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Sierra Club, Earthjustice, and RMI Response to Industry Coalition

Additional submitted attachment is included below.

Docketed in 19-BSTD-03

September 29, 2020

California Energy Commission
Docket Office, MS-4
1516 Ninth Street
Sacramento, CA 95814

Re: Response to Industry Coalition Opposition to All-Electric Baseline (Docket No. 19-BSTD-03)

Dear Commissioners and Staff:

This letter responds to a series of misguided arguments proffered by building industry stakeholders ("Industry Coalition") urging the California Energy Commission ("Commission") to maintain the status quo of new construction, which is reliant on gas and the further expansion of fossil fuel infrastructure. As recent events have made clear, the continued combustion of fossil fuels has come at enormous cost to California. As recently stated by Governor Newsom, "Across the entire spectrum, our goals are inadequate to the reality we're experiencing."[1] The Commission must rise to this moment and do everything within its authority to address the climate crisis and end reliance on fossil fuels. One of the most direct and meaningful actions the Commission can take is adopting an all-electric 2022 building code. We do not have the luxury of delay. Stalling the adoption of an all-electric building code until the 2025 building code cycle would result in an additional 3 million tons of greenhouse gas pollution by 2030.[2] It would also forgo a critical policy tool to accelerate the market transformation of electrification technologies that are essential to achieving widespread building electrification and the resulting public health and climate benefits.

[1] Sammy Roth, *Boiling Point newsletter: Gavin Newsom joust promised 'giant leaps forward' on climate. Will he follow through?*, LA Times (Sept. 17, 2020), https://www.latimes.com/environment/newsletter/2020-09-17/gavin-newsom-just-promised-giant-leaps-forward-on-climate-will-he-follow-through-boiling-point.

[2] Rocky Mountain Institute, *California Can't Wait on All-Electric New Building Code* (July 28, 2020), https://rmi.org/california-cant-wait-on-all-electric-new-building-code/.

Moreover, contrary to the unsupported claims in the Industry Coalition response, multiple analyses have concluded that all-electric new construction reduces the cost of new construction avoids the stranded asset consequences of continued expansion of fossil fuel infrastructure. With climate, air quality, public health, and cost benefits, all-electric new construction is a win for Californians and an essential action to demonstrate climate leadership at this critical time. We urge the Commission to meet this moment with the urgency it demands and end the building sector's damaging legacy of fossil fuel reliance by setting an all-electric baseline for new construction in the 2022 Building Code.

A. Commission Adoption of An All-Electric Baseline in this Building Code Cycle is an Urgent and Necessary Measure to Address the Climate Emergency.

The Industry Coalition asserts it does not "take issue with California's decarbonization goals" yet urges the Commission to delay meaningful climate action until the 2025 code cycle to allow for further study of well-settled issues. California cannot afford further delays in taking the necessary measures to end its reliance on fossil fuels. As long as buildings continue to burn gas, there is no legitimate path to eliminating their contribution to climate change. As the Commission determined close to two years ago in the 2018 Integrated Energy Policy Report ("IEPR"), "[t]here is a growing consensus that building electrification is the most viable and predictable path to zero-emissions buildings" and is "*essential* to California's strategy to meet its [greenhouse gas] reduction goals for 2030 and 2050."[3] The Commission reaffirmed this view in the 2019 IEPR, finding that:

> [D]ecarbonization requires deep efficiency, clean supply, and demand flexibility. When packaged with deep energy efficiency measures, building electrification presents the next most cost-effective path to decarbonization after the direct greening of sources of electricity. Electrification directly leverages the state's renewable sources of generation, [and] is immediately achievable with current building science and technology.[4]

Again last month, a study developed for the California Air Resources Board ("CARB") further confirmed that rapid building electrification is a least-regret strategy for achieving carbon

[3] Docket No. 18-IEPR-01, *2018 IEPR Update Volume II*, at 28, 32 (Mar. 21, 2019) (emphasis added), https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2018-integrated-energy-policy-report-update; Energy and Environmental Economics ("E3"), *Residential Building Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts* (Apr. 2019) ("We confirm that the electrification of buildings represents an important opportunity to reduce greenhouse gas emissions from buildings both in the near term and long term, and can lead to consumer capital cost savings, bill savings, and lifecycle savings in many circumstances."), https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf.

