehicles; and
- Proliferation of varied electric vehicles including electric golf carts, bicycles, tricycles, stand-up scooters, hoverboards, Segways, and wheelchairs.
- Breakthroughs in battery technologies that will dramatically lower the cost and improve performance of electric vehicles.

The city should be careful about engaging in longer term contracts and that decisions be revisited regularly as new technologies mature and the economics change for different transportation modes.

VI. Formally opposing the recent expansion of offshore drilling by the Trump Administration

Offshore Drilling Recommendation

Formally endorse California laws intended to block offshore drilling if it has not done so already.

Discussion

The State legislature has passed and the Governor has signed SB 834 (an act to add Section 6245 to the Public Resources Code, relating to state lands) and SB 1775 (an act to add Section 6245 to the Public Resources Code, relating to state lands). Both Sections are entitled State lands: leasing: oil and gas. These new laws are intended to block the Trump administration's plan to expand offshore oil drilling by prohibiting new leases for new construction of oil and gas-related infrastructure, such as pipelines, within state waters if the federal government authorizes any new offshore oil leases.

VII. 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

The Council has rightly included the need for regional coordination to address energy supply, housing and transportation. It's safe to say all Bay Area cities are grappling with these issues in one way or another, with significant disparities among them in both priorities and resources. It will take trust, willingness to move away from a

provincial mentality, leadership from MTC/ABAG and BAAQMD and probably some State action to facilitate deep progress in these areas.

VII.1. Renewable Energy Sources

Renewable Energy Sources Recommendations

1. Opt up all Berkeley's municipal, commercial and residential accounts to EBCE's[5] 100% Renewable electricity with a policy of no added cost for CARE customers and an outreach campaign to enroll all eligible customers in the CARE program in 2019.

2. Partner with all cities in CCAs to influence state legislators, the Governor, and CPUC Commissioners to develop guiding legislation, policies, and rules that support the continued existence of CCAs.

Discussion

It is critical to move toward 100% clean energy generation sources as soon as possible in order to fully realize GHG emission reductions through "fuel switching" from combustion to electricity in all spheres. There is long established worldwide consensus that the path to climate stabilization requires, in this order:

1. Deep reductions in energy demand through conservation and efficiency,
2. Conversion to clean electricity generation, and
3. Massive electrification.

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[5] A regional approach to increase reliance on renewable energy sources is possible through our new energy provider: East Bay Community Energy (EBCE). EBCE was initiated under a state law passed in 2002 that allowed government jurisdictions to create agencies (called Community Choice Aggregators or CCAs) to purchase power on their residents' behalf as a way to provide energy options to Californians. As a local government agency, EBCE is not for profit and is entirely devoted to the community. Even before EBCE was providing electricity, it was developing a plan to invest locally in energy development. In July 2018, the Board of EBCE adopted a groundbreaking Local Development Business Plan which spells out strategies for local clean energy, energy efficiency, and energy storage projects specifically to help address the environmental, economic, and social justice needs of the East Bay community.

Once established, a CCA is authorized to automatically enroll all accounts in its jurisdiction in the new energy program. Customers have the option of changing the product they are enrolled in or switching back to PG&E. EBCE currently offers three electricity supply products to its residential, commercial and municipal customers:

- Bright Choice - a mix of electricity generated by fossil fuels, renewable sources and large scale hydro, which the State of California does not classify as renewable. It is offered at a slightly lower in price than electricity from PG&E;
- Brilliant 100 - a mix of renewable energy and large hydropower at the same price as PG&E power; and
- Renewable 100 - 100% renewable energy at a slightly higher price.

Both Berkeley (through BESO and other programs) and California (largely through frequent Energy Code updates) have long standing, successful conservation and efficiency requirements. We are national leaders in this and continue to press forward with program improvements and new initiatives. Now that a 100% renewable option is available from EBCE, Berkeley can immediately convert the entire city to clean electricity generation, and turn its focus to the challenge to 'electrifying everything.' Shifting accounts to 100% renewable will reduce community-wide GHG emissions by a whopping 10%.[6]

Under the Climate Emergency Resolution, Council has signaled the intention to act boldly. Berkeley has already fallen significantly behind in achieving it's 2050 GHG emission reduction goal as set forth in the 2009 Climate Action Plan.[7] Opting all its EBCE customers to the Renewable 100 plan is the single most impactful and timely action the City can take in 2019, both because of immediate emission reductions, and to avoid GHG emissions from future increases in demand due to electrification. It is critical to do this now because by the end of 2020, EBCE will be required to sign long term contracts for 65% of its supply portfolio. Once these long term contracts are signed, it will be more difficult for EBCE to shift the sources of its power mix. For these reasons, the Energy Commission recommends that Berkeley move to 100% renewable electricity in 2019.

While EBCE energy mix options were being established last spring, the Berkeley City Council, as did most EBCE cities, chose to enroll all residential and commercial accounts in Bright Choice. Berkeley enrolled its municipal accounts in Brilliant 100. The City of Albany enrolled all accounts in Brilliant 100, Hayward enrolled its residential accounts in Brilliant 100, and the City of Piedmont enrolled all accounts in Renewable 100. We note that ten jurisdictions in Los Angeles and Ventura counties served by Clean Power Alliance (CPA, a CCA) were enrolled in Green Power, its 100% renewable product, as the default. These ten jurisdictions cover a third of CPA's one million customers.[8]

CPA, like EBCE, also has a Community Advisory Committee to help prioritize local renewable energy development and job creation, rebates and incentives. For California's progressive cities and counties, enrollment in 100% renewable energy is a climate action whose time has clearly come. Because 35% of EBCE's power purchase agreements are not required to be long term and electrification will increase demand, we anticipate ample opportunities for EBCE to make significant investments in local

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[6] Berkeley Climate Action Plan Annual Progress Update, Office of Energy and Sustainable Development, Planning Department, Slide 5, December 6, 2018

[7] Berkeley Climate Action Plan Annual Progress Update, Office of Energy and Sustainable Development, Planning Department, Slide 14, December 7, 2017

[8] Clean Power Exchange, Alliance will provide clean, competitive energy, January 12, 2019 https://cleanpowerexchange.org/alliance-will-provide-clean-competitive-energy/

energy development. As the local development market matures, there will be rolling opportunities to incorporate locally generated power into long term contracts.

