



OFFICE OF
SUSTAINABILITY
COUNTY OF SAN MATEO



PENINSULA
CLEAN ENERGY



NFOCC Building Standards Reach Codes



COUNTY OF
SAN MATEO

Topic Outline

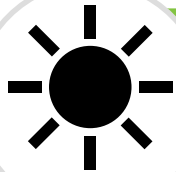
- What are “Reach Codes?”
 - Context
 - Focus Areas
 - Benefits
- Policy for Consideration
- Countywide Progress
- Timeline and Next Steps



Drivers of Electrification



CA Executive Order B-55-18 requiring all buildings to be powered by renewable energy by 2045



PCE to provide electricity from 100% renewable sources by 2023



Alignment with Municipal Green Building Policy



Government Operations and Community Climate Action Plan Updates



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What are “Reach Codes?”

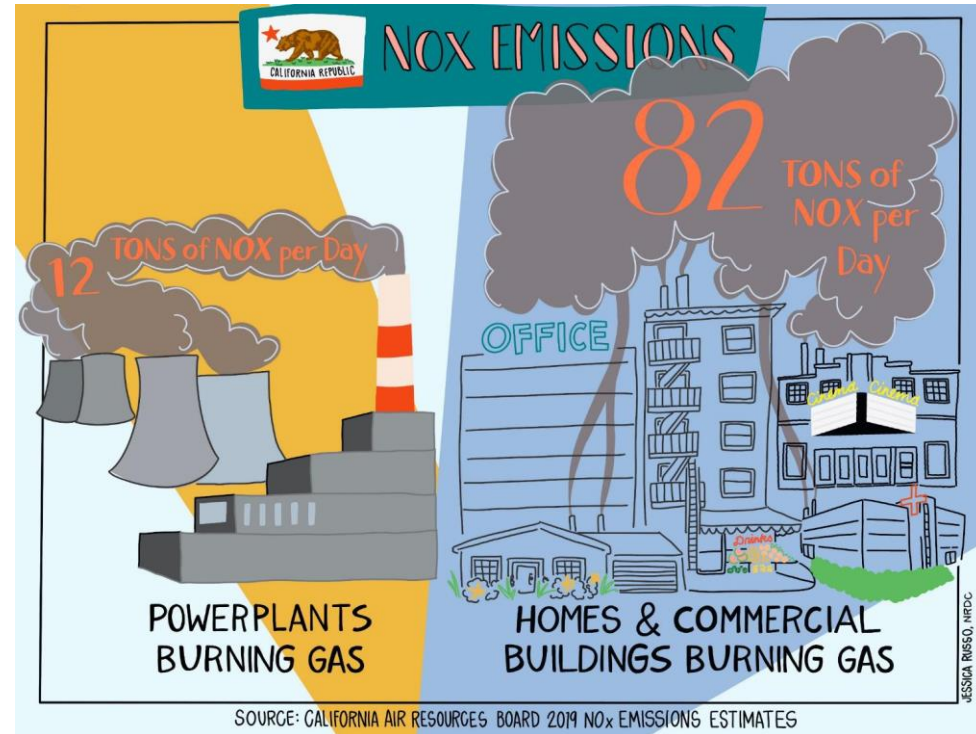
- Local Enhancements to State Building Codes and Standards
- Adopted by Individual Jurisdictions to Meet Local Climate and Building Goals
- New Code Cycle Started January 1, 2020
- Reach Codes Must be Filed with the California Building Standards Commission and the California Energy Commission