[4] Docket No. 19-IEPR-01, *Adopted 2019 IEPR*, at 58 (May 6, 2020), https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report.

neutrality by 2045.[5] The implications for the distribution gas system ranged from "a significant reduction in use" in the most gas dependent scenario reliant on carbon sequestration to a complete decommissioning by 2045 in a scenario that maximized electrification and air quality benefits.[6] Achievement of a "middle ground" scenario will require a rapid escalation in residential electric water heater deployment: from about 36,000 electric residential water heaters sold annually today, to 134,000 units sold annually by 2024, with sales continuing to escalate rapidly thereafter to achieve 800,000 annual sales by 2030.[7] This rapid uptake in heat pump water heaters will not occur at the necessary pace without establishing an all-electric baseline for new construction in this building code cycle.

Faced with a regulatory change that could begin to address the climate emergency, the Industry Coalition opts for dilatory tactics by raising a series of specious concerns. The Industry Coalition asks if building electrification will increase wildfire risk. This issue has been addressed in the Commission's Final Project Report, *The Challenge of Retail Gas in California's Low-Carbon Future*, which concluded: "No, it is not likely that building electrification will increase the risk of wildfires.... To the extent the risk of wildfires is related to footprint of the electricity grid rather than the annual energy being used, then building electrification would have negligible impact on that risk."[8] What does increase the difficulty of extinguishing wildfires, however, is gas. Describing the mounting challenges of fighting the fires raging on the West Coast to the New York Times, a spokesman for the Oregon State Fire Marshal's office explained, "When you have a fire that burns through homes and businesses, you have open gas lines that are still spewing out natural gas, and those are burning."[9]

The Industry Coalition also asks whether the Commission has analyzed the impact of increasing the electrical load from buildings and the reliability of California's increasingly renewable electric portfolio. Again, these questions have been examined. *The Challenge of*

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[5] E3, *Achieving Carbon Neutrality in California* (Aug. 2020), https://ww2.arb.ca.gov/sites/default/files/2020-08/e3_cn_draft_report_aug2020.pdf. While Southern California Gas Company ("SoCalGas") attempts to argue gas is a climate solution, given the significant limits on potential supplies of fossil gas alternatives such as biomethane, even the studies it cites in its comments support all-electric new construction because new buildings "are most easily electrified." SoCalGas, *Technical Comments Regarding Pre-Rulemaking for the California 2022 Energy Code Compliance Metrics* (Aug. 21, 2020) (citing Docket No. 19-MISC-03, Lawrence Livermore National Laboratory, *LLNL Comments – The Natural Gas Infrastructure and Decarbonization Targets* (June 21, 2019), https://efiling.energy.ca.gov/GetDocument.aspx?tn=228811&DocumentContentId=60143).

[6] E3, *Achieving Carbon Neutrality in California*, at 68 (Aug. 2020).

[7] Rocky Mountain Institute, *Climate Change Is Ravaging California. It's Time to Electrify*. (Sept. 10, 2020), https://rmi.org/climate-change-is-ravaging-california-its-time-to-electrify/.

[8] Commission, *Final Project Report, The Challenge of Retail Gas in California's Low-Carbon Future - Appendices A-G*, at B-3 (Apr. 2020), https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-AP-G.pdf.

[9] Tim Arango et al., *10 Dead in California as Wildfires Spread on West Coast*, New York Times (Sept. 10, 2020), https://www.nytimes.com/2020/09/10/us/fires-oregon-california-wa-state.html.

Retail Gas in California's Low-Carbon Future determined that "building electrification is a smaller driver of projected load growth in the study scenarios than transportation electrification," which is required in any climate mitigation scenario.[10] In fact, "new electric loads can help make needed upgrades to the state's electricity infrastructure more affordable by spreading new fixed costs over more energy consumption and thus alleviating rate impacts."[11] In addition, in the joint CEC, California Public Utilities Commission ("CPUC") and California Independent System Operator ("CAISO") letter to Governor Newsom regarding power outages in mid-August, one of the key "going-forward actions to ensure reliability" was to "continue work to enable distributed energy resources and load flexibility."[12] All-electric homes provide exactly this type of solution through the potential for load flexibility by heat pump water heaters and other appliances. Far from being an impediment, all-electric homes can serve as a reliability solution for an increasingly decarbonized grid.

