



# Reach Codes 101: Implementation

Reach Code Newcomers Series 2022

# Agenda

- **Welcome**
- **Review from earlier sessions**
- **Introduction to reach code implementation**
- **Framework for implementation**
- **Local government perspectives & approaches**
- **Implementation resources**
- **Wrap-up**

# Logistics



## Recordings

- We will be recording today
- Recordings of the presentations will be available online

## Questions

- Raise hands during presentations to ask for clarifications
- We will pause for quick questions throughout
- Put comments or more involved questions in the chat



## Purpose of this webinar series

To provide background and technical information that local government staff who are new to reach codes will need in order to understand and work on them

**NOT** intending to:

- Encourage any particular reach code
- Discuss how to advocate to get one adopted
- Go into technical calculations and details
- Discuss how projects can comply

*Poll: Who's in the room?*



# Session 1: Introduction

## What is a reach code?

- Amendment to California Energy Code (Title 24 Part 6)

## Reach code requirements

- Must be at least as restrictive as the Energy Code
- Must include findings that the reach code is needed for local climatic, geological, topographical, or environmental reasons
- Can't specifically require equipment that exceeds federal standards (federal preemption)
- Must be cost-effective
- Must be approved by CEC and filed with BSC

## Other policy tools are also available

- Different legal bases and requirements
- Sometimes informally also called “reach codes”

Reach Codes

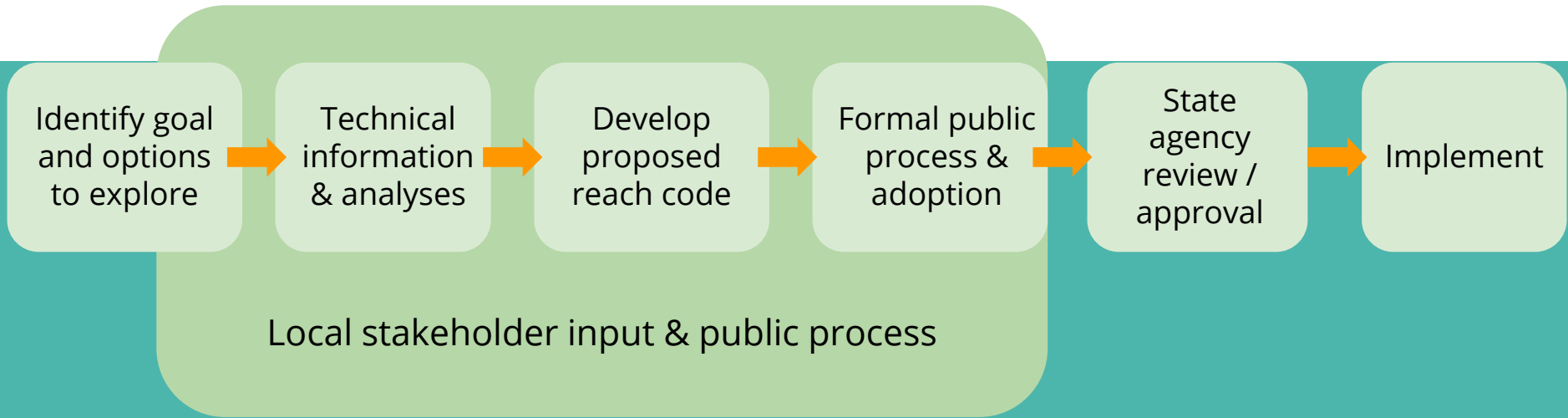
2022  
California  
Building Code

2023

2024

2025

# Session 2: Reach Code Process





# Session 3: Cost-Effectiveness



## Key Points:

- Something is cost-effective when the value of benefits exceeds the costs
- Can be cost-effective on an on-bill or Time Dependent Valuation basis
- Can use to assess policy impacts as well as to document legal compliance
- Can mean different things to different stakeholders (developers, building owners, tenants, society)
- Can be used to help balance different interests
- Many studies available at [localenergycodes.com](http://localenergycodes.com) and through the Cost-Effectiveness Explorer
- It's complicated but help is available!