There were initial concerns that new EBCE customers would opt out and go back to PG&E. There were also worries that customers would opt out if enrolled in a cleaner mix of energy generation priced at the same or slightly higher cost than PG&E rates. Both of these fears have been shown to be unfounded for the inner East Bay cities of Alameda County. In fact, among all Alameda County cities in EBCE, only the City of Livermore, at 5.56%, has had an opt out rate greater than 2.07%.[9] Piedmont's experience in making Renewable 100 the default level is instructive. As of December 2018, 6.8% of customers opted down to Brilliant 100 or Bright Choice, and only 2.07% opted out and went back to PG&E. The takeaway is that few customers took any action, and of those who did, the overwhelming majority (77.7%) chose to stay in EBCE.

Concerns have also been raised that opting all customers to the 100% Renewable product would harm low-income customers. The Energy Commission recommends that EBCE follow CPA's lead in which "customers in 100 percent renewable energy communities who are enrolled in CARE, FERA or Medical Baseline will get Green Power at no extra charge."[10] We understand that EBCE is reporting strong net revenues which could be allocated to subsidize CARE customers. Alternatively, non-CARE customers could absorb the additional cost. Furthermore, the value of the non-binding nature of the enrollments is that price sensitive customers can opt down. Unlike an increase in property taxes, nonCARE customers who cannot afford to pay any more for power can simply opt down to the lower priced option.

It has recently come to light that Bright Choice power may in fact have a higher carbon content that electricity provided by PG&E.[11] The City Council has the opportunity right now, while the nascent EBCE is locking in long term contracts for power, to opt all accounts to fossil fuel free power to ensure that joining the CCA does in fact reduce citywide GHGs.

The political landscape for CCAs is fraught with heavy opposition from PG&E and its entrenched allies in State government even as they supply electricity that is cleaner and cheaper than their for-profit counterparts.[12] Berkeley needs to partner with all Bay

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[9] EBCE Enrollment Update, December 5, 2018

[10] Clean Power Exchange, Alliance will provide clean, competitive energy, January 12, 2019 https://cleanpowerexchange.org/alliance-will-provide-clean-competitive-energy/

[11] See comments in: https://www.berkeleyside.com/2018/12/11/why-does-your-december-electricity-bill-look-different

[12] A 2016 UCLA study found that CCAs in California offered 25% more renewable energy compared to the investor-owned utility (IOU) in the same area resulting in an estimated reduction of 600,000 metric tons of CO2 in 2016.

Area cities in CCAs to work with our elected representatives to defeat legislative threats and overcome obstacles at the California Public Utilities Commission. Also, the CCA's themselves need to ensure unity and coordinated responses to initiatives aimed at undermining success.

VII.2. Affordable Densification of Cities

Affordable Densification Recommendations

1. Work with MTC/ABAG, BART cities and counties to reframe and expand Transit Oriented Development concepts to conform with internationally used approaches that look beyond infill at already heavily used transit hubs, and prioritize infill housing everywhere developed in concert with expanded transportation strategies and expanded services (educational, recreational, commercial and environmental enhancement).

2. Work with Bay Area cities and counties to develop a regional funding mechanism to subsidize low income and affordable housing in all jurisdictions.

2. Explore viability of reducing R-1 zoning to increase housing availability, opportunities for home ownership and improve transit access through increasing densification. In addition, support adoption of such transit oriented development throughout the region to reduce development pressure on open spaces, provide more housing near jobs, and provide the density to support expansion of regional.

Discussion

In order to provide affordable densification we need massive housing construction, housing subsidies and expanded transit opportunities. The high cost of living in the Bay Area includes the high cost of construction. If we want to reduce vehicle miles traveled (VMT) and the unhealthy stress of long commutes we must find ways to subsidize housing for average people, because at the present time people living on average incomes who do not already own homes cannot afford to live in the Bay Area either as renters or homeowners, forcing many into ever longer vehicular commutes. This is something that needs to be addressed by both the region and the state. There is too much disparity in wealth across the region for the problem to be completely solved by individual cities.

A desire for walkable neighborhoods and transit access has contributed to gentrification in Berkeley and San Francisco. This new gentrification is fueled by the migration of young professionals from the suburbs to these two cities in particular because they both have ample neighborhood scale services. Remarkably, the median price paid per square foot of living space is no longer significantly higher in most R-1 zones where access to transit is often limited.[13] This indicates that the hunger for the amenities of a more urban lifestyle is widespread. It's quite possible that there is an

[13] (https://www.trulia.com/real_estate/Berkeley-California/market-trends/)

untapped openness to neighborhood-scale services and transit development in existing suburbs too. This possibility needs to be explored. Any such nascent cultural shifts should be identified and reinforced. The suburbs have already absorbed job growth in the form of large business parks. Likewise, rails to trails conversions have acculturated suburban residents to walking and biking where convenient. Managed thoughtfully, initiatives to increase suburban infill housing coupled with increased transit, active transportation options and some small scale services could be welcome developments.

The push for housing densification in the Bay Area has relied on a concept of transit-oriented development (TOD) defined by MTC as [emphases added]:

> "the clustering of homes, jobs, shops and services near *rail stations, ferry terminals or bus stops with high-frequency service*"

defined by BART as:

> "mixed-use, higher density development *adjacent to frequent transit*."

and directed by Berkeley's General Plan to:

> "[e]ncourage and maintain zoning that allows greater commercial and residential density and reduced residential parking requirements in *areas with above-average transit service* such as Downtown Berkeley."

This perspective pre-supposes that densification is not a serious goal beyond existing heavily used transit corridors, or beyond cities that are already dense. Plan Bay Area forecasts the need for 800,000 new housing units by 2040. It seems doubtful that so much new housing can be built only around existing transit lines. Recent state legislation for infill housing fell victim to this kind of limited thinking.

In other parts of the world, TOD includes community scale planning with new transit service in mind, not just placing new homes near existing heavily used transit. We need to expand the mindset of housing development in the Bay Area to one of transit *coordinated* development (TCD). We need suburban infill housing developed in concert with public transit strategies, and educational, recreational and commercial services. Infill housing and transit alone do not address human needs for social, commercial and fitness activities. Enhancement of ecological surroundings is also important. A comprehensive TCD approach would improve the quality of life in many ways, serve as an attractor to development and significantly reduce GHG emissions.

Note that a substantial amount of new housing units in the suburbs will need to be subsidized for the reasons described above. Affordable and workforce housing is critical for every Bay Area city and county. Plan Bay Area has set forth affordable housing goals for the whole region, but so far every city is failing. Taking a comprehensive TCD approach would make such infill projects more relevant and attractive to existing residents.

