

Reach Codes in Cupertino

BayREN Codes & Standards Forum

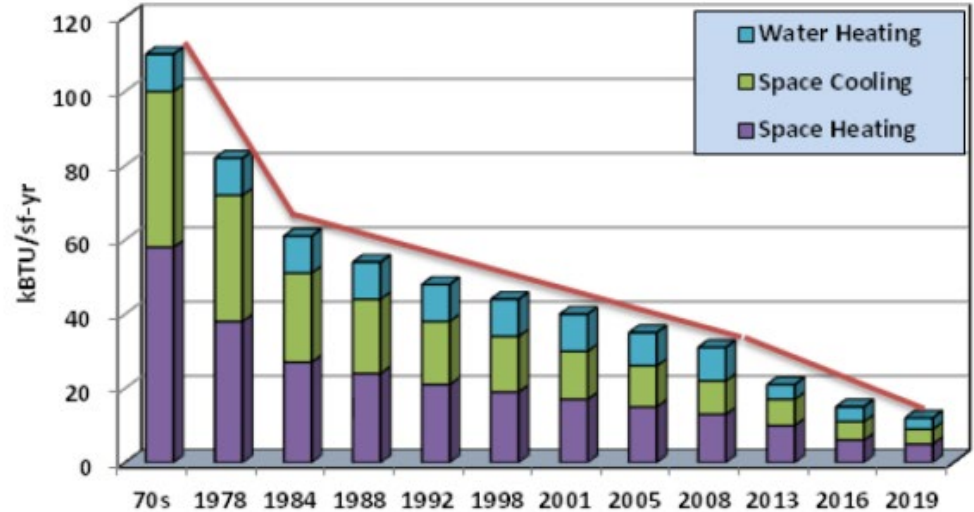
November 18, 2021

Andre Duurvoort, Sustainability Manager



**CITY OF
CUPERTINO**

History of Energy Codes



Cupertino's Policy Goals

- Cupertino Climate Action Plan (CAP) 2015
- General plan element (2015-2040)
- Member agency, Silicon Valley Clean Energy
- Cupertino climate emergency resolution 2018

“I am really glad that we are declaring a climate emergency...this is extremely critically important for not just our community but for the planet and it is something that I'm very glad to be able to bring forward to the community...”

- Councilmember Darcy Paul

*(Commenting as Mayor in 2018
at time of resolution adoption)*



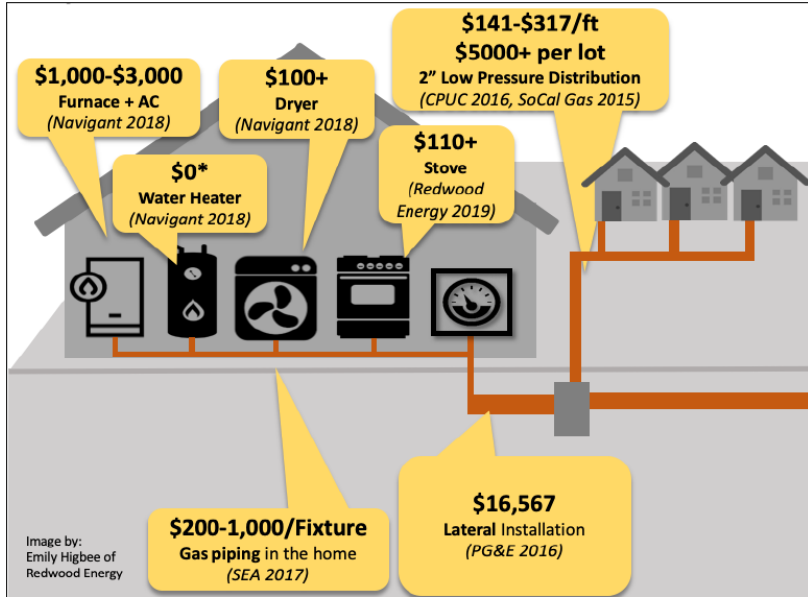
Background

- 2010: Local green building code adopted (Build it Green/LEED)
- Public process and policy development
- Local consultant for public engagement
- Adopted local reach codes for January 2020 cycle

Electrification Reach Codes

- Local amendment to State energy code
- Needs to be found cost-effective
- **Scope:** new construction at time of building permit application
- **Questions:**
 - How to best mitigate emissions and climate impact of development for next 3 years
 - What level of flexibility vs. stringency drives market transformation?