Finally, contrary to the Industry Coalition's claims, a dual-fuel energy system is not more resilient: modern gas appliances also require electricity to operate and cannot be turned on during a power outage. It is clear that the challenges of worsening wildfires will confront California over the next decades, but these challenges will only be heightened by increasing California's reliance on fossil fuels and continuing to build out gas infrastructure to serve new construction.

C. The Industry Coalition Grossly Understates the Cost Savings from All-Electric New Construction.

The Industry Coalition claims there is "no significant difference in cost" to construct all-electric and dual-fuel homes, but the uncited dollar figures provided in the letter omit several categories of costs, thereby obscuring the full expenses associated with dual-fuel new construction. The letter states that the average cost to connect a home to gas, including only costs "up to and including the meter," is $1,424. As an initial matter, it is unclear whether this estimate is intended to represent just the cost seen by builders, or if it includes the portion of extension costs that are currently socialized: In a home with four gas appliances, over $1,600 of the total cost may be added to the utility's rate base and paid for by all ratepayers in their gas bills.[13] The Industry Coalition also understates costs because by their own admission, their cost estimate "does not include plumbing in the home, or other 'behind the meter' costs."[14]

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[10] Commission, *Final Project Report, The Challenge of Retail Gas in California's Low-Carbon Future - Appendices A-G*, at B-3 (Apr. 2020).
[11] *Id.*
[12] CPUC et al., *Letter to Governor Newsom Regarding Power Outages*, at 5 (Aug. 19, 2020), https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2020/Joint%20Response%20to%20Governor%20Newsom%20Letter%20August192020.pdf.
[13] *See* Pacific Gas and Electric Co. ("PG&E"), *Gas Rule No. 15*, https://www.pge.com/tariffs/assets/pdf/tariffbook/GAS_RULES_15.pdf; SoCalGas, *Rule No. 20, Gas Main Extensions*, https://www2.socalgas.com/regulatory/tariffs/tm2/pdf/20.pdf; San Diego Gas & Electric

Well supported and detailed assessments of the full cost of connecting a new home to the gas system are higher than what the Industry Coalition asserts. PG&E has previously provided the Commission information on the historical average cost of gas extensions in its service territory, summarized in the table below.[15]

Table 1: PG&E Gas Infrastructure Cost Estimates

	Existing Subdivision/Development	New Greenfield Subdivision/Development
Mainline Extension	N/A[3]	Single-Family $17/ft[4] Multi-Family $11/ft[4]
Service Extension (Typically 1" pipe from mainline to the meter)	$6750 per service/building[4] (excludes trench costs) $9200 per service/building[4] (includes trench costs)	$1300 per service/building[4] (includes mainline extension costs within the subdivision; excludes trench costs) $1850 per service/building[4] (includes mainline extension costs within the subdivision; includes trench costs)
Meter	Residential Single Family $300 per meter[5] Residential Multi-Family $300 per meter + $300 per meter manifold outlet[5] Small/Medium Commercial $3600 per meter[6]	Residential Single Family $300 per meter[5] Residential Multi-Family $300 per meter + $300 per meter manifold outlet[5] Small/Medium Commercial $3600 per meter[6]

In addition to these up-to-the meter costs, PG&E estimates that the additional cost of gas plumbing is on average $800 per home.[16] Plan review for gas service will vary by city, but PG&E provides an estimate of $850.[17] Added together, PG&E's records demonstrate that the average cost of gas infrastructure to serve a new single-family home in an existing subdivision may be $8,700 or more.[18] In a new greenfield development, the cost just to connect one home

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Co. ("SDG&E"), *Rule 15, Gas Main Extensions*, http://regarchive.sdge.com/tm2/pdf/GAS_GAS-RULES_GRULE15.pdf.

[14] Industry Coalition, *Comments Opposing All-Electric Baseline for 2022 Energy Code*, at 2 (Sept. 2, 2020).

[15] PG&E, *Letter from Janice Berman to Commission Staff*, at 2 (Dec. 5 2019) (Letter from Janice Berman is attached as Attach. 1).

[16] *Id.* at 3.