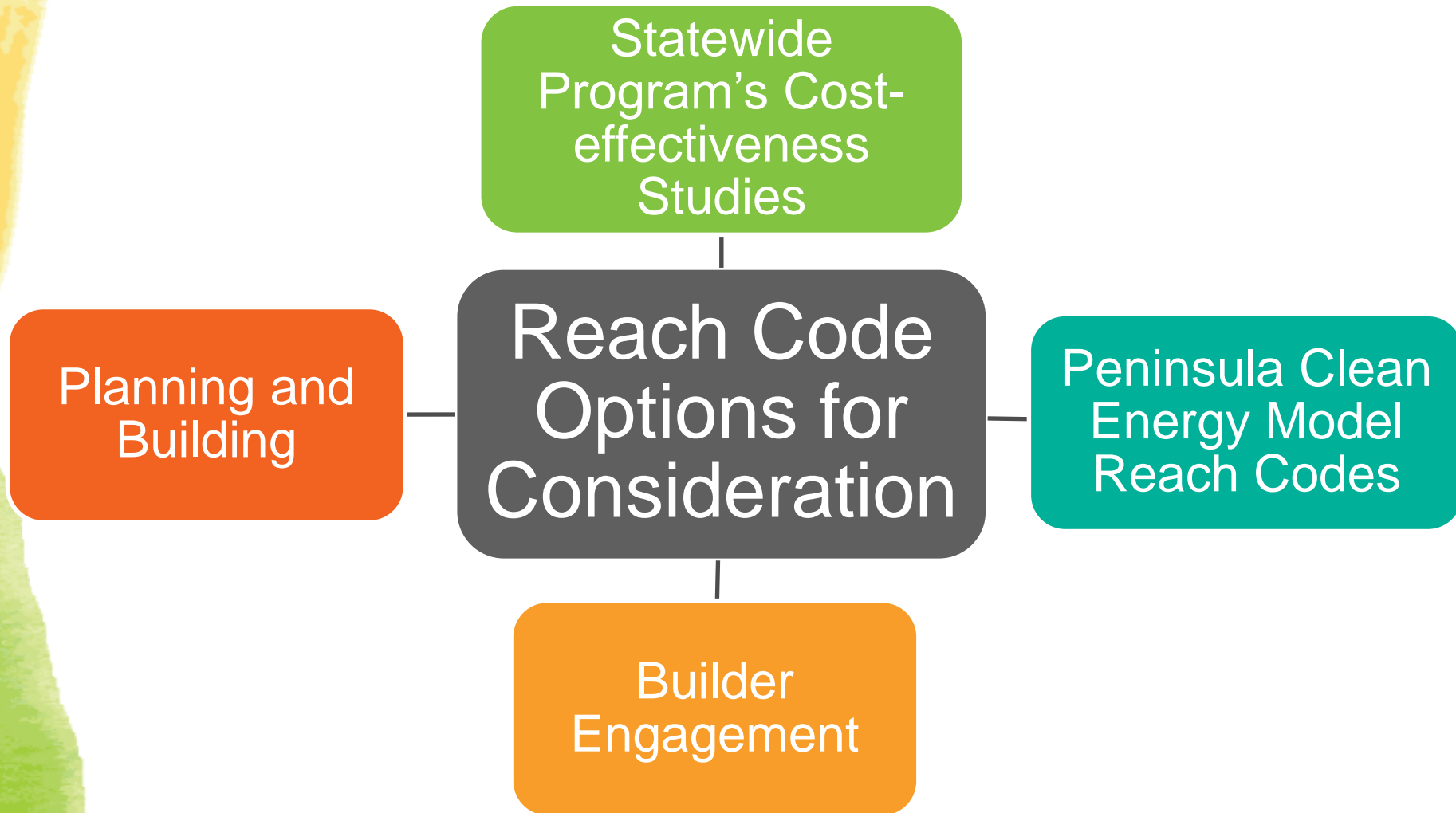
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Benefits of Reach Codes

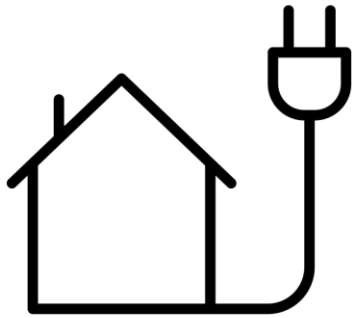
- Less expensive to construct
- Improve indoor air quality
- Reduce the risk of fires
- Achieve sustainability goals for the community



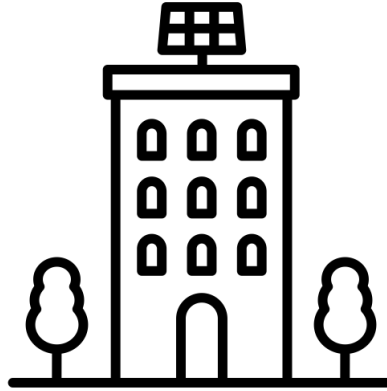
Reach Code Development



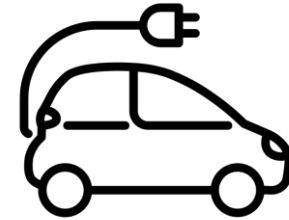
Focus areas for New Construction



**Energy Code
Reach Code
Building
Electrification**



**Energy Code
Reach Code
Mandatory Solar**



**Green Building
Code Reach Code
Electric Vehicle
Infrastructure
Readiness**



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Proposed For All NEW Construction (All Buildings Types)