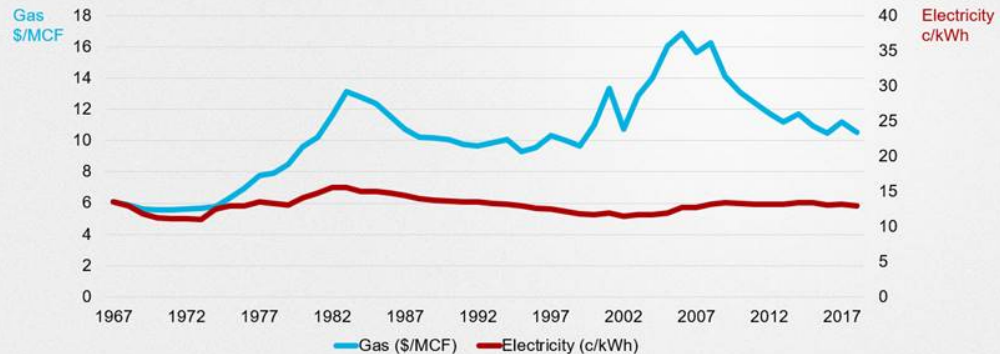
Economics of New Electric Buildings



Consultants working for both PG&E and SoCalGas have found more than \$20,000 in developer-paid cost increases from gas appliances, plumbing and infrastructure.

Electricity retail prices are historically much more stable than gas prices, and are virtually unchanged in 50 years, adjusted for inflation

U.S. residential price history for gas and electricity
Inflation-adjusted 2018 dollars, 1967-2018



Source: EIA (retail price history); U.S. Federal Reserve (inflation adjustment factors)

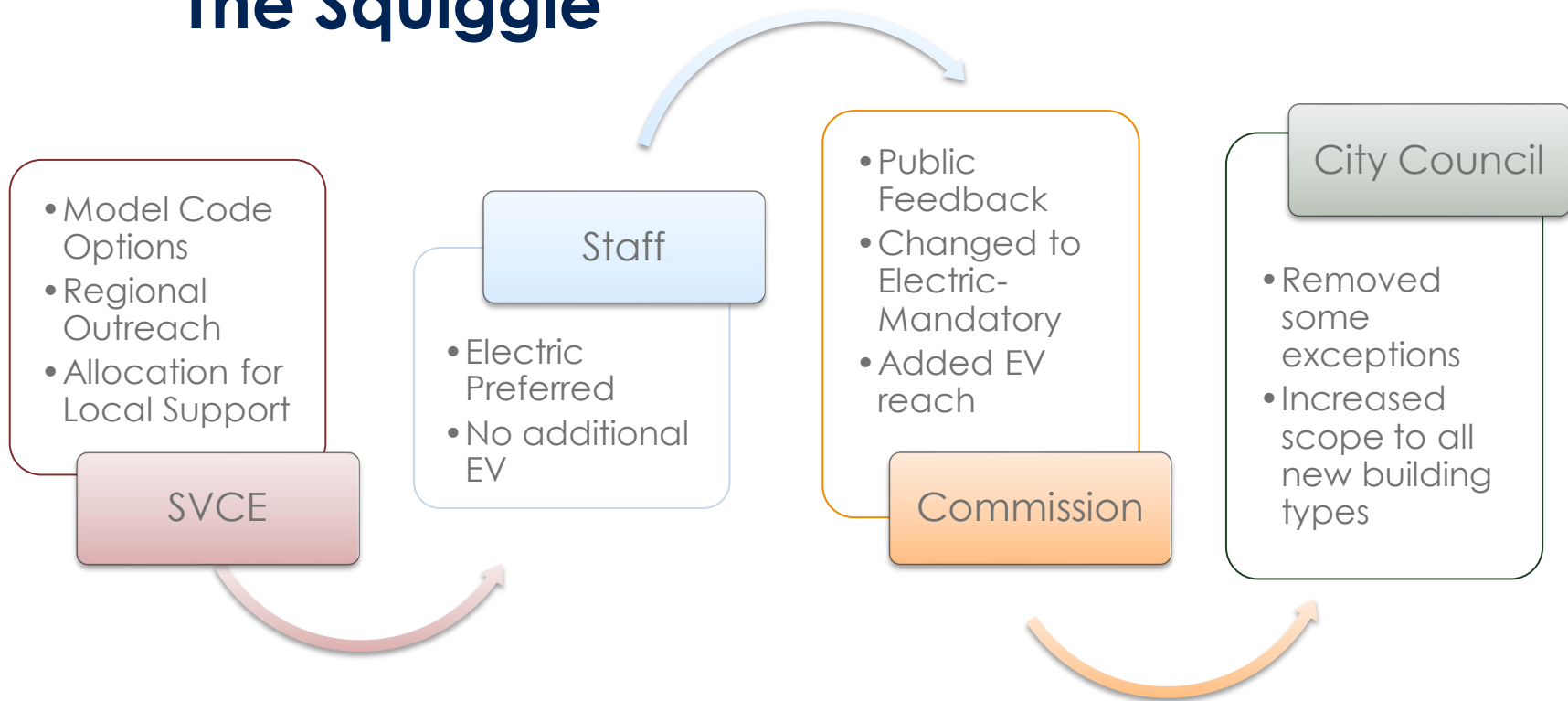
Economics of EV Chargers for New Construction

- 6% EV market share in Cupertino today
- 18%-20% by 2030

Table 1. Estimated Cost of Installing EV Infrastructure (price per spot)