One action cities such as Berkeley can take is to change zoning restrictions to eliminate R-1 zoning. Berkeley's General Plan institutionalizes R-1 low density housing:

"These areas are generally characterized by single-family homes. Appropriate uses for these areas include: residential, community services, schools, home occupations, recreational uses, and open space and institutional facilities. Building intensity will range from one to 10 dwelling units per net acre, not including secondary units, and the *population density will generally not exceed 22 persons per acre.*"[Emphasis added.]

The recent move to allow Accessory Dwelling Units is too restrictive to increase density to the extent needed on the land that is most available. It also preserves privilege, in failing to foster home ownership for additional residents.

Berkeley's R-1 zoning is visually correlated with the legacy of red-lining. Its perpetuation restricts growth in areas with the most open land that could support densification. There is quite a lot of aging housing stock in the Berkeley that needs significant renovation, including in R-1 zones. Under current policies, large houses in R-1 cannot be subdivided to allow for more occupants. As a result when modernized they grow larger and more luxurious, a sort of "deep gentrification." It's well documented, but rarely acknowledged, that such consumption drives GHG emission increases.

If the zoning was changed and subsidies provided, we could see small scale condo development like is happening in areas with higher density zoning, and much lower average household CO2e emissions because all the infill would be natural gas free as well as house more people. We could also reverse gentrification and truly become a city that prioritizes diversity. Increased density in R-1 areas would facilitate increased transit service and car sharing, and reduce congestion in shopping corridors. The fact is, many people actually spend little free time in their homes and gardens, preferring to recreate elsewhere, and even when self or contractually employed, preferring to go to work spaces and coffee shops with other people. Children in R-1 zones don't generally play in their neighborhoods, but are shuttled daily to many activities, increasing VMT. Densifying housing in R-1 areas could eventually prompt further zoning changes along the more major roads already served by public transit leading to infill services and commercial development there as well such as the two small and well used commercial districts in Kensington. The result could very well be both environmentally preferable and lead to an increase in our city-wide happiness quotient. Human happiness is correlated with low economic disparity. Our zoning ordinances should be reviewed to see how they amplify disparity and/or inhibit community happiness and act as a bias toward creating GHGs.

VII.3. Low Emissions Public Transportation Infrastructure

Public Transportation Recommendations

The Energy Commission would like to coordinate recommendations with the Transportation and Public Works Commissions for accelerating a reduction in fossil fuel vehicles in Berkeley. To begin the process, the Energy Commission makes the following recommendations.

1. Work with AC Transit to convert all public transit to EVs.
2. Work with AC Transit and major employers to expand existing bus service and add all manner of appropriately sized bus and shuttle services, including into the suburbs.
3. Work to create dedicated bus/shuttle-only lanes on all bridges, freeways and major streets.
4. Work to normalize ride sharing.
5. Work with MTC, regional transit providers and the state to augment subsidies such that public transit is affordable for all.
6. Lobby the state to regulate ride hailing services to reduce overall per capita VMT.

Discussion

MTC distributes enormous sums of money and wields huge power over regional transportation decisions but has not seriously addressed how the region can mitigate climate pollutants from transportation. As a start we need to press MTC to set clean transportation goals commensurate with the damage to our climate that dirty transportation has wrought and the urgency to make drastic emission cuts by 2030. The goal setting process must include a planning document showing the path to take, and policy commitment to achieve the goals.

The Bay Area's freeways are already some of the most crowded in the nation. As housing affordability has worsened, more people are commuting farther distances to their Bay Area jobs. According to MTC, time spent in weekly traffic in the Bay Area shot up 80% between 2010 and 2016. All this traffic is increasing transportation emissions, with no end in sight. Clearly there is a need for increased transportation options, and they need to be carbon free. To expand clean public transits as quickly as possible, light rail is not likely to play a large role. EV buses and shuttles can be built and routed in the time frame we need.

Given the number of tech workers (living all over the region, including the suburbs) who now take buses to their jobs, it is clear that old ideas about who will use bus transit is completely obsolete.

Like housing, transportation is an equity issue. All driving services, public or private, should be required to provide a living wage to drivers. Likewise, we cannot expand public transportation services without massive investment to assure affordability for all. This is a wealthy region that can afford such investments. Significant wealth generated

in this region is also sent to Sacramento. We need the state to assist in subsidizing the transition to clean, affordable public transit available to all.

On June 12, the Berkeley City Council also passed item 49 "Declaration of a Climate Emergency" which refers "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."

Carbon Sink Recommendations

1. Plant more trees.
2. Apply compost (and biochar where possible) to city parks, median strips and generally all planted areas.
3. Support use of low carbon construction materials both in municipal buildings and commercial and residential projects.
4. Support urban farming: for example through recently adopted urban farming policies and also planting suitable edible perennials in public spaces.
5. Support citywide programs, such as the Ecology Center's farmers market program, that give all residents access to fresh, organic, regionally grown foods.

Discussion

Carbon sequestration is an essential component of comprehensive state, national and global efforts to meet climate change reduction goals. The October 9, 2018 UN IPCC report recommends that at least 1000 gigatons of CO2 be removed from the atmosphere and sequestered by the end of the century. A wide range of strategies are being looked at to remove and sequester atmospheric carbon. The most promising strategies, biological sequestration, rely on natural processes, including afforestation and carbon farming. The California Air Resources Board is already providing Cap and Trade funds to support and expand these promising approaches to carbon sequestration.

Because of the density of habitation, Berkeley is unlikely to be able to be a carbon sink until annual emissions have been reduced by about 99%. Citywide CO2 emissions totaled 640,000 metric tons in 2015. With roughly 6 square miles of space not covered with buildings and roads, only a very small fraction of these annual emissions could be offset with biological sequestration.[14]

[14] Background for Carbon Sink section:
Carbon sequestering buildings: While using rapidly renewable materials such as wood, straw and bamboo can sequester carbon in buildings, the amount is quickly offset by the vastly greater energy intensity of metals, plastics and concrete required in taller buildings and

While not having significant climate benefits, carbon sequestering strategies such as afforestation and application of biochar to the soil can have health and resilience benefits for the city residents improving air quality and local sources of food.

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seismically active zones. In Berkeley, the effects of low carbon footprint construction can at best lower the carbon footprint of an individual building, which is important. However, it cannot provide a means to offset carbon emissions in the city generally.

Biological sequestration in soil: It is practical to sequester carbon from the atmosphere in two ways, changing farming practices to capture more carbon in soils, and reversing deforestation. (It is also possible to capture CO2 from the air but because of the low concentration of CO2 in the air, the cost is prohibitive. Sequestering the captured CO2 is also expensive, , requiring either mineralization or pressurization in a natural cavern (think Aliso Canyon) which is not present in Berkeley.)

