

## DOCKETED

<b>Docket Number:</b>	17-BSTD-01
<b>Project Title:</b>	2019 Building Energy Efficiency Standards PreRulemaking
<b>TN #:</b>	221464
<b>Document Title:</b>	Redwood Energy Comments Gas costs should be included in cost effectiveness study
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*Comment Received From: Sean Armstrong*

*Submitted On: 10/11/2017*

*Docket Number: 17-BSTD-01*

## **Gas costs should be included in cost effectiveness study**

Honorable Commissioners and Staff,

Redwood Energy was asked by the Sierra Club to provide cost estimates for electrifying homes with existing Propane gas services, and based on our experience with electrification retrofit costs on 913 units of housing since 2011, we have documented the additional cost of \$9,000 to \$23,000 of retrofit costs per low and moderate income residence, both apartments and homes, under varying construction strategies and site power limitations.

However, in new Construction we have documented \$3000 per unit savings for homes and \$5000 for houses. This is so much cost savings it actually pays for our ZNE homes and apartments to adopt the full range of measures required for Energy Star for Homes, which is a great model of proven cost-effective measures for the 2019 Code.

Gas infrastructure, however, raises costs in Energy Star for Homes and CTCAC funded housing, where natural combustion safety testing is \$300-500+ per residence. If you go search on-line, you can see that a Rheem SEER 14 Air Conditioner costs \$1800, the same product built with a reversible valve, one more DX and controls logic is called a Heat Pump and goes for \$2000, and the same AC product with a gas burning box at 80-95% Furnaces costs \$2800-\$3000. Adding gas costs more, and you must document this in your work.

Additionally, the current language in the ACM regarding Gas Available for Space Heating is not fuel neutral. We studied an extremely high efficiency, ZNE house in our portfolio (40 built in Williams, 54 built in Selma). In more than half the climate zones in CA it would not get a building permit with Gas Available for Space Heating to the all-electric home. This language works to ban all-electric homes in much of the State, which is an unacceptable outcome from the 50% ZNE 2019 Code. To assume a gas service is in use for space heating just because it is attached to the residence does not comply with how the IOUs set one's electric Baseline--Gas Heat or Electric Heat baselines (e.g. Code B and H in PG&E territory). I electrified my home incrementally, starting with an HVAC heat pump in 2008, which immediately provided an appropriately increased Electric Baseline (Code H) so I could keep my premature twin infants warm. I had Code H for 8 years until I switched my entire house to all-electric on Oct. 9, 2017. This policy exists to ensure low-income people can afford to stay warm, and it is a solid policy of the CPUC. I don't know what justification the CEC is using to warp that IOU billing policy and make it disappear, replacing it with an ACM policy to the gas industry that makes Gas Available for Space Heating almost impossible to avoid anywhere in cities, where 85% of Californians live.

The public perception of SoCalGas and the policies that it has advocated for, such as this ACM language, is being altered by the attached report by the CPUC Office of Ratepayer Advocates. It illustrates that SoCalGas has been working illegally with ratepayer monies and the American Gas Association, via named complicit cooperating energy consulting firms (NegaWatts, Navigant, Bira, GTI) documented with internal emails, to block CEC gas efficiency standards since at least 2014. It illustrates how as recently as this spring it worked with the Trump Administration's roll back of gas furnace efficiency standards in contradiction to the stand of the other California IOUs. The report calls for their 2014 ratepayer expenditures to be clawed back, no funds provided for 2015 and 2016, and SoCalGas to be banned from participating in Code making, rebate program oversight and CASE study management. Absorb that a moment, and then think about reversing whatever they have cunningly advocated for since 2014.

