

# 2019 Building Electrification & EV Infrastructure Reach Code Initiative

## Frequently Asked Questions



### Topic: Cost Effectiveness Study

Q: Is the study based on IOU utility rates or PCE/SVCE's?

A: Currently, the study is based on specific IOU utility rates, but they may later be adjusted for PCE/SVCE rates.

Q: For tenant/landlord situations, who is paying for the measures vs. who receives the benefits?

A: It depends on the metering situation and rental agreement between tenant and landlord.

Q: Does the 2019 Title 24 Part 6 require residential buildings to be all-electric?

A: All-electric construction is not a mandatory requirement. It is an alternate compliance pathway.

Q: Are the models adjusted for upstream fugitive emissions? Do they account for Renewable Portfolio Standard requirements?

A: The consultant teams are reviewing the source of the GHG emission factors embedded in the compliance software to answer these questions.

Q: What geographical regions do the cost effectiveness results apply to?

A: The statewide IOU study covers all geographical regions in California. This initiative focuses on San Mateo county (CEC climate zone 3) and Santa Clara county (CEC climate zone 4). The most up-to-date draft of cost effectiveness study can be found at: <http://localenergycodes.com/content/2019-local-energy-ordinances/>

Q: Is there a consideration for hydrofluorocarbons (HFC's) in GHG emission saving analysis?

A: No, the GHG emissions analysis included emissions associated with electricity and natural gas consumption.

Q: Does the PV sizing in analysis result in over production?

A: For most scenarios, no. The residential code allows for a slight over generation for all-electric homes with battery storage.

Q: Was there a sensitivity analysis performed on cost benefit?

A: The studies were performed with a set of assumptions that the consultant teams assumed would be most realistic. Sensitivity analysis has not yet been performed.

## Topic: Technologies

Q: Can a heat pump water heater match the performance of a gas system?

A: Yes, a heat pump water heater can equal the performance of a gas equivalent. For example, Rheem's 55 gallon unit can deliver 70 gallons of hot water in the first hour, enough for about four showers. For comparison, Rheem's gas equivalent delivers 79 gallons in the first hour. When selecting any hot water heater, no matter the fuel, make sure it is the right size for your use type. A home with a big family or a vacation home might need a larger 80 gallon tank.

Q: Will the heat pump water heater need to be supplemented by electric resistance?

A: Heat pump water heaters are typically designed with hybrid heating capability, including a backup electric resistance coil. This enables the heat pump to work when its bitterly cold, and also helps the heat pump replenish its hot water supply more quickly. In most cases, the electric resistance coil just sits there as a backup system.

Q: Can the central heat pump water heater distribute adequate water supply temperature to multiple units simultaneously?

A: Yes, this is what these systems are designed to do.

Q: How reliable is the electric grid as compared to natural gas?

A: The natural gas grid and electric grid both go down on occasion. In fact, during California's primary natural disaster events, wildfires and earthquakes, PG&E is supposed to turn the gas off. If 100% reliability is a goal for your home or project, electrification with battery and solar backup via microgrid is the way to get there.

Q: With the rapid change in technologies, how soon will these all-electric technologies become irrelevant?

A: Most electrification technologies have been around for over a century. They will likely become slightly more efficient over time, but the current options available will be relevant for the life of the system.

Q: How does the induction cooking compare to the current more favorable gas cooking?

A: Induction cooking has more specific temperature control, is much safer, easier to clean, and can vary heat settings faster than gas. If you like looking at flames, however, induction cannot provide that to you.

Q: Are electric or gas systems more resilient to earthquake or wildfire?

A: During California's primary natural disaster events, wildfires and earthquakes, PG&E is supposed to turn the gas off. If 100% reliability is a goal for your home or project, electrification with battery and solar backup via microgrid is the way to get there.

Q: How do the costs for electric space heating and water heating compare to that of natural gas based options?

A: Energy costs are a wash. This is because electricity is four times more expensive than gas, but heat pumps are four times more efficient than their gas equivalents. Capital costs for new construction are lower because a building owner can avoid the high cost of a new gas meter (\$8,000-10,000 for a single-

family home.) For retrofit applications, replacing with a heat pump is often a similar cost to a gas replacement. In some cases, the electric equipment will be more expensive. PCE and SVCE are designing incentives to offset the cost difference and help you electrify.

Q: Are natural gas systems more efficient than all-electric?

A: In every case, all-electric systems are more efficient than natural gas systems.

Q: How do the costs to run an all-electric house compare to that of mixed fuel?

A: Energy costs are a wash. This is because electricity is four times more expensive than gas, but heat pumps are four times more efficient than their gas equivalents.

Q: Would storage tanks be required if heat pump water heater cannot circulate very efficiently?

A: No, there is a storage tank in the unit.

### Topic: Electric Vehicles

Q: Can you explain different types of EV terminology?

A: PEV - Plug-in Electric Vehicle, which includes both PHEV and BEV as subsets

PHEV - Plug-in Hybrid Electric vehicle, which includes a conventional combustion engine.

BEV - Battery electric vehicle, which does not include a conventional combustion engine.

Q: How are the electric vehicle charging spaces shared between tenants in multifamily buildings?

A: It depends on the specific scenario. The model codes developed through this initiative will be designed to be flexible enough to accommodate most if not all potential scenarios.

Q: What are the typical costs of EVSE (Electric Vehicle Supply Equipment)?

A: Residential chargers - \$400-\$1200 per outlet

Nonresidential chargers - \$1000-\$5000 per outlet

Q: Will a very aggressive deployment of EV readiness may put a sudden load to the electric grid?

A: Significant effort is going into planning at the infrastructure level, and smart charging capability at the EV charging station to ensure this is not an issue. While this will prove to be an engineering challenge, the grid has been through worse.

### Topic: Model Code-Ordinance

Q: Do the local governments work with public utilities on developing the ordinance?

A: Local governments must receive approval from the California Energy Commission before adopting local building energy ordinances except for electric vehicle ordinances. This initiative supports local governments in developing ordinances that are ready for CEC application and promote regional consistency.

Q: How will the code be implemented against current standard practices?

A: The Statewide Utility study researched design approaches that are market ready as well as cost effective. The model codes as part of this initiative will support a flexible design approach with multiple compliance pathways.

Q: Can we directly adopt the San Francisco EV ordinance?

A: Yes, cities can adopt EV ordinances they feel are best for their community, subject to the constraints of their own local ordinance development process. This initiative is building upon other EV ordinances to recommend model codes.

Q: How do we apply the cost effectiveness study to develop a prescriptive approach for model ordinance?

A: The cost effectiveness studies determined the maximum performance level that can be achieved cost effectively through a certain set of measures. The intent was to identify a market ready performance threshold, while allowing for it to be achieved in a variety of ways. Local jurisdictions can choose to allow for an alternative prescriptive compliance path that requires this set of measures.

Q: Can reach codes promote better air quality and help low income neighbors in addition to energy efficiency?

A: Indoor air quality impacts are not explicitly studied, though studies have shown that avoiding indoor natural gas combustion can result in better air quality. The cost effectiveness studies included measures that are should lower costs over the lifetime of the measures.

Q: What about retrofits?

A: Retrofits are not considered for the current scope of this initiative.