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SoCalGas Comments on IEPR Workshop: Clean Energy in LIMF Buildings

Please find attached Southern California Gas Company's comments on the 2018 Integrated Energy Policy Report Update Joint Agency Workshop on Clean Energy in Low-Income Multifamily Buildings.

Additional submitted attachment is included below.



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Subject: Comments on the 2018 Integrated Energy Policy Report Update (IEPR) Joint Agency Workshop on Clean Energy in Low-Income Multifamily Buildings, Docket #: 18-IEPR-08

The Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the Clean Energy in Low Income Multifamily Buildings workshop conducted by the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC) as part of the 2018 Integrated Energy Policy Report Update (IEPR) proceeding.

Our comments are organized as follows:

1. Overview of SoCalGas' Energy Savings Assistance Program for Multi-Family Households
2. Corrections to erroneous statements that combustion appliances negatively affect indoor air quality
3. Energy Affordability
 - a. Natural gas provides valuable, low-cost energy to ratepayers
 - b. Information on recent studies demonstrating building electrification results in increased consumer costs
 - c. Costs associated with electric-heat pump use
4. SoCalGas' Efforts to Improve Energy Efficiency in Multi-Family Buildings
 - a. SoCalGas' role in greening affordable multi-family housing in Los Angeles
 - b. Partnership with LINC Housing Corporation
 - c. Lessons learned from LINC project

1. SoCalGas' Energy Savings Assistance Program for Multi-Family Households

SoCalGas' Energy Savings Assistance (ESA) program multi-family offering has expanded to include common area measures in addition to the in-unit energy efficiency (EE), health, comfort and safety measures that the program has historically provided to low-income customers. On March 1, 2018, SoCalGas' Low-income Multi-Family Program Implementation Plan was

approved by the CPUC and outlines SoCalGas' plans to integrate common area measures (including central water and space heating systems) into the standard ESA program offering. Elements of the plan include establishing budgets, integration with EE and other programs through a single point-of-contact, program delivery mechanisms, marketing and outreach, and measurement and evaluation.

In 2017, SoCalGas provided ESA program services to 26,412 low-income multifamily households and looks forward to expanding ESA services to low-income common area measures.

2. Correcting Erroneous Statements that Combustion Appliances Negatively Affect Indoor Air Quality

During the workshop, statements linking poor indoor air quality to combustion appliances were made. We provide clarification and refute statements that natural gas cooking appliances are a public health concern. It is the emissions from the cooking process, and not from burner or heat source operation that represent the chief source of concern with respect to indoor air quality.¹ A recent study by the CEC states that “exposure to pollutants from natural gas can result from three general scenarios:

- Improper or ineffective venting of exhaust gases from appliances required to be vented;
- Using cooking burners without venting or with ineffective venting; and
- Using illegal vent-free heaters or fireplaces.”²

In addition, according to the California Air Resources Board, “[t]he act of cooking itself, whether with gas or electric stovetop burners or ovens, can also generate elevated levels of most of these pollutants, due to heating oil, fat, and other food ingredients, especially at high temperatures ...and [s]tudies have revealed that home air pollutant levels can exceed health-based standards when people are cooking in kitchens with poor ventilation.”³ Without proper ventilation, cooking indoors with either electric or natural gas appliances can create air quality concerns. SoCalGas is committed to customer safety and following all California building code regulations and combustion appliance safety protocols.

¹ California Air Resources Board. Residential Cook Exposure Study Final Report. January 2006. Retrieved from <https://www.arb.ca.gov/research/indoor/cooking/cooking.htm>

² California Energy Commission. October 2017. Emissions, Indoor Air Quality Impacts, and Mitigation of Air Pollutants from Natural Gas Appliances. Retrieved from <http://www.energy.ca.gov/2017publications/CEC-500-2017-034/CEC-500-2017-034.pdf>

³ See “Cooking and Range Hoods,” retrieved on 6/13/2018 from https://www.arb.ca.gov/research/indoor/cooking/cooking_range_hoods.htm

3. Energy Affordability

a. *Natural gas provides valuable, low-cost energy to ratepayers*

Natural gas plays a critical role in disadvantaged communities as a low-cost and relatively low-emission fuel. As the lowest-price fuel source in California, natural gas provides valuable, low-cost energy to ratepayers, including the 33% of SoCalGas residential customers that are enrolled in the California Alternate Rates for Energy program. The economic impact on ratepayers—especially those that are low-income—must be taken into account when considering clean energy strategies. Consider that the average annual household electricity bill is \$1,460, while the annual natural gas bill is \$421.⁴