[17] *Id.*

[18] This estimate is comprised of the following expenses: $6,750 (service extension, excluding trenching under the conservative assumption trenching is always performed for electricity) + $300 (single family meter) + $800 (gas plumbing) + $850 (plan review) = $8,700. *See also* E3, *Residential Building*

averages $3,250, plus the additional cost of the mainline extension to reach and extend throughout the new development, which costs as much as $17/foot, and therefore can escalate rapidly.

When it comes to the cost of the appliances in the home, all-electric new buildings can reduce costs by combining the cost of separate heating and cooling systems into a single heat pump. Based on research done by Rocky Mountain Institute for the City of Oakland, it is estimated to cost between $2,400 to $2,700 more per home to install two separate systems than it would be just to install a single heat pump.[19] Even when taking into account the estimated $1,050 cost premium over gas appliances to install a heat pump water heater and an induction stove, purchasing all-electric appliances results in a net savings of $1,350 to $1,650.[20]

D. The Vast Majority of All-Electric Homes Offer Savings or Roughly Equivalent Operational Costs Compared with Mixed-Fuel Homes, with Additional Savings Over Time as California Reduces Gas Demand to Meet Decarbonization Requirements.

The Industry Coalition asserts that all-electric homes are more expensive to operate, but does not provide any explanation or support for this claim. In fact, a report commissioned by several utilities from E3 determined that, assuming current electricity rates and appliance efficiencies, the vast majority of all-electric new construction homes either experience bill savings or a bill increase of under nine dollars per month.[21] The study concludes that, across the board, heat pump space conditioning and water heating would save residents money over the gas equivalents; in a minority of situations, these savings were offset by bill increases for electric cooking and clothes drying.[22] It is important to note that E3 calculated bills using current electricity rates and does not appear to consider rate structures that can increase the value of an all-electric home, like a highly differentiated time of use rate encouraging customers to shift heat pump load to off peak periods, as are currently being adopted.[23] It also appears that both the

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Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts, at 55 (Apr. 2019) (finding all-electric homes have "a capital cost advantage ranging from $3,000 to more than $10,000 over a mixed-fuel home" due to avoided gas infrastructure costs).

[19] Rocky Mountain Institute, *The Economics of Electrifying Buildings*, at 29 (2018), https://rmi.org/insight/the-economics-of-electrifying-buildings/.

[20] E3, *Residential Building Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts*, at 32, 34 (Apr. 2019).

[21] *Id.* at 69.

[22] *Id.* at 87–88.

[23] Southern California Edison Company currently has an electrification-targeted rate, and PG&E and SDG&E have been ordered to develop similar rates in the coming year. *See* CPUC, Decision 20-03-003, *Decision Addressing Proposed Fixed Charge For Residential Customers*, at 44 (Mar. 12, 2020).

dual-fuel home and the all-electric home were assumed to have the same size solar system.[24] A larger solar system to support the all-electric home's higher load could reduce lifetime operating costs further.

In addition, contrary to the Industry Coalition's assertion that all-electric new construction will increase home costs in the Central Valley, the study also found that "[a]ll-electric new construction sees lifecycle savings in all homes that require air conditioning, based on large capital cost savings and small net changes in bills for most homes."[25] Accordingly, it was new construction in San Francisco--which is already pursuing all-electric construction requirements—that was found to have higher overall costs, due to the assumption that these homes would not otherwise have incurred the added expense of air conditioning.[26]