Berkeley is 10.5 square miles. If 40% is impervious surfaces, then approximately 6.3 square miles would be available for carbon sequestration.

(https://en.wikipedia.org/wiki/Impervious_surface#Total_impervious_area) If the City and its residents were to implement ambitious carbon building land management practices, the land could optimistically sequester 2 metric tons of CO2 per acre annually or about 8000 metric tons of CO2.(Soil Carbon Restoration: Can Biology do the Job? by Jack Kittredge, policy director, NOFA/Mass www.nofamass.org August 14, 2015) This compares to annual emissions of approximately 640,000 metric tons.

Purchasing carbon offsets: Carbon offsets cost between $5.50 and $29 per ton of CO2. Taking the average, it would cost $1.1 mill to offset 640,000 metric tons or about $90 per resident. (https://www.whatitcosts.com/carbon-offsets-cost-prices/) However, purchasing carbon offsets should be discouraged since it transfers money away from Berkeley without addressing our local objective of becoming fossil free.

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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

ANNOTATED AGENDA BERKELEY
CITY COUNCIL MEETING
Tuesday, June 12, 2018
6:00 P.M.

COUNCIL CHAMBERS - 2134 MARTIN LUTHER KING JR. WAY

JESSE ARREGUIN, MAYOR

Councilmembers:

DISTRICT 1 – LINDA MAIO
DISTRICT 2 – CHERYL DAVILA
DISTRICT 3 – BEN BARTLETT
DISTRICT 4 – KATE HARRISON
DISTRICT 5 – SOPHIE HAHN
DISTRICT 6 – SUSAN WENGRAF
DISTRICT 7 – KRISS WORTHINGTON
DISTRICT 8 – LORI DROSTE

Council Consent Items

30. Fossil Fuel Free Berkeley
From: Councilmember Davila, Mayor Arreguin, and Councilmember Harrison
Recommendation: Refer to the Energy Commission and Transportation Commission the proposed resolution to further implementation of the Climate Action Plan and establish the goal of becoming a Fossil Fuel Free Berkeley: - Establish a date by which we are committed to being a Fossil Fuel Free City. - Oppose further transportation of oil, gas, and coal. - Strengthen green building requirements for newly constructed city facilities, and major renovations, including the potential for Zero Net Energy and further integration of considering climate impacts in capital planning projects. Current requirements are LEED Silver, which are far below what we require for new buildings in the Downtown. - All future City government procurements of vehicles should minimize emissions and set a goal of transitioning the city's vehicle fleet to all electric vehicles. - Establish a goal of transitioning to 100% renewable energy for municipal operations and community wide goal of 100% reductions by 2030. - Formally oppose recent expansion of offshore drilling by the Trump Administration. - Call for region-wide solutions to carbon emissions, including rapid adoption of renewable energy sources, affordable densification of cities and low-emissions public transportation infrastructure.
Financial Implications: Unknown
Contact: Cheryl Davila, Councilmember, District 2, 981-7120

Action: Moved to Action Calendar. 8 speakers. M/S/C (Harrison/Wengraf) to approve the recommendations in Item 30 and Item 49 as amended in the revised items submitted by Councilmember Hahn. Councilmembers Davila (Chair), Harrison, and Hahn appointed to Ad Hoc Committee.
Revised Recommendation for Item 30:
Refer 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.*
- *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.*

Vote: Ayes – Maio, Davila, Harrison, Hahn, Wengraf, Worthington, Droste, Arreguin; Noes – None; Abstain – None; Absent – Bartlett.

Councilmember Cheryl Davila
District 2

CONSENT CALENDAR
June 12, 2018

To: Honorable Mayor and Members of the City Council
From: Councilmember Cheryl Davila, Mayor Jesse Arreguin and Councilmember Kate Harrison
Subject: Fossil Fuel Free Berkeley

RECOMMENDATION

Refer to the Energy Commission and Transportation Commission the proposed resolution to further implementation of the Climate Action Plan and establish the goal of becoming a Fossil Fuel Free Berkeley:

- Establish a date by which we are committed to being a Fossil Fuel Free City.
- Oppose further transportation of oil, gas, and coal.
- Strengthen green building requirements for newly constructed city facilities, and major renovations, including the potential for Zero Net Energy and further integration of considering climate impacts in capital planning projects. Current requirements are LEED Silver, which are far below what we require for new buildings in the Downtown.
- All future City government procurements of vehicles should minimize emissions and set a goal of transitioning the city's vehicle fleet to all electric vehicles
- Establish a goal of transitioning to 100% renewable energy for municipal operations and community wide goal of 100% reductions by 2030.
- Formally oppose recent expansion of offshore drilling by the Trump Administration.
- Call for region-wide solutions to carbon emissions, including rapid adoption of renewable energy sources, affordable densification of cities and low-emissions public transportation infrastructure.

FISCAL IMPACTS OF RECOMMENDATION

Unknown

ENVIRONMENTAL SUSTAINABILITY

Establishing the goal of achieving a Fossil Free City, and strengthening green building, city vehicle procurement, and renewable energy initiatives will further implementation of the Climate Action Plan.

BACKGROUND

On June 1, 2017, the 45th president and administration announced its intention to pull the United States out of the Paris Agreement, reached by 194 countries at the United Nations Conference of Parties 21 meeting in November, 2015. This action undercuts commitments the United States has made to our global partners and to United States citizens to combat climate change and reduce our GHG emissions. The 45th Administration has removed "global warming" and "climate change" content from many Federal agency websites and has proposed to cut funding for Federal research on clean energy, energy efficiency, clean fuels and clean transportation.

The Interior Department recently proposed opening Federal waters to new leases for oil and gas drilling, including off the coast of California. These and other reckless climate denial actions by the current federal Administration create tremendous risk and instability to the world's efforts to forestall climate catastrophe now and for future generations. It is now critical that cities double our climate commitments and actions. Cities must say no to new or expanded fossil fuel projects/use and move more rapidly to 100% clean energy. The City of Berkeley must accelerate and expand our leadership on issues laid out in our Climate Action Plan. This resolution is modeled after a resolution passed in Portland, Oregon and is part of the Fossil Fuel Free campaign by 350.org.

CONTACT PERSONS

Councilmember Cheryl Davila 510.981.7120

RESOLUTION NO. ##,###-N.S.