Additionally, in March 2018, the California Building Industry Association (CBIA) funded a study to poll 3,000 voters across the state to understand what Californians are looking for in their choice of energy for their homes. They found that voters prefer the use of natural gas for heating and cooking in all regions of the state and that they overwhelmingly oppose mandates to get rid of their natural gas appliances, with particular concerns about energy costs and choice.⁵ Natural gas provides valuable, low-cost energy to ratepayers.

b. *Building Electrification Results in Increased Costs*

Without natural gas in the home, the cost of energy for many consumers could rise: in the CEC’s Pre-Rulemaking on 2019 Building Energy Efficiency Standards docket, an Energy and Environmental Economics, Inc. (E3) study examining building electrification found a \$24 monthly energy bill increase when moving to an all-electric home from a mixed-fuel home,⁶ or approximately \$288 per year. Additionally, E3’s analysis showed that an all-electric home required more energy than a mixed-fuel home.

In March 2018, CBIA funded Navigant Consulting to study the potential costs customers could incur from switching from a mixed-fuel home to an all-electric one.⁷ In Phase I of the study, Navigant looked at existing homes single-family in several Southern California locations. They found that “[s]witching to all-electric appliances would cost CA consumers over \$7200 and increase energy costs by up to \$388 per year.”^{8,9}

⁴ Bureau of Labor Statistics, U.S. Department of Labor. <https://www.bls.gov/opub/ted/2016/household-spending-increased-4-point-6-percent-from-2014-to-2015.htm>

⁵ California Building Industry Association. January 2018. [California Natural Gas Poll](#)

⁶ Energy & Environmental Economics. July 2016. Electrification Analysis. Obtained from CEC Docket Log (16-BSTD-06): Updates to the 2019 Time Dependent Valuation of Energy. Retrieved from <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=16-BSTD-06>

⁷ Navigant Consulting. April 19, 2018. [The Cost of Residential Appliance Electrification, Phase I Report- Existing Single-Family Homes.](#)

⁸ This analysis does not include the cost of necessary infrastructure upgrades to the local and statewide electricity grid to accommodate the additional load on the system.

⁹ Navigant. California Building Industry Association. April 2018. [The Cost of Residential Appliance Electrification, Phase I Report, Existing Single-Family Homes](#)

In order to achieve a 2% decrease in statewide greenhouse gas emissions from residential buildings (6% of current total state GHG emissions),¹⁰ homeowners would need to pay about \$2,600 to purchase and install new electric appliances as well as about \$4,600 to upgrade their home's wiring and electric panels to handle the additional electrical load. Also, the net annual increase in utility costs from increased electrical consumption is up to \$388 per home. The homeowners' \$613-\$877 combined annual cost increase represents about 1-2% of median household income for California customers. This would result an annual cost increase of \$4.3-\$6.1 billion across California's seven million single-family homes.

Navigant will expand the analysis in Phase II to include single-family new homes, multi-family existing homes, additional home locations across the state, as well as 2030 appliance and utility costs.

c. Electric Heat Pumps

During Panel II, Innovative Technologies in Multifamily Building Programs, various remarks around the cost-savings potential associated with electric-heat pump were made. Electric heat pumps have high-up front installation costs and there are technical barriers associated with their implementation. The 2016 "Palo Alto Electrification Final Report," analyzed the impact of electrification of new and existing buildings within the City of Palo Alto. They conclude that electric heat pump water heating and combined heat pump space and water heating packages are not cost effective in existing buildings, primarily due to the costly electrical upgrades required.¹¹

As the majority of housing in California was built before 1980, most residential electrification projects would not be cost-effective due to the costly infrastructure upgrades that would be required. Further, the report notes that building types included in the analyses did not include high-rise residential or large multi-family buildings, which have much higher water and space heating loads. As 31% of California households reside in multi-family homes¹², the feasibility and costs of electric space and water heating in that particular housing type must be evaluated. An additional cost impact of heat pump water heaters is the requirement to install condensate drain lines in older buildings, which may cost thousands of dollars for a multi-family home.¹³ Electric heat pump measures are not cost-effective in existing homes, and require costly infrastructure additions, which could exacerbate housing affordability issues.