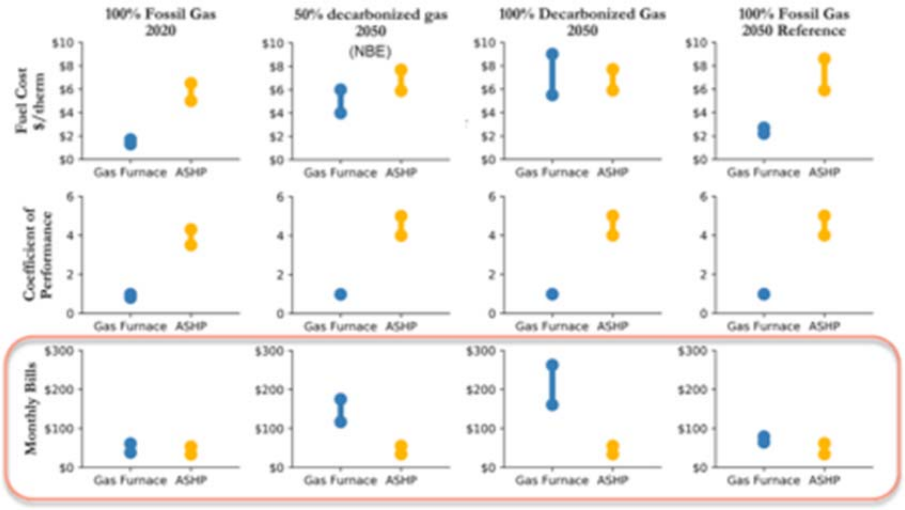
Moreover, focusing only on current bills misses the more important perspective on the cost savings from electric homes in coming years, as gas rates rise due to decarbonization policies. The Commission's Final Project Report, *The Challenge of Retail Gas in California's Low-Carbon Future*, predicts the relative cost savings from living in an all-electric home are expected to grow markedly over the next three decades as gas rates rise disproportionately to electric rates.[27] Accounting for the incremental cost from wildfire-related costs, the CEC's report found that "electric rate increases are relatively muted compared to those seen in the gas system."[28] Unlike gas rates, which will increase as gas demand decreases through electrification and other decarbonization policies, "electric rates exhibit long-run stability because the state's rising electric revenue requirement is partially paid for by new electrification loads."[29] Indeed, substantial increases in gas rates are not a distant prospect. SoCalGas sought a 42% increase in its overall gas revenue requirement by 2022 relative to 2018, and PG&E received approval for a 21.8% increase relative to 2018 for transmission and storage, with a pending request for a 26.6% increase for distribution revenue.[30] Accordingly, to the extent mixed-fuel costs have a slight operational costs advantage today, this "cost advantage [will] erode[] over time."[31]

Indeed, the cost savings of an electric home would be even more substantial were California to forgo building electrification and instead decarbonize its energy system through

[24] E3, *Residential Building Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts*, at ii (Apr. 2019).
[25] *Id.* at 87.
[26] *Id.* at 79. This assumption appears increasingly misplaced given the extreme temperatures San Francisco has recently experienced.
[27] *See* Commission, *The Challenge of Retail Gas in California's Low-Carbon Future*, at 39–40 (Apr. 2020), https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-F.pdf.
[28] *Id.* at 53.
[29] *Id.*
[30] Gridworks, *California's Gas System in Transition - Equitable, Affordable, Decarbonized, and Smaller*, at 1 (2019), https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf.
[31] *See* Commission, *The Challenge of Retail Gas in California's Low-Carbon Future*, at 54 (Apr. 2020).

expensive fossil gas alternatives. In that hypothetical, gas bills skyrocket due to the high commodity costs for hydrogen, biomethane, and synthetic gas, leading to significantly higher monthly bills relative to electric heating, as summarized in the chart below.[32]

Figure 16: The Cost of Residential Space Heating Using Electricity, Natural Gas, and 100 Percent Renewable Natural Gas



The homes built under the 2022 code will still be occupied in 2045, when the energy sector must be completely decarbonized. Most residents of all-electric housing will save money on their energy bills today, even without favorable rate design and even assuming current technology efficiency. These savings will increase over time as gas rates rise due to planned system investments and electrification-related customer attrition. On top of the increased climate, outdoor and indoor air pollution from mixed-fuel homes, failure to require all-electric new construction in this building code cycle will needlessly commit residents to the gas system and higher future bills. The Commission should plan for this future by beginning the transition to all-electric housing as soon as possible though an all-electric 2020 building code.

Thank you for your consideration of these comments.

Respectfully submitted,

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[32] *Id.* at 40.

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Attachment 1

PG&E, *Letter from Janice Berman to Commission Staff* (Dec. 5 2019)

Pacific Gas and Electric Company

Janice Berman
Director – Grid Edge
Pacific Gas and Electric Company
Mail Code B9F
P.O. Box 770000
San Francisco, CA 94177-00001

December 5, 2019

Energy Commission Staff:

On March 2, 2018, PG&E provided gas extension cost estimates for residential existing and new subdivisions (see attached memo). We have recently updated our estimates and are therefore providing an updated memo.

In addition to mainline and service extension costs, we are also providing estimates of the cost of gas meters for different building types including both residential and commercial customers. These estimates are based on PG&E historical jobs.