ESTABLISHING A GOAL OF ACHIEVING A FOSSIL FREE CITY

WHEREAS, the City of Berkeley Climate Action Plan has commendable goals of 33% reduction in greenhouse gases compared to 2000 by 2020 and 80% reduction by 2050; and

WHEREAS, the December 7, 2017 report from City staff shows only a 12% reduction as of 2015, indicating that the City is well behind in achieving both its 2020 and 2050 goals; and

WHEREAS, global temperatures are rising at an accelerating rate, averaging 0.9°C above 1950 - 1981 temperatures in 2017 according to NASA, and could reach the UN limit of 1.5°C as early as 2032 at the current rate of increase; and

WHEREAS, the current warming is already leading to an increase in heat waves, wildfires, floods, droughts, stronger hurricanes, extreme weather, and rising oceans, climate refugees, and

WHEREAS, the State of California has a goal to reduce greenhouse gases by 40% by 2030 but is also making insufficient progress towards achieving that goal, and

WHEREAS, this resolution is intended to substantially further both the City of Berkeley and the State goals, and

WHEREAS most of the greenhouse gases that have accumulated in the atmosphere can be attributed to the consumption of fossil fuels that companies such as Chevron, Exxon, BP, Shell, ConocoPhilips extracted, refined, transported, and sold; and

WHEREAS the processes by which Chevron, Exxon, BP, Shell, ConocoPhilips extract, refine, transport, market and/or sell fossil fuels in California generally and in Berkeley specifically create pollution that causes severe environmental harms that also constitute grave environmental injustices, and threaten catastrophic harms in Berkeley such as sea level rise, drought, and wildfires; and

WHEREAS fossil fuel companies have systematically distorted climate science, lied about climate change, and misled the public about the dangers of fossil fuels in order to impede any transition from fossil fuels to clean energy in California generally and in Berkeley specifically; and

WHEREAS, transportation of coal using open top rail cars results in significant volumes of materials escaping during transit, exposing local communities to toxic heavy metals in coal dust and particulates at levels potentially harmful to adjacent communities, workers, wildlife and nature; and

WHEREAS, investments in clean energy solutions create more jobs than fossil fuels and spur innovation and growth of the U.S. clean energy economy; and

WHEREAS, local, regional and global economies are transitioning to low-carbon energy sources, and businesses are leaders in providing renewable energy and energy efficiency; and

WHEREAS, dozens of American communities have passed resolutions addressing fossil fuel industry expansion, and hundreds of public officials, including governors, state and federal agencies, tribes, health organizations, religious leaders and other community leaders, have recognized the harms presented by fossil fuels to our environment and our communities; and

WHEREAS the Federal government is the nation's largest emitter of greenhouse gas and is currently governed by an administration committed both to fossil fuels and to climate denial; and

WHEREAS, Berkeley's first preference for meeting energy needs is energy efficiency, and the City remains committed to acquiring at a minimum all cost-effective energy efficiency available with a particular focus on achieving energy efficiency in low-income housing; and

WHEREAS, the transportation sector accounts for 56 percent of greenhouse gas emissions in the City of Berkeley, and significant reductions in emissions from transportation are essential to achieving our climate-protection goals; and

WHEREAS, electrifying car, truck, and bus fleets will bring environmental and economic benefits to local residents, including lower cost transportation options for low income households; and

NOW THEREFORE BE IT RESOLVED that the City of Berkeley will actively oppose the expansion of fossil fuel infrastructure, including but not limited to those owned and/or operated by Chevron, Exxon, BP, Shell, ConocoPhilips, the primary purpose of which is to extract, refine, transport or store fossil fuels in or through city limits or adjacent waterways, including offshore drilling and;

NOW THEREFORE BE IT RESOLVED, that the City of Berkeley shall commit to a goal of 100% clean, carbon-free energy and a 100% reduction in total greenhouse gas emissions, including from transportation and buildings, as soon as possible and no later than 2030.

BE IT FURTHER RESOLVED, all future government procurements of vehicles should minimize emissions and phase-out the internal combustion engine as soon as possible; and

BE IT FURTHER RESOLVED, the City of Berkeley opposes the rollback of climate policy at the federal level and affirms its ongoing commitment to the goals of the Paris Climate Agreement and the City's responsibility to meet its proportionate greenhouse gas reductions for the United States under the Paris Climate Agreement; and

BE IT FURTHER RESOLVED, the City of Berkeley will establish a goal of supplying 100 percent of electricity for City operations from renewable energy by 2022 through a combination of on-site renewable electricity generation, utility-supplied renewables, dedicated off-site renewable resources, and renewable energy credit (REC) purchases; and

BE IT FURTHER RESOLVED, the City of Berkeley will prioritize renewable resources over the purchase of RECs with the intention of reducing reliance on RECs during the transition to 100% renewable resources over time; and

BE IT FURTHER RESOLVED, the City of Berkeley will prioritize community-based development of renewable energy infrastructure and should make investments in community based organizations to build capacity to lead such development to meet 100% renewable community-wide energy needs including transportation, heating, and electricity via such infrastructure; and

BE IT FURTHER RESOLVED, the City of Berkeley will partner with labor unions, and others to develop training and retraining programs to serve workers who would be displaced by this transition or workers who would otherwise be working in the energy field so that they are well-equipped for the "renewable energy" economy; and

BE IT FURTHER RESOLVED, a renewable energy transition is an opportunity to redress historical inequities in our community and must be just. This means, in part, prioritizing the resources to train and hire people from within communities of color and women that have traditionally been underrepresented in renewable energy, energy efficiency, and the workforce needed to implement a successful renewable energy transition; and

BE IT FURTHER RESOLVED, City projects and procurements under this proposal will use proven policies to ensure the jobs created are high-quality, family-wage jobs that meet our high standards of workforce inclusion for women and communities of color; and

BE IT FURTHER RESOLVED, the City of Berkeley will partner with energy providers and to accelerate the transition to renewable energy and minimize dependence on fossil fuels, expressing the City's preferences for resources consistent with its renewable energy goals and opposition to any new fossil fuel power project; and

BE IT FURTHER RESOLVED, the City of Berkeley urges utility companies to maximize energy efficiency, demand control technologies, energy storage, and renewable energy and avoid any new commitments to ownership of or long-term contracts from non-renewable sources; and

BE IT FURTHER RESOLVED, the City of Berkeley will partner with energy providers and community-based organizations to adopt policies that reduce the cost-burden for low-income customers, and make incentives available to foster equality in energy burdens as a percent of household incomes; and

BE IT FURTHER RESOLVED, the City of Berkeley urges the governor of California to adopt a 100% renewable energy goal that will continually update as new scientific findings are discovered that change our timeline and support SB 100.

