

DOCKETED

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Project Title:	2022 Energy Code Update Rulemaking
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Document Title:	2022 SF Electric Ready Cost Comparison
Description:	This memo presents cost information showing the relative cost of in-building electric infrastructure (e.g., dedicated circuits and panel capacity) needed for electric equipment. This document compares three scenarios (an all-electric building, an electric ready building, and a retrofit of a non-electric-ready building) and three equipment types (space heating, cooking, and clothes drying).
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Single Family Electric Infrastructure Costs

Heat Pump for Space Heating

Proposed Requirement

A dedicated 240-volt, 30 amp or greater electrical circuit shall be provided that terminates within 3 feet from the heater or designated future location of an electric replacement heater with no obstructions into a listed cabinet, box, enclosure, or receptacle labelled “For Future Heat Pump Space Heater”. In the electrical panel the circuit shall be served by a dedicated double pole circuit breaker or a single pole circuit breaker with a reserved single pole circuit breaker space adjacent, and shall be labeled with the words “For Future Heat Pump Space Heater”.

Costs

Scenario	Cost	Source/Notes
0. All-electric new construction (electric service to air handler)	\$200	Statewide Reach Code Team, 2019.
1. Electric ready	\$152	
1a. Costs at construction	\$44	Home Depot. Material cost for #10/3 vs. #14/2 Romex. Assume 80ft. No additional labor cost assumes the wire also provides power to the furnace air handler and the 3 rd conductor is capped.
1b. Costs at time of retrofit	\$108	2020 RS Means. Material and labor for a 30A, 2-pole circuit breaker.
2. Retrofit costs (not electric-ready)	\$450-570	E3, 2019. Cost varies based on local labor rate. Assumes running of new 240V electrical at time of equipment replacement.
	\$640	TRC, 2016. For 30A to HPWH but expect similar or higher costs for attic located furnace

Cooking

Proposed Requirement

A dedicated 240-volt, 50 amp or greater circuit shall be provided that terminates within 3 feet of all combined or stand-alone cooking equipment with no obstructions into a listed cabinet, box, enclosure, or receptacle labelled “For Future Electric Cooking”. Each circuit shall be served by a dedicated double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Cooking”.

Costs

Scenario	Cost	Source/Notes
0. All-electric new construction (electric service to cooktop)	\$255-\$315	E3, 2019. Cost varies based on local labor rate.
	\$200	Statewide Reach Code Team, 2019.
1. Electric ready	\$426	
1a. Costs at construction	\$261	2020 RS Means. Material and labor for a future 240V 50A range outlet, 30' of #8/3.

1b. Costs at time of retrofit	\$165	2020 RS Means. Material and labor for a 50A, 2-pole circuit breaker.
2. Retrofit costs (not electric-ready)	Not available	Expect costs to be higher for interior located appliances than the \$640 estimate for HPWH (TRC, 2016).

Clothes Drying

Proposed Requirement

A dedicated 240-volt, 30 amp or greater electrical receptacle shall be provided within 3 feet of the clothes dryer location and accessible with no obstructions. The circuit shall be served by a double pole circuit breaker in the electrical panel labeled with the words “Electric Clothes Dryer”.

Costs

Scenario	Cost	Source/Notes
0. All-electric new construction (electric service to dryer)	\$255-\$315	E3, 2019. Cost varies based on local labor rate.
	\$200	Statewide Reach Code Team, 2019.
1. Electric ready	\$280	
1a. Costs at construction	\$280	2020 RS Means. Material and labor for a dryer outlet, 30A, 240V, 20' of #11/3 and 30A, 2-pole circuit breaker.
1b. Costs at time of retrofit	\$0	
2. Retrofit costs (not electric-ready)	Not available	Expect costs to be higher for interior located appliances than the \$640 estimate for HPWH (TRC, 2016).

Sources

Energy & Environmental Economics. 2019. Residential Building Electrification in California. April 2019. https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

Statewide Reach Codes Team. 2019. 2019 Cost-effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. August 1, 2019. https://localenergycodes.com/download/800/file_path/fieldList/2019%20Res%20NC%20Reach%20Codes

TRC. 2016. Palo Alto Electrification Final Report. November 2016. <https://www.cityofpaloalto.org/civicax/filebank/documents/55069>