

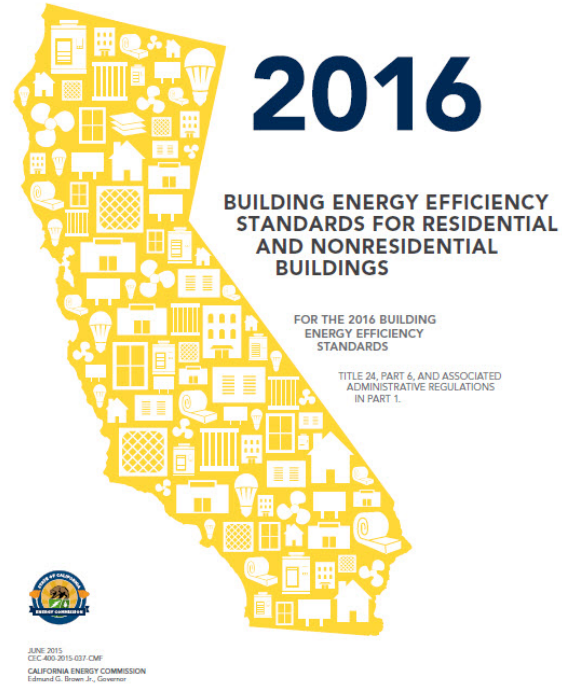
Building Codes, Reach Codes, and Electric Only Construction

**Santa Rosa Builder's Roundtable
September 19, 2019**

Title 24 2020 Updates and Reach Code Basics

California Energy Code

- Part 1 - California Building Standards Admin Code
- Part 2 - California Building Code
- Part 3 - California Electrical Code
- Part 4 - California Mechanical Code
- Part 5 - California Plumbing Code
- **Part 6 - California Energy Code**
- Part 7 - California Elevator Safety Construction Code
- Part 8 - California Historical Building Code
- Part 9 - California Fire Code
- Part 10 - California Code for Building Conservation
- Part 11 – California Green Building Standard



New Code (2019)

Effective January 1, 2020

- Adopted May 9, 2019
- Lighting efficiencies increased – no incandescent lighting (few exceptions)
- 2 x 6 exterior wall framing – standard – (R-20 insulation)
- Efficiency for doors must now be addressed (not just windows)
- HERS Verified Quality Insulation Installation prescriptively required
- PV installation prescriptively required
- Natural Gas is not eliminated from code

2019 CALIFORNIA BUILDING CODE

CALIFORNIA CODE OF REGULATIONS | TITLE 24, PART 2, VOLUME 1 OF 2

Based on the 2018 International Building Code®

California Building Standards Commission



CALIFORNIA'S 2019 RESIDENTIAL BUILDING ENERGY EFFICIENCY STANDARDS

CALIFORNIA ENERGY COMMISSION

The state's energy efficiency standards for new buildings and appliances have saved consumers billions in lower electricity and natural gas bills. The 2019 Building Energy Efficiency Standards for residential buildings includes a first-in-the-nation requirement to install solar photovoltaic systems. Other features enable homes to reduce the electricity demand from the grid, helping to reduce energy bills and the carbon footprint.

\$19,000 SAVINGS OVER A 30 YR. MORTGAGE | INITIAL COST \$9,500



SOLAR PHOTOVOLTAIC SYSTEM

Promote installing solar photovoltaic systems in newly constructed residential buildings. The systems include smart inverters with optional battery storage. This will increase the self-utilization of the electricity generated to power the home's electricity loads including plug-in appliances. California is the first state in the nation to require smart systems on homes.



DEMAND RESPONSE COMPLIANCE OPTIONS

Encourage battery storage and heat pump water heaters that shift the energy use of the house from peak periods to off-peak periods. Utilities moving to time-of-use pricing assists the grid to meet the state's climate change goals and helps homes reduce energy bills.



HEALTHY INDOOR AIR QUALITY

Enable using highly efficient filters that trap hazardous particulates from both outdoor air and cooking and improve kitchen ventilation systems. Moving air around and in and out of the home while filtering out allergens and other particles makes the home healthier.



BUILDING ENVELOPE

Strengthen insulation in attics, walls and windows to improve comfort and energy savings. Keeping the heat out during the summer and warm air during the winter makes a home more resilient to climate change.