# Session 4: Local Ordinance Structure Options

	Applicability			Example Ordinances Exist
	New Construction	During Retrofits	Existing Buildings	
→ Reach Codes	◆	◆		Yes
→ Natural Gas Moratorium (Municipal Ordinance)	◆		◆	Yes
Emission Limit on Appliances	◆	◆	◆	*
Require Appliance Replacement <ul style="list-style-type: none"> <li>- on Burnout / Retrofit</li> <li>- at Time of Sale</li> </ul>		◆	◆ ◆	Developing
Community Scale Phase Out	◆		◆	*
Building Emissions Standards	◆	◆	◆	Yes

**New Construction efforts started here in 2019**



# Reach Code Implementation



# Adoption is just the beginning

## Implementation is what turns a reach code into real benefits

- Energy savings
- Greenhouse gas reductions

## Barriers include:

- Time and staff constraints
- Lack of understanding
- Lack of information



# Two perspectives on reach code implementation



Marin County analysis of real-world impact of reach codes



Survey of California local governments on reach code implementation

# Reach Code Analysis

## Tracking Impact on Single Family New Construction

by

Brian Reyes

Sustainability Planner

Photo Credit: Jeff Wong

Community Development Agency  
3501 Civic Center Drive, Rm 308  
San Rafael, CA  
[www.marinsustainability.org](http://www.marinsustainability.org)



# A Variety of Green Building Codes

Jurisdiction	Current Reach Code Status	Additional Efficiency Required
County of Marin (Unincorporated)	CalGreen Tier 1 + Electric Preferred	None for all-electric
Mill Valley		Increase energy efficiency w/more fuel appliances
San Anselmo		
Novato	CalGreen Tier 1	Tier 1
San Rafael		
Tiburon	CalGreen Tier 1	None - excludes Tier 1 efficiency requirements
Fairfax		
Belvedere	None	None
Corte Madera		
Larkspur		
Ross		
Sausalito		

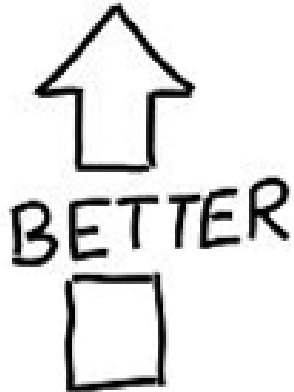
# 2019 County of Marin Green Building Requirements for New Construction

+ "CalGreen Tier 1 Reach Codes"

+ Energy Reach Code "Electric Preferred  
Enhanced Energy Efficiency  
Requirements"

+ 3 Pathways

1. All-Electric (no Gas),
2. Limited-Mixed Fuel  
(Gas Cooking and/or Fireplace only)
3. Mixed Fuel  
(Gas and/or Electric)





# Why this Analysis?

Needed a better way to assess rather than digging into each building dept. permit applications

Assess whether our New Construction Energy Reach Codes were working as intended

- Are we seeing energy and GHG reductions and how they vary across jurisdictions?
- Are our codes being enforced?
- How are building codes affecting change across the various code types in the County?





# Hypothesis

*“More aggressive green building energy conservation requirements will result in more building energy and GHG savings”*

# Methodology and Limitations

1. Residential New Construction from CalCERTs and CHEERS
2. Process, Visualize, Analyze, and Replicate using PowerBI
3. Targeted Interviews of Architects
4. Limitations
  - 2016 TDV vs 2019 EDR compliance metrics
  - Projects sampled according to Design, NOT what was installed

2016

2019

Count

472

## Jurisdiction Boundaries

- Select all
- City of Berkeley
- City of Fairfax
- City of Larkspur
- City of Mill Valley
- City of Novato
- City of San Anselmo
- City of San Rafael
- City of Sausalito
- City of Tiburon
- County of Marin

# Results

(Findings)

1. Impact of Energy Reach Codes Across 2016 and 2019 Cycles
2. Impact of 2019 Electric Preferred Energy and Electrification Reach Code