Cost-effectiveness concerns for all-electric homes are further compounded by recent field studies where nameplate energy factors of heat pump water heaters were found to be

¹⁰ California Air Resources Board

¹¹ City of Palo Alto. TRC Energy Services. "Palo Alto Electrification Final Report." November 16, 2016. <http://www.cityofpaloalto.org/civicax/filebank/documents/55069>. Pages 15-16.

¹² California Department of Housing and Community Development. February 2018. California's Housing Future: Challenges and Opportunities. Retrieved from: http://www.hcd.ca.gov/policy-research/plans-reports/docs/SHA_Final_Combined.pdf

¹³ Ibid p. 13

significantly higher than actual (for example, “real world” Energy Factor (EF) 1.77 vs. nominal rating of 2.4).¹⁴

Senate Bill 350 calls for improving economic conditions in disadvantaged communities;¹⁵ therefore, the CEC must consider electrification impacts to the affordability of energy and housing for the 43% of California households that are lower income,¹⁶ including over one-third of SoCalGas customers—or 1.5 million households—that receive bill assistance each month.

SoCalGas urges the CEC to continue on the path of balanced energy, allowing builders and designers to utilize all available resources, from higher-efficient energy systems to multiple fuel sources, both for conventional use and renewable generation systems. This approach fosters innovation, competition, and flexibility, while still advancing California’s energy policies. SoCalGas recommends the CEC fund studies to further explore how electric heat pump use would affect utility bill costs to minimize speculation around affordability and determine the associated effects in grid-wide peak shifting and demand response.

4. Improving EE in Multi-Family Buildings

a. Greening Los Angeles’ Affordable Multifamily Housing Stock¹⁷

The single point-of-contact strategy implemented by SoCalGas has produced substantial results since its inception. SoCalGas’ first multi-family account executive started in 2014, and a second position was added in early 2016. This endeavor has resulted in enrollment of more than 5,300 units in SoCalGas’ low-income direct install program across its territories, with over 1,800 units in Los Angeles alone. The SoCalGas multi-family account executive is currently working with 13 portfolios, with over 320 properties representing over 50,000 units across Southern California, and approximately 25% of those are within Los Angeles. Many of these properties are enrolled in SoCalGas’ programs that provide free low-flow showerheads, faucet aerators, and demand-based hot water circulation pump controllers. The account executive’s role, however, goes beyond connecting multi-family customers with SoCalGas’ programs. They also help connect the property owners with the electric and water utilities, including Los Angeles Department of Water and Power (LADWP), Southern California Edison, and other municipal utilities such as the Cities of Riverside, Anaheim, and Pasadena.

SoCalGas’ strategy of implementing a holistic approach in the multi-family sector is predicated on working with, and not on, property owners. SoCalGas acknowledges that there are

¹⁴ Owen Howlett. Sacramento Municipal Utility District. February 27, 2017. Results from a 23-Site Study of HPWHs in Central California. Retrieved from

http://aceee.org/sites/default/files/pdf/conferences/hwf/2017/Howlett_Session3B_HWF17_2.27.17.pdf

¹⁵ California Public Utilities Commission. 2018. Disadvantaged Communities. Retrieved from

<http://www.cpuc.ca.gov/General.aspx?id=6442453417>

¹⁶ California Department of Housing and Community Development. January 2017. *California’s Housing Future: Challenges and Opportunities, Public Draft Statewide Housing Assessment 2025*. Retrieved from

<http://www.hcd.ca.gov/policy-research/plans-reports/docs/California's-Housing-Future-Main-Document-Draft.pdf>

¹⁷ Adapted from American Council for an Energy-Efficient Economy. *It takes a Village: Greening Los Angeles’ Affordable Multifamily Housing Stock*. Lukito and Drake, Southern California Gas Company.

many barriers that a property owner faces in modernizing their buildings, which calls for a multi-layered approach. Not every property can undergo a major building rehabilitation due to financial, logistical, and regulatory constraints. Therefore, property owners that are just getting introduced to sustainability and efficiency could benefit from lighter touches in the form of less extensive, often no cost, solutions that can be implemented right away. This helps build the owners' confidence, and proves the concept of EE through lower utility bills for both owners and tenants. This level of introduction can help lay the foundation for when the major projects are coming down the pike. When that time comes, the utility's EE programs will be there to upsell EE.