ANNOTATED AGENDA
BERKELEY CITY COUNCIL MEETING
Tuesday, June 12, 2018
6:00 P.M.

COUNCIL CHAMBERS - 2134 MARTIN LUTHER KING JR. WAY

JESSE ARREGUIN, MAYOR

Councilmembers:

DISTRICT 1 – LINDA MAIO
DISTRICT 2 – CHERYL DAVILA
DISTRICT 3 – BEN BARTLETT
DISTRICT 4 – KATE HARRISON
DISTRICT 5 – SOPHIE HAHN
DISTRICT 6 – SUSAN WENGRAF
DISTRICT 7 – KRISS WORTHINGTON
DISTRICT 8 – LORI DROSTE

49. Declaration of Climate Emergency
From: Councilmembers Davila and Harrison
Recommendation: Adopt a Resolution endorsing the declaration of a Climate Emergency and partner with institutions, organizations, community groups, businesses, neighboring city and county governments to plan and organize a regional Climate Emergency Town Hall.
Financial Implications: Unknown
Contact: Cheryl Davila, Councilmember, District 2, 981-7120
Action: 8 speakers. M/S/C (Harrison/Wengraf) to approve the recommendations in Item 30 and Item 49 as amended in the revised items submitted by Councilmember Hahn. Councilmembers Davila (Chair), Harrison, and Hahn appointed to Ad Hoc Committee.
Revised Recommendation for Item 49:

Adopt Resolution No. 68,486–N.S., amended to change "citizens" to "residents," endorsing the declaration of a Climate Emergency and commit the City Council to partner with institutions, organizations, community groups, businesses, and neighboring city and county governments to plan and organize a regional Climate Emergency Town Hall, and carry forward the Climate Action Resolutions.

Refer 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.

Establish a Council Ad Hoc Subcommittee to organize a Global Climate Action Summit and undertake other actions outlined in the Resolution, and appoint a Subcommittee Chair.

Vote: Ayes – Maio, Davila, Harrison, Hahn, Wengraf, Worthington, Droste, Arreguin; Noes – None; Abstain – None; Absent – Bartlett.

Councilmember Cheryl Davila
District 2

ACTION CALENDAR
June 12, 2018

To: Honorable Mayor and Members of the City Council
From: Councilmembers Cheryl Davila and Kate Harrison
Subject: Declaration of Climate Emergency

RECOMMENDATION
Adopt a Resolution endorsing the declaration of a Climate Emergency and partner with institutions, organizations, community groups, businesses, neighboring city and county governments to plan and organize a regional Climate Emergency Town Hall.

FISCAL IMPACTS OF RECOMMENDATION
Unknown

ENVIRONMENTAL SUSTAINABILITY
Declaration of a Climate Emergency, and a regional Climate Emergency collaborative will further the City's environmental sustainability goals.

BACKGROUND
Human activities have warmed the Earth enough to end the 12,000-year period of climate stability that allowed agriculture and human civilization to develop. Global warming has already set in motion catastrophic changes to the Earth system, including accelerating ice mass loss from the Greenland and West Antarctic Ice Sheets and the thawing of the borders of the vast Arctic permafrost, which holds twice as much stored carbon as the entire atmosphere. NASA scientists have concluded that the complete collapse of the Greenland Ice Sheet alone could raise sea levels 23 feet, creating several billion climate refugees and a "global-scale catastrophe." The arctic ice sheet went above freezing in winter of 2017 indicating near term melt. With the Trump administration aggressively thwarting our ability to prevent climate catastrophe, our situation is dire. Over 19,000 scientists have signed a Second Warning to Humanity proclaiming that "a great change in our stewardship of the Earth and the life on it is required if vast human misery is to be avoided"; The global economy's overshoot of ecological limits and, increasingly climate change, are driving a global fresh water scarcity crisis and the sixth mass extinction of species, which could devastate much of life on earth for the next 10 million years. All this and more demonstrate we are in the midst of a climate emergency.

CONTACT PERSONS
Councilmember Cheryl Davila 510.981.7120

RESOLUTION NO. ##,###–N.S.

RESOLUTION ENDORSING THE DECLARATION OF A CLIMATE EMERGENCY

WHEREAS, human activities have warmed the Earth enough to end the 12,000-year period of climate stability that allowed agriculture and human civilization to develop;

WHEREAS, the world came together in December 2015 to address the end to this period of climate stability due to global warming, agreeing to keep warming to "well below 2°C above pre-industrial levels" and to "pursue efforts to limit the temperature increase to 1.5°C";

WHEREAS, in 2017 the global surface temperature was over 1°C warmer than the pre-industrial base period;[1]

WHEREAS, global warming has already set in motion catastrophic changes to the Earth system, including accelerating ice mass loss from the Greenland and West Antarctic Ice Sheets and the thawing of the borders of the vast Arctic permafrost, which holds twice as much stored carbon as the entire atmosphere;

WHEREAS, according to the latest climate projections, humanity is on track to warm the Earth a sustained average of 1.5°C above pre-industrial levels as soon as 2026;[2]

WHEREAS, the Greenland Ice Sheet, which is likely to completely collapse at 1.6°C warming, which NASA scientists have concluded would lead to 23 feet of sea-level rise, billions of climate refugees, and a "global-scale catastrophe";

WHEREAS, it is estimated that sustained 1.5°C warming could cause a long-term, "continuous thaw" of the Arctic permafrost, which could turn the tundra from carbon sink into source in the 2020s;

WHEREAS, such tipping points must be avoided at all costs, as they will have positive feedback effects on the climate system, causing further and increasingly uncontrollable global warming;

WHEREAS, failure to uphold the Paris goal of keeping warming "well below 2°C" would lead to the disappearance of island nations and "certain death" for Africa, Chief Negotiator for the G77 Lumumba Stanislaus Di-Aping warned in 2009;

WHEREAS, over 19,000 scientists have signed a Second Warning to Humanity proclaiming that "a great change in our stewardship of the Earth and the life on it is required, if vast human misery is to be avoided";

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[1] Hansen, James, et al., Global Temperature in 2017 (18 January 2018).

