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CEC should adopt a single, all-electric baseline for all building types

Additional submitted attachment is included below.

Mark Roest

The CEC should move towards adopting a single, all-electric baseline for all building types because all-electric buildings are cheaper to build and operate, better for public health, and critical to protect us from the climate crisis.

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. 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.

Appliance surveys have shown that the current market for heat pumps is ready for this requirement. According to the U.S. census bureau 2017 American Housing Survey, heat pumps are commonly installed, with an average of 40% of new homes installed with them. This number rises to over 60% in the South, where this technology has been a part of common construction practice for decades because it can both heat and cool a space. According to the soon to be released 2019 California Residential Appliance Survey, California continues to lag behind the rest of the country, with only 8% of new homes installing heat pumps, because our energy code has incentivized the installation of natural gas appliances until recent energy code cycles. The CEC should correct this by requiring heat pumps in all new homes, regardless of climate zone.

Moving to all-electric will not increase construction costs. In fact, it will reduce them, and will also reduce utility bills, helping make housing more affordable.

Building all-electric is less expensive than building with gas for every single housing type, according to data from [SF Environment](#). In some cases, forgoing gas hookups and appliances saves thousands of dollars in construction costs.

- [TPs: All-Electric affordability data SF](#)

E3's 2019 study, *Residential Building Electrification in California*, finds that across six different climate zones in California, the capital costs for all-electric single-family and low-rise multifamily buildings are cheaper than their natural gas alternatives.

- [E3, Residential Building Electrification in California, at viii-xi. August 15, 2019](#)

The report *2019 Energy Efficiency Ordinance Cost-Effectiveness Study*, prepared for the California Energy Codes and Standards Program by Frontier Energy, evaluated the cost effectiveness of code compliance package options for both mixed-fuel and all-electric homes across all sixteen California climate zones. The report concluded that the all-electric code compliance option was cost effective in every climate zone when using time dependent valuation (TDV).

- [California Energy Codes & Standards, 2019 Cost-effectiveness Study: Low-Rise Residential New Construction, at 41-42. July 2019](#)

□ Research done for the California Energy Commission (CEC) on the affordability of all-electric commercial buildings found substantial capital savings in all climate zones modeled for several different building types. The CEC analysis found that a mixed-fuel medium size office building in California costs between \$45,029 and \$96,106 more than an all-electric version, with the cost-differential varying by climate zone. The CEC also found that a mixed-fuel mid-rise residential building in California costs about \$14,400 more than an all-electric version, and a mixed-fuel hotel costs between \$1,277,845 to \$1,284,121 more than an all-electric version.

- [2019 Nonresidential New Construction Reach Code Cost Effectiveness Study at 11 \(2020\)](#)
- [2019 Mid-Rise New Construction Reach Code Cost Effectiveness Study at 8 \(2020\)](#)
- [2019 Nonresidential New Construction Reach Code Cost Effectiveness Study at 13 \(2020\)](#)

● Last month, Jeff Byron, a former CEC commissioner, submitted on the CEC docket that it's "now time to codify electrification of all new residential construction."

- <https://efiling.energy.ca.gov/GetDocument.aspx?tn=235263&DocumentContentId=68145>

Yours truly,

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