There are many reasons why a multi-family property undergoes a major retrofit. Policies and regulations serve as important drivers for major improvements. Refinancing is another opportunity where government policies can provide positive influence. The California Housing Finance Agency, for example, requires a Green Physical Needs Assessment from applicants to its multi-family programs that provide permanent financing for the acquisition of multifamily rental housing. Furthermore, the California Tax Credit Allocation Committee that awards tax credit status for low-income housing in the state, scores and ranks its applicants based on sustainable building measures. All of these policies help create an environment where EE is the expectation. While the policies are intended to push property owners to embrace efficiency and sustainability, the job of pulling the property owners to achieve more than baseline falls on voluntary efforts provided by utility programs or other private and non-profit organizations.

The role of housing advocacy groups in advancing EE and sustainability cannot be understated. Organizations such as the California Housing Partnership Corporation have been very active and vocal in supporting affordable multi-family properties in California in their efforts to green and modernize them. These organizations serve as an important piece in the overall puzzle, and they are part of a network that helps push or pull property owners toward EE and sustainability.

b. Partnership with LINC Housing Corporation

Residents of low-income housing in California often carry the brunt of the State's energy burden, allotting a higher proportion of their income to utility costs compared to other income groups. This is primarily because owners of low-income multi-family housing lack the ability to raise rents and reinvest in a property's EE.

From October 2013 to 2016, SoCalGas partnered with LINC Housing Corporation, Southern California Edison, and others to develop, demonstrate, and document the implementation of deep, near-zero energy retrofits in low-income multi-family properties in California, through a comprehensive turnkey approach including:

- Cost-effective Very Efficient Retrofits (VERs)
- Rigorous monitoring to validate actual savings
- One-stop delivery models
- Resident education

Participants implemented this project at The Village at Beechwood, a 100-unit low-income multi-family property in the City of Lancaster, which has demonstrated and reported cost-effective VER packages and the integration of solar technologies in a low-income multi-family project, reducing annual electricity use by 92%, and natural gas use by 50%.¹⁸

Though not employed for this retrofit project, SoCalGas believes that combination services, using high efficiency condensing tankless gas water heaters to serve both space heating and domestic hot water, should be promoted, as it could provide benefits and improved comfort for low-income multi-family residential new construction.

c. Lessons Learned from LINC Project

Post LINC project implementation, SoCalGas and partners learned a number of helpful insights including which technologies provide the most energy savings as well as those that are difficult to implement. Below is a list.

Technologies with significant energy savings capability:

1. Solar PV on top of carports
2. Pilotless natural gas appliances
3. Condensing and tankless water heaters, natural gas fired
4. Solar thermal collector, evacuated tubes
5. Underground hot water piping insulation retrofit
6. Hot water re-circulator demand controls
7. Building envelop, attic, and roof foam-spray insulation
8. Aerosol duct sealing
9. Smart thermostats (with Wi-fi addition to reap the full benefits)
10. LED indoor and outdoor lighting
11. Property owner act as the energy service company to finance

Technologies considered but that were difficult to implement:

- Common area laundry equipment retrofits or upgrades, such as ozone washers, are not implemented due to the fact that the benefits cannot be split among leasing companies and tenants easily.
- Natural gas engine heat pump type water heater was not implemented, due to owner's unfamiliarity with it and a high initial cost.
- Submetering natural gas appliances and split billing with tenants has a potential to save fuel. A study on this subject is ongoing currently, co-funded by CEC's Public Interest Energy Research program.

Conclusion

SoCalGas thanks the CEC for the opportunity to comment on the Clean Energy in Low Income Multifamily Buildings. We strongly believe that a diverse energy portfolio that includes

¹⁸ Hammon-Hogan, et. al. BIRAenergy, LINC Housing Corporation, Electric Power Research Institute, Southern California Edison, and Electric Power Research Institute. 2016. *Replicable and Scalable Near-Zero Net Energy Retrofits for Low-Income Housing*. Retrieved from http://aceee.org/files/proceedings/2016/data/papers/1_468.pdf

multiple fuels and technologies is necessary to meet California's energy needs and environmental policies in a cost-effective and feasible manner.

Sincerely,

/s/ Tim Carmichael

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