Electric Required

Require Electric Fuel Source for:

- Space heating
- Water heating
- Clothes drying

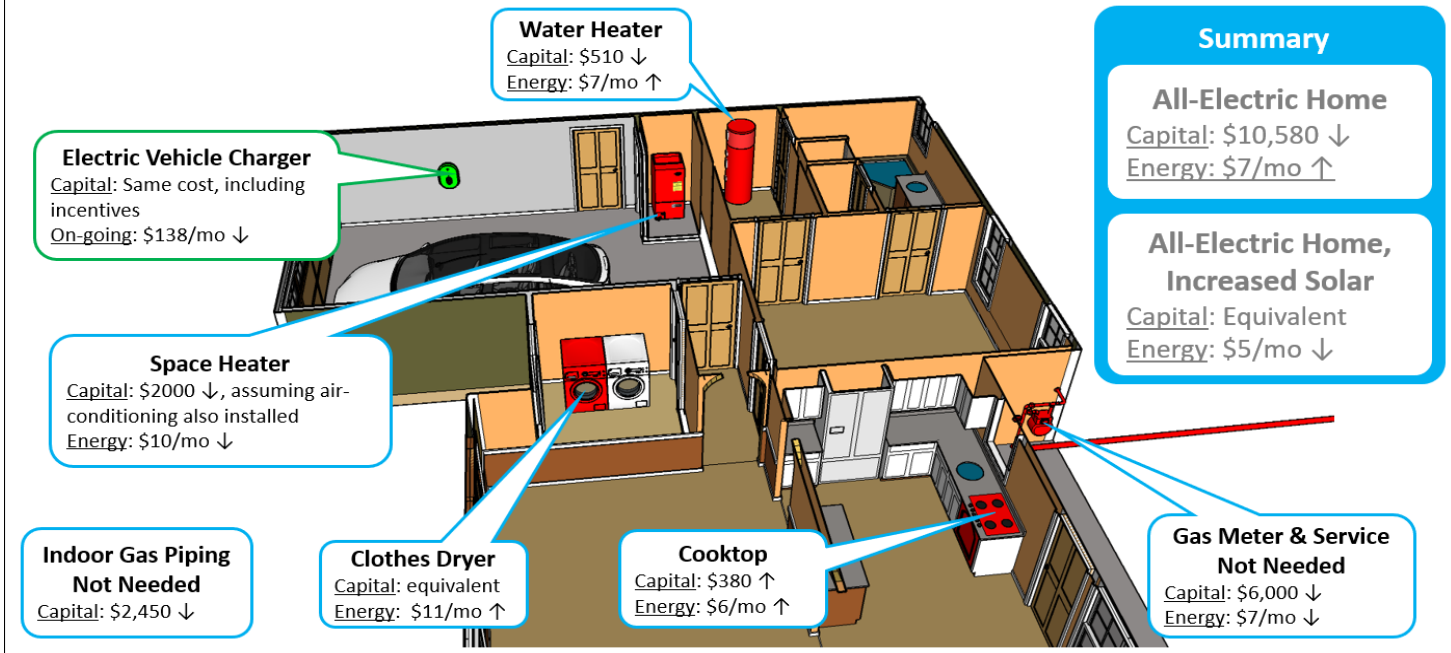
Natural Gas Can be Used for:

- Stoves
- Fireplaces
- Other decorative appliances if desired
- Pre-wiring for electric appliances is required where natural gas appliances are used.



Costs for a Single Family Home

Electrifying New Single Family Homes in the Bay Area – The Cost Story



Summary

All-Electric Home
Capital: \$10,580 ↓
Energy: \$7/mo ↑

All-Electric Home, Increased Solar
Capital: Equivalent
Energy: \$5/mo ↓






Capital and energy costs of thermal systems are based on Residential Building Electrification in California by E3 (April 2019); electricity costs specific to PCE/SVCE territory
All-Electric Home, Increased Solar bill impacts are based on Low-Rise Residential New Construction 2019 Cost Effectiveness Study by Frontier Energy (August 2019)