Developing gas extension cost estimates is complex and the actual costs are project dependent. Costs vary widely with location, terrain, distance to the nearest main, joint trenching, materials, number of dwellings per development, and several other site and job-specific conditions. For these reasons, it is not practical to come up with estimates that represent every case. Instead we are including estimates based on historical averages taken from projects within PG&E's territory. It is not recommended to compare specific project costs to these estimates as any number of factors could lead to higher or lower costs than these averages are representing.

We are also including estimates for in-house gas infrastructure costs and specific plan review costs. These estimates are from external sources, and are not based on PG&E data, but have been provided for the sake of completeness and for use in energy efficiency analysis.

To further anchor the estimates, several assumptions have been made:

1. It is assumed that during new construction, gas infrastructure will likely be joint trenched with electric infrastructure. As a result, the incremental cost of trenching associated with the gas infrastructure alone is minimal. Therefore, all mainline cost estimates exclude trench costs. Service extension cost estimates include both estimates with and without trench costs. In the case where new construction would require overhead electric and underground gas infrastructure, the estimates with trench costs included for service extensions should be utilized.

2. It is assumed that new construction in an existing subdivision would not generally require a mainline extension. In cases where a mainline extension would be required to an existing subdivision, the costs are highly dependent on the location, terrain, and distance to the nearest main.

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3. These estimates are for total costs. The cost estimates have not been reduced to account for the portion of the costs paid by all customers due to application of Rule 15[1] and Rule 16[2] allowances. Hence, costs to the specific customer may be lower than the estimates below, as the specific customer benefits from the Rule 15 and Rule 16 allowances.

Table 1: PG&E Gas Infrastructure Cost Estimates

	Existing Subdivision/Development	New Greenfield Subdivision/Development
Mainline Extension	N/A[3]	Single-Family $17/ft[4] Multi-Family $11/ft[4]
Service Extension (Typically 1" pipe from mainline to the meter)	$6750 per service/building[4] (excludes trench costs) $9200 per service/building[4] (includes trench costs)	$1300 per service/building[4] (includes mainline extension costs within the subdivision; excludes trench costs) $1850 per service/building[4] (includes mainline extension costs within the subdivision; includes trench costs)
Meter	Residential Single Family $300 per meter[5] Residential Multi-Family $300 per meter + $300 per meter manifold outlet[5] Small/Medium Commercial $3600 per meter[6]	Residential Single Family $300 per meter[5] Residential Multi-Family $300 per meter + $300 per meter manifold outlet[5] Small/Medium Commercial $3600 per meter[6]

[1] https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_15.pdf
[2] https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_16.pdf
[3] It is assumed that new construction in an existing subdivision would not require a main extension.
[4] Estimates based on PG&E jobs from Jan 2016 - Dec 2017 from PG&E's Service Planning team.
[5] Estimates from PG&E's Dedicated Estimating Team. For Multi-Family units, the costs of $300 per meter and $300 per meter manifold outlet should be combined for a total of $600 per meter.
[6] PG&E Marginal Customer Access Cost Estimates presented in the 2018 Gas Cost Allocation Proceedings (GCAP), A.17-09-006, Exhibit PG&E-2, Appendix A, Section A, Table A-1. The Average Connection Cost per Customer values were included in the MCAC workpaper that accompanied the GCAP testimony

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	Large Commercial $32,000 per meter[6]	Large Commercial $32,000 per meter[6]

Note: Service extension cost estimates for New Greenfield Subdivisions include mainline extension costs as well. Therefore, mainline cost estimates can be ignored for the purpose of estimating total project costs.

Table 2: Gas Infrastructure Cost Estimates from Other Sources

	Existing Subdivision/Development	New Greenfield Subdivision/Development
In-House Infrastructure	Single-Family $800[7] Multi-Family $600 per unit[7] Medium Office $600-4500[7,8] Medium Retail $10,000[8]	Single-Family $800[7] Multi-Family $600 per unit[7] Medium Office $600-4500[7,8] Medium Retail $10,000[8]
Plan Review (Will vary by city and often not a fixed fee)	Residential Palo Alto - $850[9] Nonresidential Palo Alto - $2316[9]	Residential Palo Alto - $850[9] Nonresidential Palo Alto - $2316[9]

Please let us know if there are any follow-up questions or clarifications.