What is a Reach Code?

- In California, Title 24 of the Code of Regulations sets the building code standards for all jurisdictions statewide. However, local governments can **adopt more stringent requirements**, which are known as reach codes.
- All energy efficiency-related reach codes must be proven to be **cost effective**.
- All reach codes must go through a **public process** for approval.
- All reach codes must be **re-approved with each Energy Code update**
(~ every 3 years)

50+ Cities and Counties Interested in 2020 Electric Reach Codes

- Cloverdale
- Santa Rosa
- Windsor
- Petaluma
- Berkeley
- Fremont
- Hayward
- San Mateo
- Arcata
- Carlsbad
- Cupertino
- Davis
- Healdsburg
- Hillsborough
- Los Altos
- Los Angeles
- Monte Sereno
- Mountain View
- Marin County
- Menlo Park
- Morgan Hill
- Oakland
- Pacifica
- Palo Alto
- Portola Valley
- San Francisco
- San Jose
- San Luis Obispo
- Santa Clara County
- Santa Cruz
- Santa Monica

What Sectors Would an Electric Reach Code Apply to?

Would apply to:

- new construction single family residential
- new construction of an accessory dwelling unit
- multifamily residential properties under 4 stories in height

Would **NOT** apply to:

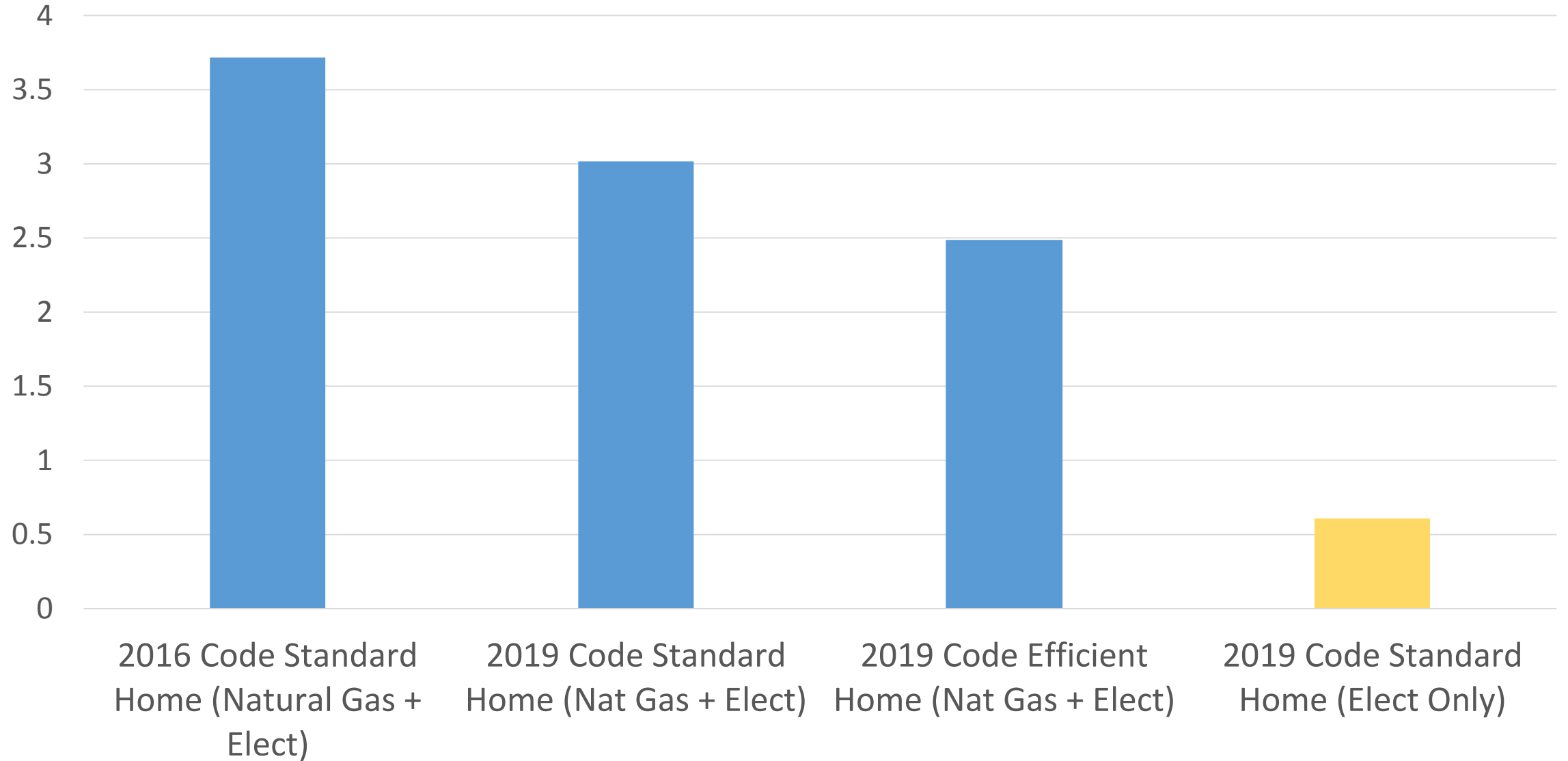
- Alterations or additions of single family, multifamily, or commercial properties
- New construction of a commercial property
- New construction of a multifamily property over 4 stories in height