[2] See, *inter alia,* Henley, B. J., and A. D. King (2017), *Trajectories toward the 1.5°C Paris target: Modulation by the Interdecadal Pacific Oscillation*, Geophys. Res. Lett., 44, 4256–4262, doi: 10.1002/2017GL073480; Jacob, D. , Kotova, L. , Teichmann, C. , Sobolowski, S. P., Vautard, R. , Donnelly, C. , Koutroulis, A. G., Grillakis, M. G., Tsanis, I. K., Damm, A. , Sakalli, A. and van Vliet, M. T. (2018), *Climate Impacts in Europe Under +1.5°C Global Warming*. Earth's Future, 6: 264-285. doi:10.1002/2017EF000710

WHEREAS, it is estimated that humanity currently uses the equivalent of about 1.6 earths per year in resource consumption and waste disposal, a figure that is headed toward 3 earths per year in 2030;

WHEREAS, the global economy's overshoot of ecological limits and, increasingly, climate change are driving a global fresh water scarcity crisis and the sixth mass extinction of species, which could devastate much of life on Earth for the next 10 million years;

WHEREAS, England's chief scientific advisor has warned that humanity faces a "perfect storm of global events" by 2030 as climate change, population growth, and growing demand for food, energy and fresh water incites violent conflict over diminishing resources that are essential to human life and dignity;

WHEREAS, climate change has been called a "threat multiplier" that exacerbates pre-existing tensions and political instability in regions across the globe by both the United States Department of Defense and North Atlantic Treaty Organization, and has been linked to the Syrian war, the rise of Boko Haram in Nigeria, as well as the famines, water shortages, and resulting conflict in Yemen, Somalia, and South Sudan;

WHEREAS, climate-fueled droughts, famines, and diseases have already killed millions of people in the Global South, and displaced millions more;[3]

WHEREAS, indigenous and low-income communities and communities of color in the United States and abroad have suffered the gravest consequences of the extractive economy since its inception;

WHEREAS, according to the National Centers for Environmental Information (NCEI), in 2017, "the U.S. was impacted by 16 separate billion-dollar disaster events tying 2011 for the record number of billion-dollar disasters for an entire calendar year," with a cumulative cost of $309.5 billion, shattering the previous U.S. annual record cost of

$219.2 billion in 2005 due to Hurricanes Dennis, Katrina, Rita and Wilma;[4]

WHEREAS, the death and destruction already wrought by global warming of 1°C demonstrate that the earth is already too hot for safety and justice;

WHEREAS, it is an act of unspeakable injustice and cruelty to knowingly subject our fellow humans now and into the future to societal disintegration, food and clean water shortages, economic collapse, and early death on an increasingly uninhabitable planet;

WHEREAS, Pope Francis has declared that humanity is on the verge of a "global

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[3] A 2009 report estimated that "climate change causes 400,000 deaths on average each year today, mainly due to hunger and communicable diseases that affect above all children in developing countries." It further noted, "Our present carbon-intensive energy system and related activities cause an estimated 4.5 million deaths each year linked to air pollution, hazardous occupations and cancer." A Guide to the Cold Calculus of a Hot Planet, Climate Vulnerability Monitor 2nd Edition.

[4] In fact, NCEI notes, "2017 arguably has more events than 2011 given that [its] analysis traditionally counts all U.S. billion-dollar wildfires, as regional-scale, seasonal events, not as multiple isolated events." NOAA NCEI U.S. Billion-Dollar Weather and Climate Disasters (2018).

suicide," noting that we will destroy ourselves if we destroy God's creation, and has called for a life-sustaining economy;

WHEREAS, common sense and morality indicate that humanity can no longer safely emit greenhouse gases and must seek to draw down the excess carbon from the atmosphere in order to restore a safe level of greenhouse gas concentrations and global average temperatures well below today's levels and back to preindustrial levels as quickly as possible;

WHEREAS, reversing global warming and restoring a safe and stable climate requires an emergency mobilization to reach zero greenhouse gas emissions across all sectors at wartime speed, to rapidly and safely drawdown or remove all the excess carbon from the atmosphere, and to implement safe measures to protect all people and species from the consequences of abrupt warming in the near-term;

WHEREAS, reversing ecological overshoot and halting the sixth mass extinction requires an effort to preserve and restore half Earth's biodiversity in interconnected wildlife corridors and to humanely stabilize population. as well as a shift toward a climate-resilient society and culture that prioritize conservation, community, and mutual aid over consumerism and narcissism;

WHEREAS, justice requires that those countries, classes, and industries that have contributed the most to this global climate and ecological cataclysm carry a commensurate burden in reversing it and protecting those most impacted from the lethal impacts already underway;

WHEREAS, justice also requires, in developing and carrying out the emergency mobilization to restore a safe climate, the active consultation, participation, and protection of communities that have historically borne the brunt of the extractive economy;

WHEREAS, the United States of America has disproportionately contributed to the climate and ecological crises and to preventing a transition away from fossil fuels, and Americans thus bear an extraordinary responsibility to solve the crises;

WHEREAS, as a part of the United States, the community of Berkeley and surrounding counties, despite well-meaning efforts, have disproportionately contributed to dangerous greenhouse gas emissions and thus must substantially curtail use of fossil fuels and greenhouse gas emissions on behalf of the larger planetary community to enable a rapid, just transition to a stable climate;

WHEREAS, severe rainfall in February 2017 across northern and central California resulted in at least five deaths and an estimated $1.5 billion in damage, including to the Oroville Dam spillway, causing a multi-day evacuation of 188,000 residents, and to the city of San Jose, flooding neighborhoods and forcing 14,000 residents out of their homes.

WHEREAS, the October 2017 Northern California wildfires caused more than $9.4 billion in damage, destroying over 8,900 structures, displacing many people, killing 44, and injuring another 192;

WHEREAS, we cannot wait for more devastating floods, heatwaves, fires, droughts, rising sea levels, and public health and humanitarian crises that threaten local residents, ecologies, businesses, and the broader Bay Area population to begin the necessary emergency response;

WHEREAS, during World War II, the Bay Area came together across race, age, class, gender and other differences in an extraordinary regional mobilization, building and repairing Liberty ships, converting car assembly plants into tank manufacturing facilities, rapidly switching to mass transit systems, and serving as the most important symbol of freedom in the Pacific Theater during the war as well as the site of the signing of the United Nations Charter at its conclusion;