In light of the uncovered internal dialogue of SoCalGas Codes and Standards leadership, staff and consultants, I am

challenging the gas supporting, non fuel-neutral elements of the 2019 Code as wrong-headed and reflecting professional criminality revealed in the ORA submittal to the CPUC's San Joaquin proceedings. I encourage your organization to do the same. As it is, the CEC has not succeeded in providing a ZNE 2020 Code, only a 50% ZNE Code based in accommodation and deference to the illegal efforts by SoCalGas and the rules and rates that have responded to their advocacy. Why this failure, after ten years of preparation, is a question that takes on a different flavor in light of the ORA report.

I encourage your Commission and Staff to endeavor to make a fuel neutral Code, where all-electric homes are understood to be the implicit goal of AB 32 and COP21. It is not yet, but it could be.

Sincerely,  
Sean Armstrong  
Redwood Energy

*Additional submitted attachment is included below.*



California Energy Commission  
Building Standards Office  
1516 Ninth St.  
Sacramento, CA

**Re: 2019 Building Energy Efficiency Standards Development  
Docket # 16-BSTD-06**

April 21, 2017

Dear Christopher Meyers,

Stone Energy Associates appreciates the opportunity to submit comments related to the development of the 2019 Building Energy Efficiency Standards.

As the Commission and the utilities perform cost effectiveness analysis for each CASE proposal and potential measure for the 2019 Standards, it has stated the goal of being fuel neutral. To accomplish that the Commission should include all incremental costs for measures under consideration. Because electricity is required for all buildings (with possible rare exceptions), the cost of electrical service to a building is not incremental for any measures. Incremental line (wire) sizing, additional breakers, and additional wiring should be considered, but everything outside of the building is a basic requirement.

Since all-electric buildings are an option, the cost of providing natural gas service should be accounted for in the cost effectiveness analysis for gas water heating and gas space heating in dual-fuel buildings. To ignore that cost when gas appliances are not essential, favors gas rather than being fuel neutral.

As pointed out by Commissioner Hochschild in an article in the San Francisco Chronicle (May 20, 2016), progressive builders have already discovered that it is less expensive to build new homes without gas service. "By avoiding the need to install gas pipelines under the streets and inside homes, these forward-thinking builders are able to reduce the price of the home by \$4,500," according to Hochschild.

The gas infrastructure costs can be thought of as falling within one of four categories:

- Distribution main lines under the street,
- Gas meter and connection to the main,
- Gas piping within the building, and
- Exhaust venting.

Some data may be available that would allow the Commission to separate the cost of extending gas distribution lines from the cost of a connection to the main and installation of the gas meter.

Nehemiah Stone  
**916 633-1225**  
nehemiah@  
StoneEnergyAssc.com




P.O. Box 324  
Loomis, CA 95650

[www.StoneEnergyAssc.com](http://www.StoneEnergyAssc.com)

The preponderance of data we have been able to gather combines those two costs. The table below shows that there is a wide range in costs. The two contractor quotes are for trenching and piping between the main and the building, but do not include the utility company's price for connecting the main and installing the meter. EPRI's estimate was intentionally conservative.

Price Quote	Source
\$8841 (single-family)	Palo Alto
\$17,634 (8-unit MF)	Palo Alto
\$1000 (single-family)	EPRI for SMUD
\$600 (per unit of MF)	Contractor quote, north coast
\$2000 (per bldg. of MF)	Contractor quote, north coast
\$14,768 (single-family)	PG&E, Richmond
\$10,000 (MF)	Pasadena

The most complete costing available to us is the PG&E contract proposal in Richmond.



**Residential Rule 16 Gas and Electric Single Service Extensions\***

November 21, 2016

[Redacted Address] LAFAYETTE, CA 94549

Dear [Redacted Name],

We are writing to let you know Pacific Gas and Electric Company (PG&E) will extend its facilities to provide residential gas and electric service to the project address listed above. This letter, including PG&E's tariffs, which are incorporated by reference below, will serve as our contract. As required by the California Public Utilities Commission (CPUC), special facilities will be handled in a separate contract. Please complete the following three steps to execute this contract.