Popular Energy Reach Code Options

Option	Jurisdictions Considering this Option	Anticipated per home costs beyond 2020 Requirements	Anticipated GHG Impacts	Potential Barriers	Timeframe	Applies to
Adoption of 2019 Energy Code (Business as Usual)	-----	\$0	Assuming 500 homes are built over next three years, 500 MT of CO2e annually	None	2019 Code Update Would Go into Effect Jan 1, 2020	All Buildings
All Electric Favored Reach Code	Cloverdale, San Luis Obispo	Unknown range of costs.	Assuming 1/3 of homes choose all-electric option, 900 MT of CO2e annually	Need State approval	Could go into effect as soon as January 1, 2020	New construction single family and low-rise multifamily
All Electric Reach Code	Santa Rosa, Petaluma, Windsor	Savings of \$6,171 (or \$3,361 for multifamily unit) compared to a home using natural gas ¹	Assuming 500 homes are built over next three years, 1,700 MT of CO2e annually	Need State approval	Could go into effect as soon as January 1, 2020	New construction single family and low-rise multifamily
Natural Gas Ban	Berkeley, San Jose	Savings of \$6,171 (or \$3,361 for multifamily unit) compared to a home using natural gas ¹	Assuming 500 homes are built over next three years, 1,700 MT of CO2e annually	Relies on city's police powers	Could go into affect at any time	All buildings

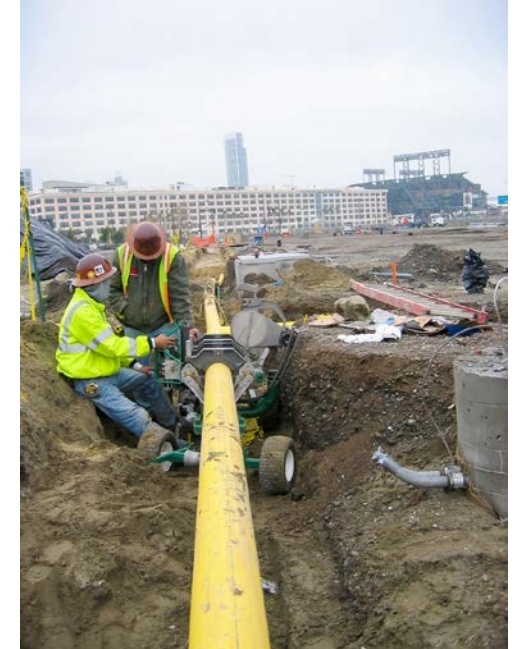
¹ 2019 Energy Efficiency Cost Effectiveness Study, California Codes and Standards

Yearly Per Home Emissions (MT CO2e)



Costs of Building All Electric Homes Versus Homes with Gas

Required Measure	Average Cost versus Gas Appliance
Heating/Cooling (Heat Pump)	\$221 in cost savings
Water Heating (Heat Pump Water Heater)	\$0 in cost savings
Dryer (Electric)	\$0 in cost savings
Cooking (Induction)	\$0 in cost savings
Electric Service Upgrade	\$600 in additional costs
Gas Infrastructure	\$6,550 in cost savings
Total Costs	\$6,171 in cost savings



Questions?