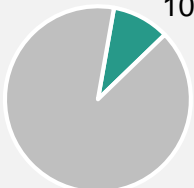
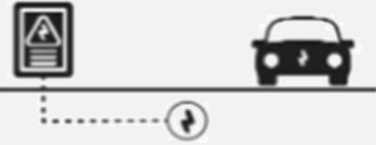


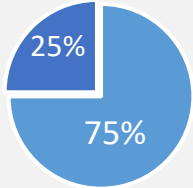



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EV Charging Policy Options for New Construction

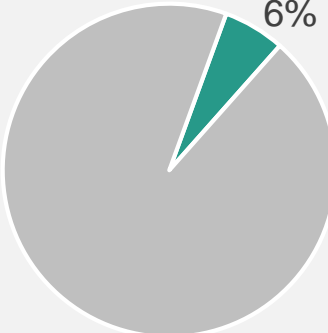

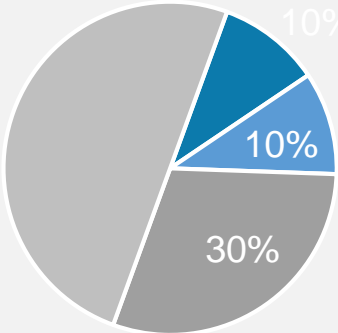
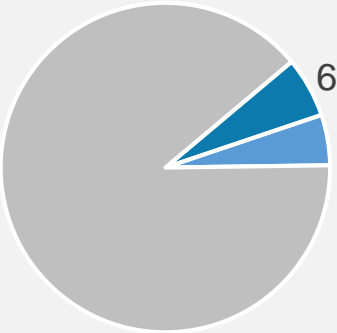
	2019 CALGreen Mandatory	County Proposed
<p>Single Family and Two Family Townhomes</p>	<p>One Level 2 EV Capable for one parking space per dwelling unit</p> 	<p>Two EV spaces total:</p> <ul style="list-style-type: none"> • One Level 2 EV Ready circuit • One Level 1 EV Ready circuit  

EV Charging Policy Options for New Construction

	2019 CALGreen Mandatory	County Proposed
Multifamily	 <p>10%</p>  <p>10% Level 2 EV Capable</p>	 <p>100%</p>  <p>≤20 dwelling units</p>  <p>25% 75%</p>  <p>>20 dwelling units</p> <ul style="list-style-type: none"> • 10% of all dwelling unit spaces install to Level 2 EV Ready • 40% of all dwelling unit spaces install to Level 1 EV Ready • Provides access to 50% of units and with management of the stations 100% of units can have access



EV Charging Options for New Construction

	2019 CALGreen Mandatory	County Proposed	
Non-Residential	 <p>6%</p>  <p>6% Level 2 EV Capable (for buildings with at least 10 parking spaces)</p>	 <p>10% 10% 30%</p> <p>Office building:</p> <ul style="list-style-type: none"> • 10% Level 2 EV Stations Installed • 10% Level 1 EV Ready • 30% EV Capable 	 <p>6% 5%</p> <p>Commercial: Of all parking spaces:</p> <ul style="list-style-type: none"> • 6% Level 2 EV Stations Installed • 5% Level 1 EV Ready



What Other Agencies are Doing

City	Buildings			Electric Vehicles
	Choice All-Electric or High Efficiency Mixed-Fuel	All-Electric with Limited Gas Usage	Natural Gas Ban	
Burlingame		Exploring		EV Ready code (PCE model)
Brisbane		ADOPTED		Aggressive EV Ready code
Menlo Park		ADOPTED		Increase chargers & EV Capable (2018)
Milpitas	ADOPTED			Increase chargers & EV Capable
Morgan Hill			ADOPTED	
Mountain View		ADOPTED		Aggressive EV Ready code
Pacifica		ADOPTED		Increase chargers (2017)
Palo Alto		ADOPTED		Aggressive EV Ready code
Redwood City		COUNCIL OK		EV Ready code (PCE model)
San Mateo	ADOPTED			Increase chargers & EV Capable
San Jose		ADOPTED	ADOPTED (low rise)	Increase chargers & EV Capable
County of San Mateo		BOARD OK	Proposed	EV Ready code (PCE model)

Over 30 municipalities in San Mateo and Santa Clara counties have adopted or are currently exploring reach codes



Next Steps

- Staff is finalizing proposed code language with feedback captured tonight
- County Staff to bring proposed Energy and Green Building Local Amendments to Board of Supervisors for approval on January 28th
- If the Board approve the amendments, code will be in effect likely in March 2020 (pending approval with California Energy Commission and filing with the California Building Standards Commission)