For Internal Use

Notification # [Redacted]

Contract # [Redacted]

E-PM # [Redacted]

G-PM # [Redacted]

Prior MLX/PM# [Redacted]

Cust # [Redacted]

Re: [Redacted] RICHMOND, 94801

**1 Review the following project cost summary information.**

	GAS	ELECTRIC
<b>Total Service Costs</b>	<b>\$14,768.82</b>	<b>\$0.00</b>
Residential allowance, a CPUC-approved credit applied to the cost of the job	- \$1,498.00	- \$0.00
Advance payment credit	- \$1,500.00	- \$0.00
Subtotal:	\$11,770.82	\$0.00
<b>Total Due (gas and electric)</b>	<b>\$11,770.82</b>	

All amounts include the Income Tax Component of Contribution (ITCC) PG&E is required to charge customers, where applicable.

**ADDITIONAL INFORMATION**

**What is the SACAC form?**  
Under PG&E's Rule 16, you have a choice: you can perform the work yourself, hire a qualified contractor to perform the work or hire PG&E to do the work. We are required by the CPUC to provide you with PG&E's costs.

This form identifies our cost for the refundable service that is PG&E's responsibility to install. PG&E's costs were developed based on your choices within the application and may change if you change that choice.

**How do I fill out the SACAC?**  
If you want to do this work yourself or have a qualified contractor do this work, please enter your estimated costs in the section of the SACAC form.

Cost estimates for installing gas piping within residential buildings varies nearly as much as the costs for getting the gas to the building. Some of the estimates are derived from estimating web sites, and some are quotes from plumbing contractors on specific projects.

Nehemiah Stone  
**916 633-1225**  
 nehemiah@  
 StoneEnergyAssc.com



P.O. Box 324  
 Loomis, CA 95650  
[www.StoneEnergyAssc.com](http://www.StoneEnergyAssc.com)

Price Quote/Estimate	Source
\$578 - \$718 (single family)	Homewyse Web Site
\$300 - \$1000 (single family)	Costhelper.com
\$259 - \$733 (single family)	homeadvisor.com
\$200 - \$500 (single family)	Fixr.com
\$550 (single family)	EPRI for SMUD
\$200/fixture (MF)	Contractor quote, north coast
\$200-\$300/fxtr. (MF)	Contractor quote, Pasadena

For a 40-unit apartment building where each unit has a gas water heater, gas furnace, and gas stove, the contractor quotes result in a cost between \$24,000 and \$36,000. While the cost of additional wiring to install heat pumps and an electric stove must be considered, in comparison, those costs are much lower (roughly 1/3 lower by some estimates).

KB Homes and City Ventures provided the Commission with a combined-cost figure of \$4500 net savings per single family home for going all-electric. Redwood Energy's experience with multifamily projects is that the net cost savings per unit for avoiding gas infrastructure in multifamily new construction ranges between \$2000 and \$3000 per dwelling unit.

These data should be considered indicative of the need to better understand the true costs of gas water heating and gas space heating. Though some of the data points are actual bids, the data set is not large enough to be considered definitive. The Commission should gather more data from more regions of the State, and across a wider range of building types and builders.

In light of the tragedy at San Bruno, the explosion in Woodside the next year, one in Fresno two years ago, a gas line explosion in Stanislaus County last year, and two gas (propane) explosions near Kirkwood in March of this year, as well as the climate impacts associated with burning gas and fugitive emissions from gas pipelines and storage like Aliso Canyon, it is important that the Standards not favor dual-fuel construction by ignoring some of the costs.

Therefore, Stone Energy Associates respectfully requests that the Building Standards Office:

1. Include the cost of all gas infrastructure in cost-effectiveness analysis while evaluating CASE proposals,
2. Base analysis on an independent evaluation of the costs of bringing natural gas down the street, piping from the main to buildings, and piping within the building, and
3. Consider including risk values for fires and explosions caused by either electrical service or natural gas service.

Thank you for considering these comments. Please let me know if any clarification is needed.

Sincerely,



Nehemiah Stone

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 StoneEnergyAssc.com



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