Best regards,

[7] Frontier Energy, Inc., Misti Bruceri & Associates, LLC. 2019. "2019 Cost-effectiveness Study: Low Rise Residential New Construction." Available at: https://localenergycodes.com/content/performance-ordinances

[8] TRC, EnergySoft. 2019. "2019 Nonresidential New Construction Reach Code Cost Effectiveness Study." Available at: https://localenergycodes.com/content/performance-ordinances

[9] TRC. 2018. "City of Palo Alto 2019 Title 24 Energy Reach Code Cost Effectiveness Analysis Draft." Available at: http://cityofpaloalto.org/civicax/filebank/documents/66742

March 2, 2018

Energy Commission staff,

PG&E appreciates the opportunity to provide input to be considered as part of the 2019 Building Energy Efficiency Standards rulemaking process. On January 22, 2018, PG&E provided some information on four questions regarding the electric baseline rate, the definition of "natural gas available", and gas extension costs. PG&E's original response is included as Attachment A.

As a follow-up to our discussion on Monday, January 22nd, 2018 the Energy Commission asked PG&E to provide further clarification on the gas extension cost estimates. In particular, Staff thought the cost estimate provided for mainline extension seemed high.

The table below provides a summary of the cost estimates and what is included or not included in each.

	Existing Subdivision	**New Greenfield Subdivision**
Mainline Extension	**$568/foot** Includes: • Materials and Labor • Trenching through paved, developed area • Service line extension Does Not Include: • Allowances credited to Developer	**$11/foot (Multi-Family)** **$17/foot (Single-Family)** Includes: • Materials and Labor • Allowances credited to Developer Does Not Include: • Trenching (sharing joint trench)
Service Extension (< 1" line from main to building)	**$10,000 - $16,000 per service*** Includes: • Materials and Labor • Trenching through paved, developed area • Inspection Does Not Include: • Allowances credited to Customer	**$533 - $625 per service** Includes: • Materials and Labor • Trenching greenfield, undeveloped land Does Not Include: • Allowances credited to Developer

* Historical data review indicated this may approach $18,000 in some scenarios.

The table highlights that it is significantly more expensive to extend either distribution mainline or service through existing, developed subdivisions with paving, structures, and other underground installations.

Please let us know if we can be of further assistance,

Janice Berman
Director, Grid Innovation
PG&E

Question #3: *Can we provide a pricing range to extend gas service for a typical new subdivision in PG&E's territory per dwelling (prioritizing single family homes, then multi-family complexes, and pursuing data on existing subdivision single and multi-family as possible)?*

The table below provides estimates of the cost to extend a gas service line from the gas distribution pipe to a single location where PG&E's provides natural gas. A single location may include one or more dwellings or buildings served from the single service line. The table provides historic data from PG&E's 2017 GRC.

Table 1: Shows the $/service to install service lines in new construction on undeveloped land

	2010	2011	2012	2013	2014
Cost per service ($/service)	$625	$586	$534	$533	$552

Table 1 is an average of many projects and individual project costs can vary significantly due to the specific conditions and complexities at each site.

Costs to install in developed areas are higher due to additional construction considerations not required in undeveloped areas, such as paving, permitting, traffic control, landscaping, protection of underground infrastructure, etc. PG&E estimates costs for new service extensions in existing subdivision at $10,000 - $16,000/service line, on average, but is still tracking down the historical costs.

The estimate we have provided for the cost of gas service is to be used as an approximation to inform Energy Commission decisions on how, and when, natural gas availability and cost-effectiveness options are presented to the user of the Title 24, Part 6 compliance software.

Question #4: *What is the average cost of extending a main, per 100 feet, to a new subdivision in PG&E territory?*

The price to extend a main to a new subdivision is approximately $568 per foot. [1] The costs can vary significantly due to digging and trenching to install the pipe, paving, easement, permit, and inspection costs. Furthermore, costs to extend gas service can be used to support extending underground electric service.

The estimate we have provided for the cost of extending a main is to be used as an approximation to inform Energy Commission decisions on how, and when, natural gas availability and cost-effectiveness options are presented to the user of the Title 24, Part 6 compliance software.

We look forward to our discussion this morning.

Thank you,
Kelly

[1] This estimate was provided in a recently published data response in the Santa Rosa post-fire recovery efforts.