WHEREAS, the following mayors in the greater Bay Area have committed to adopt, honor, and uphold the Paris agreement, noting, "We will intensify efforts to meet each of our cities' current climate goals, push for new action to meet the 1.5 degrees Celsius target, and work together to create a 21st century clean energy economy . . . The world cannot wait—and neither will we": Mayor Jesse Arreguin of Berkeley, Mayor Peggy McQuaid of Albany, Mayor Trish Herrera Spencer of Alameda, Mayor Charles Stone of Belmont, Mayor Lori S Liu of Brisbane, Mayor Ricardo Ortiz of Burlingame, Mayor Mark Landman of Cotati, Mayor Darcy Paul of Cupertino, Mayor Juslyn Manalo of Daly City, Mayor David Haubert of Dublin, Mayor Janet Abelson of El Cerrito, Mayor John J. Bauters of Emeryville, Mayor Lily Mei of Fremont, Mayor Debbie Ruddock of Half Moon Bay, Mayor Barbara Halliday of Hayward, Mayor Shaun McCaffery of Healdsburg, Mayor Mary Prochnow of Los Altos, Mayor Gary Waldeck of Los Altos Hills, Mayor Marico Sayoc of Los Gatos, Mayor Rob Schroder of Martinez, Mayor Kirsten Keith of Menlo Park, Mayor Reuben D. Holober of Millbrae, Mayor Ken Rosenberg of Mountain View, Mayor Jill Techel of Napa, Mayor Libby Schaaf of Oakland, Mayor Greg Scharff of Palo Alto, Mayor David Glass of Petaluma, Mayor John Seybert of Redwood City, Mayor Jake Mackenzie of Rohnert Park, Mayor Tom Butt of Richmond, Mayor Bob Grassilli of San Carlos, Mayor Mark Farrell of San Francisco, Mayor Sam Liccardo of

San Jose, Mayor Pauline Russo Cutter of San Leandro, Mayor Rick Bonilla of San Mateo, Mayor Lisa M. Gillmor of Santa Clara, Mayor Chris Coursey of Santa Rosa, Mayor Rachel Hundley of Sonoma, Mayor Glenn Hendricks of Sunnyvale, and Mayor Debora Fudge of Windsor;

WHEREAS, the Global Climate Action Summit, the purpose of which is to "bring people together from around the world to showcase climate action and inspire deeper commitments from national governments, and each other, in support of the Paris Agreement," will be held in San Francisco in September 2018;

WHEREAS, the community of Berkeley and surrounding counties have the insight, drive, capacity and capital to take a moral stand and do all we can to restore a safe climate within our own boundaries and on behalf of our planetary community;

WHEREAS, in Berkeley and the broader Bay Area, we can rise to the challenge of the greatest crisis in history by organizing politically to catalyze a national and global climate emergency effort, employing local workers in a mobilization effort building and installing renewable energy infrastructure, growing healthy food that stays in the community, restoring ecosystems, and retrofitting and redesigning our built environment, electric grid, and transportation systems;

WHEREAS, the Global Climate Action Summit presents an unparalleled opportunity for the City of Berkeley and the greater Bay Area to inspire and influence summit attendees to end emissions from all sources at emergency speed through a just mobilization and, in so doing, to affect the course of human history;

WHEREAS, the Berkeley Climate Action Coalition has laid the foundation for a just emergency climate mobilization through its work, including raising the profile of and implementing key goals of the Berkeley Climate Action Plan, championing community choice energy for Alameda County, enhancing Berkeley's biking and pedestrian access by promoting complete streets projects, developing local guidelines and policy to promote vacant lot conversion to community gardens and sponsoring water saving projects and education during record-breaking drought;

WHEREAS, the City of Berkeley can act as a global leader by both converting to an ecologically, socially and economically restorative economy, and by catalyzing a unified regional climate emergency mobilization effort this year; and

1000NOW BE IT THEREFORE RESOLVED, the City of Berkeley declares that we face an existential Climate Emergency that threatens our city, region, state, nation, civilization, humanity and the natural world;

BE IT FURTHER RESOLVED, the City of Berkeley endorses a just citywide emergency mobilization effort to citywide greenhouse gas emissions as quickly as possible and immediately initiates an effort to safely draw down carbon from the atmosphere;

BE IT FURTHER RESOLVED, the City of Berkeley commits to becoming a carbon sink by 2030;

BE IT FURTHER RESOLVED, the City of Berkeley commits to educating our citizens about the climate emergency and working tirelessly to catalyze a just emergency climate mobilization at the local, state, national, and global local to protect our citizens as well as all the people and species of the world;

BE IT FURTHER RESOLVED, the City of Berkeley underscores the need for full community participation and support, and recognizes that the citizens of Berkeley, the Berkeley Climate Action Coalition, the Ecology Center, and other community organizations will be integral to the mobilization effort;

BE IT FURTHER RESOLVED, the City of Berkeley commits to keeping the considerations of disadvantaged communities central to all climate emergency mobilization planning processes and to inviting and encouraging such communities to actively participate in order to advocate directly for their needs;

BE IT FURTHER RESOLVED, the City of Berkeley, in order to ensure a just transition, will consult with environmental justice, economic justice, and racial justice organizations at every step of the climate emergency mobilization planning process;
BE IT FURTHER RESOLVED, the City of Berkeley calls for a Regional Just Transition and Climate Emergency Mobilization Collaborative Effort, inviting concerned citizens, youth, faith, labor, environmental, economic and social justice organizations as well as

other community groups, and all elected officials in and from Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties, and especially all the mayors who have signed on to enact the Paris Agreement, to initiate a just local, state, national, and global climate emergency mobilization to restore a safe climate;

BE IT THERE RESOLVED, the City of Berkeley seeks to partner with local and regional agencies to participate in this regional emergency just mobilization effort and to intensify support of a comprehensive just transition to restore a safe climate;

BE IT FURTHER RESOLVED, the City of Berkeley will coordinate with other organizations and agencies to organize a regional emergency town hall in advance of the September 2018 Global Climate Action Summit to begin to envision the Regional Just Transition and Climate Emergency Mobilization Collaborative Effort;**BE IT FURTHER RESOLVED**, the City of Berkeley calls on the State of California to initiate a just statewide emergency mobilization effort to reverse global warming, which, with appropriate financial and regulatory assistance from Federal authorities, ends statewide greenhouse gas emissions as quickly as possible and immediately initiates an effort to safely draw down carbon from the atmosphere;

BE IT FURTHER RESOLVED, the City of Berkeley calls on the United States of America to initiate a just national emergency mobilization effort to reverse global warming, which ends national greenhouse gas emissions as quickly as possible and immediately initiates an effort to safely draw down carbon from the atmosphere; and

BE IT FURTHER RESOLVED, the City of Berkeley calls on all governments and peoples worldwide to initiate a just global emergency mobilization effort to reverse global warming, which ends global greenhouse gas emissions as quickly as possible and immediately initiates an effort to safely draw down carbon from the atmosphere.

CITY COUNCILMEMBER
RIGEL ROBINSON
DISTRICT 7

04

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,

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[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

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05

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 Arreguín	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.