Code Scenario:	Market Rate 25% Level 2 75% Level 1		Affordable Housing 10% Level 2 90% Level 1	
	New Construction	Retrofit ⁴	New Construction	Retrofit
60-Unit MUD	\$1,410	\$4,443	\$1,049	+\$3,982
150-Unit MUD	\$1,197	\$4,101	\$1,002	+\$3,854
60-Space Office Building	\$1,166	\$3,232	N/A	N/A

The Squiggle



Energy Reach Code – New Construction

<p>Low-rise residential (includes single-family, duplex, townhomes, and multifamily)</p>	<p>All-electric appliances required. Includes heating/cooling, water heating, clothes dryer, cooking, fireplace and outdoor fire pit.</p>
<p>High rise multifamily Mixed-use Hotel/Motel Office Retail</p>	<p>All-electric required. Includes heating/cooling, water heating, clothes dryer, cooking appliances, fireplace and outdoor fire pit.</p> <p>Exemption for Factories, Hospitals, Laboratories, Commercial Kitchens, and Essential Facilities.</p> <p>Any gas installed through exemptions shall provide electric circuiting for future electric appliances.</p>

CalGreen Reach Code – New Construction

Low-rise residential (includes new homes and townhomes)

For each dwelling unit, install (1) Level 2 EV Ready Circuit and (1) Level 1 EV Ready Circuit.

Multi-family buildings less than or equal to 20 units

One parking space per dwelling unit with parking provided with (1) Level 2 EV Ready Circuit.

Multi-family buildings greater than 20 units

25% of dwelling units with parking spaces provided with (1) Level 2 EV Ready Circuit.
Each remaining dwelling unit with parking space provided with (1) Level 1 Ready Circuit.

Office buildings

10% of available parking provided with Level 2 EV Charging Stations installed.
An additional 10% provided with Level 1 EV Ready Circuits.
An additional 30% are at least EV Level 1 Capable.

Other non-residential buildings

6% of available parking provided with Level 2 EV Charging Stations installed.
An additional 5% are at least EV Level 1 Ready.
Exception: Each Level 3 Fast Charger can substitute for some of the required spaces.

Projects Subject To Reach Code

Since January 2020:

- 100 new residential
 - Many ADUs
 - Single-family homes
 - Duplexes
- 1 new commercial
 - Auto repair shop
- 1 new mixed-use development



Electric Vehicle Charging

Future Electrical Vehicle Supply Equipment (EVSE) and Clean Air Vehicles

- Per CALGreen 4.106.4.1.: Each Townhouse / Rowhouse will have a raceway and service panel to support a 40 amp circuit for a vehicle charging station.

- Per CALGreen 4.106.4.2.2: 10 percent of parking spaces in multi-family dwellings units shall be EVSE charging stalls.

- Building 1/ Residential Spaces: 10% of 81 spaces = 9 Spaces Req'd / 9 Spaces Provided
 - 1 Accessible charging stall required per 25 charging stall / 1 provided
- Building 2/ Residential Spaces: 10% of 30 spaces = 3 Spaces Req'd / 3 Spaces Provided
 - 1 Accessible charging stall required per 25 charging stall / 1 provided

- Per CMC 16.58.420: 10% Spaces are EVSE Charging Spaces

- Building 1/ Retail Spaces: 130 Spaces = 13 EVSE Charging Req'd / 13 Provided
 - 1 EVSE Charging Accessible Van Space Req'd / 1 Provided
 - 1 EVSE Charging Accessible Car Space Req'd / 1 Provided
- Building 2/ Retail Spaces: 14 Spaces = 2 EVSE Charging Req'd / 2 Provided
 - 1 EVSE Charging Accessible Van Space Req'd / 1 Provided
 - 1 EVSE Charging Accessible Car Space Req'd / 1 Provided

- Per CAL Green 5.106.5.2, Table 5.106.5.2

- Building 1: (130) retail parking spaces require 11 Clean Air Vehicle stalls / 11 Provided
- Building 2: (14) retail parking spaces require 1 Clean Air Vehicle stalls / 1 Provided

- Per CAL Green 5.106.5.2.1, Clean Air Vehicle stalls shall be designated as "CLEAN AIR / VAN POOL / EV".



Keys to Success

- Robust public conversation
- Focus on cost-effectiveness for consumer and builder
- Responsive legal council
- Internal alignment:
 - community development, sustainability, economic development
- Ask for help from State and utility

Proposed CAP 2.0 Measures

Transportation

Increase zero-emission vehicle (ZEV) adoption

35% of passenger cars are zero-emission vehicles by 2030, and 100% by 2040

20% of commercial vehicles are zero-emission vehicles by 2030, and 100% by 2040

Building Energy

Electrify existing buildings

Electrify 49% of existing residential building energy uses by 2030 and 86% by 2040

Electrify 24% of existing commercial building energy uses by 2030 and 49% by 2040



Concerns Looking Ahead

- Equity & electricity prices
- Retrofit market not ready
- Net metering
- Stranded costs