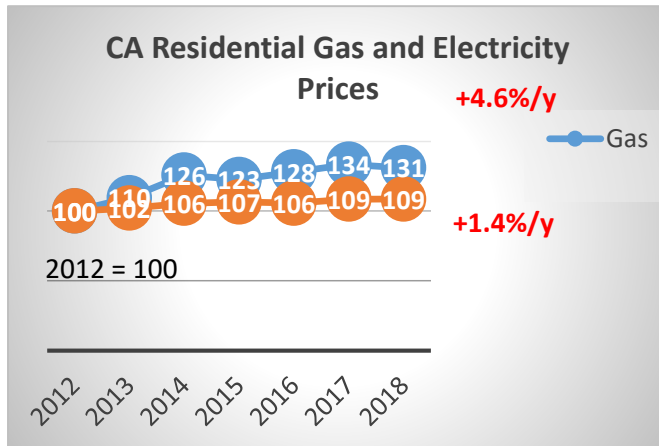


Backup Slides



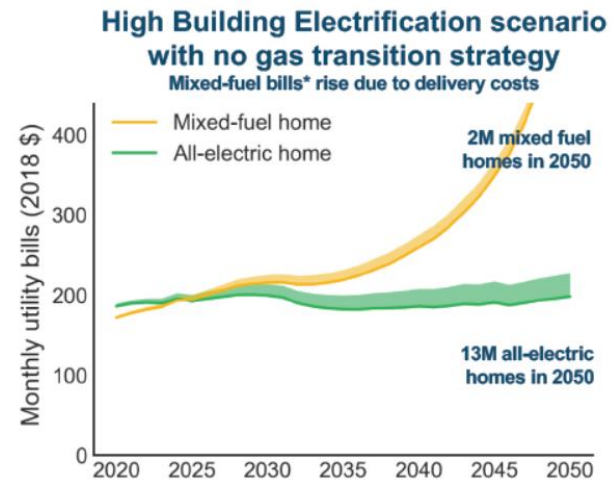
Natural Gas Costs Climbing

CA residential natural gas prices increased 3x faster than electricity prices from 2012 to 2018



Source: EIA
<https://www.eia.gov/dnav/ng/hist/n3010ca3m.htm>
<https://www.eia.gov/electricity/data/browser/#/topic/7?agg=2.0,1&geo=g&freq=M>

Trend expected to accelerate:



CEC Workshop June 6, 2019: Draft Results from E3 study on the Future of Natural Gas Distribution in California



Example Cost Breakdown - WH

Single Family New Construction Gas Option Zone 4					Single Family New Construction Electric Option Zone 4						
Installation					Installation						
Water Heater					Water Heater						
	New water heater, equipment price	1	EA	1,200.00	1,200			1	EA	1,500.00	1,500
	<i>190 kBtu/h, 0.81 UEF (0.82 EF) gas tankless in garage</i>										
	Miscellaneous supplies	1	LS	50.00	50			1	LS	50.00	50
	Labor	12	HR	95.00	1,140			6	HR	95.00	570
Piping					Piping						
Materials					Materials						
	Connection/modification of hot water piping, including valves	1	LS	400.00	400			1	LS	400.00	400
	Modification to gas piping	1	LS	200.00	200			1	LS	100.00	100
	Labor	2	HR	95.00	190			2	HR	95.00	190
Gas and Electrical Supply					Gas and Electrical Supply						
	New electrical circuits to equipment	1	EA	75.00	75			1	EA	125.00	125
	Panel and main service modification			<i>Not required</i>						<i>Not required</i>	
	Gas supply piping	20	LF	3.00	60					<i>Not required</i>	
	Labor	16	HR	95.00	1,520			8	HR	95.00	760
		55		2,213	4,835			21		2,460	3,695
	Subtotal				4,835						3,695
	General Conditions, Overhead and Profit	11.00%			532			11.00%			406
	Design and Engineering	4.00%			215			4.00%			164
	Permit, testing and inspection	1.25%			70			1.25%			53
	Contractor Profit/Market Factor										
	Recommended Budget				5,652						4,318



County Building Impact (Estimated FY18-19)

New Building Type	Number of Permits Pulled
Single Family Dwelling	60
Multifamily	1
Commercial	4
Detached Accessory Dwelling Units	10
Total	75