# Impact of Energy and Electrification Reach Code

Avg. Compliance Margin (Time Dependent Valuation)  
Countywide

Code Year ● 2016 ● 2019

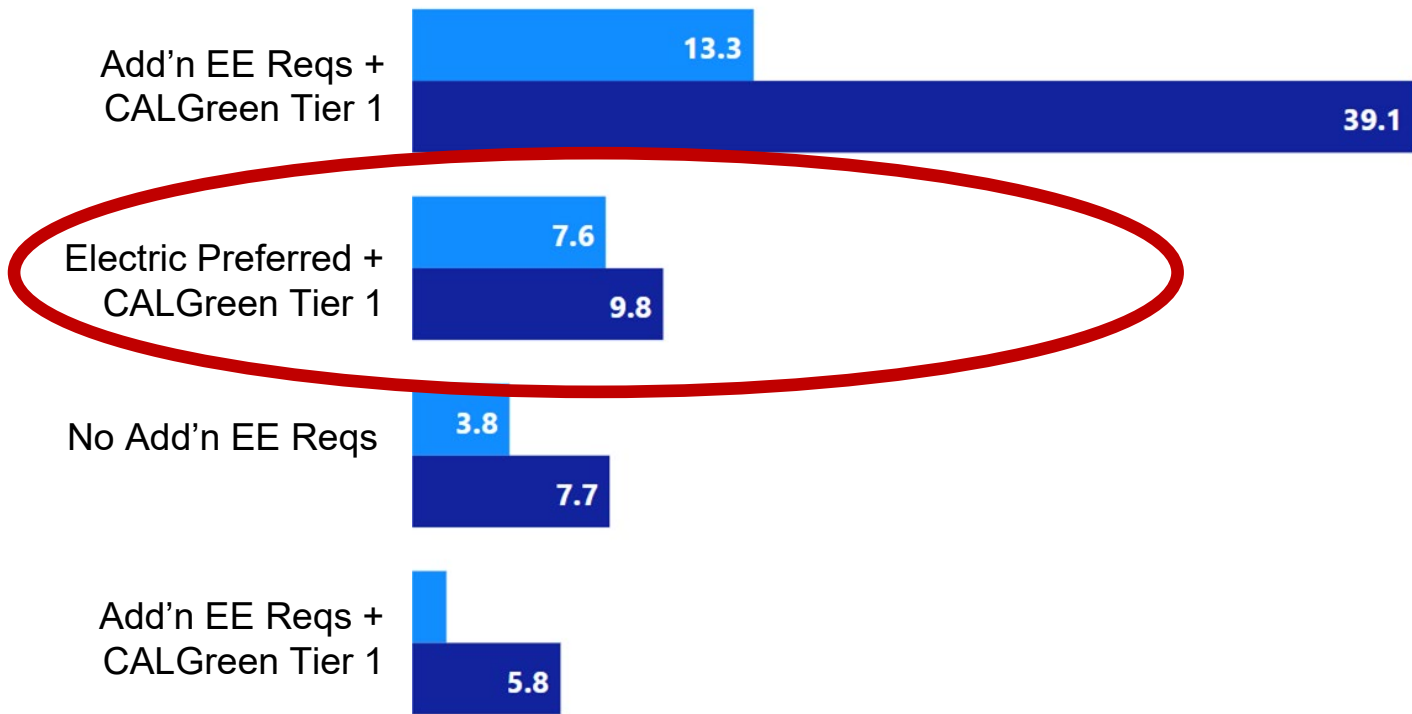


Sample Size  
284

# Impact of Energy and Electrification Reach Code

## Avg. Compliance Margin (TDV) by Code Type

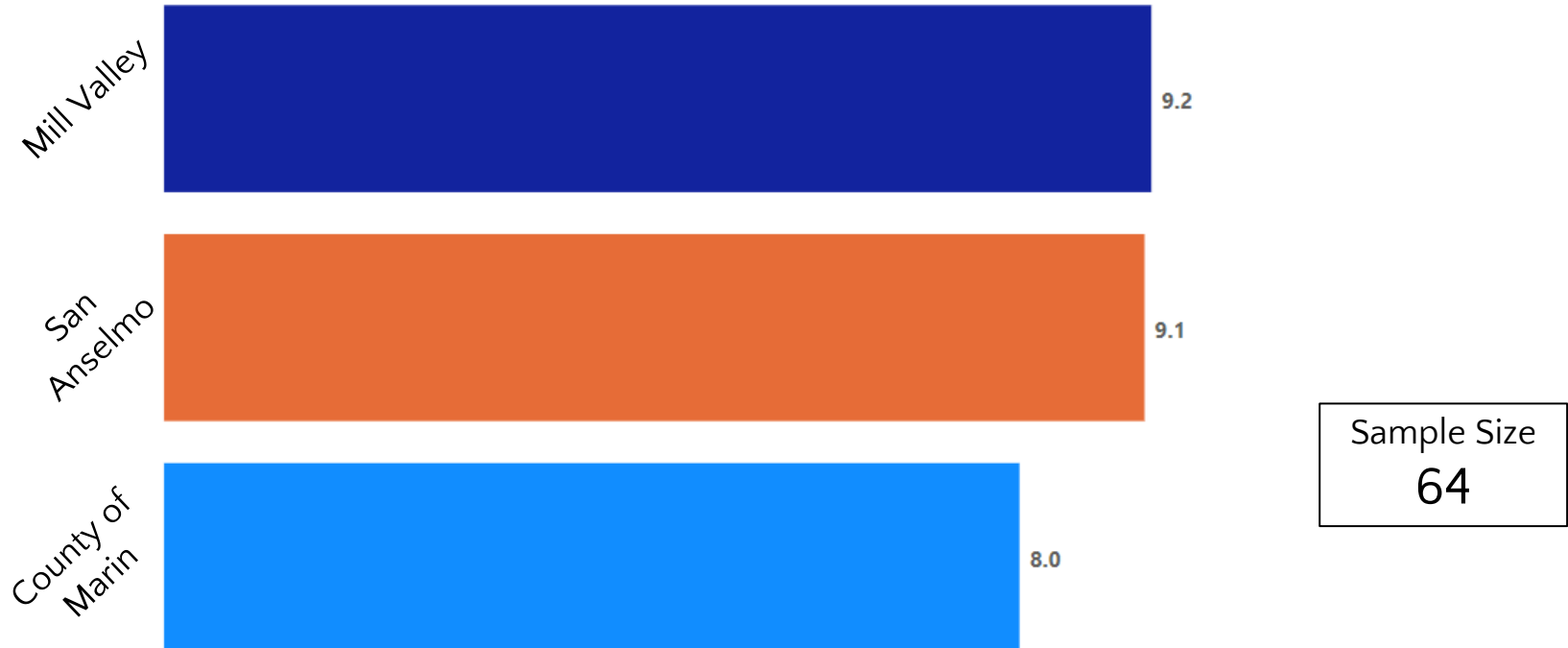
Code Year ● 2016 ● 2019



Sample Size  
284

# Impact of Electric Preferred Reach Code by Jurisdictions

2019 Avg. Energy Design Rating (EDR) Compliance Margin



# 2019 Electric Preferred Reach Codes are NOT driving all-electric adoption in New Construction in Marin County

Electric Preferred Pathways	# of Projects	Adoption Rate
All-electric (No Gas)	7	11%
Limited Mixed Fuel (At minimum Gas Cooking and/or Fireplace allowed)	14	22%
Mixed Fuel (Gas+Electric)	39	67%
Total	64	100%



# Key Findings

- Hypothesis: True, *"More aggressive green building energy conservation requirements will result in more building energy and GHG savings"*
- Majority (2/3<sup>rds</sup>) 2019 Residential New Construction Projects still opted for gas installs
- Architects/design team needs to drive All-Electric choice
  - Architect Quote *"9 out of 10 clients want gas cooking"*

# Key Findings

- Compliance documentation and enforcement needs to be improved and streamlined
  - Some were not enforcing
  - It's like a language! Recurring Training Needed
  - HERS Database: Data delay on Installed Permit Database : No delay; now
  - Checklists by appliance to measure GHGs site energy use
    - Solicited plan check/inspector input

**5. INPUT THE FOLLOWING INFORMATION AND CHECK BOXES ONCE COMPLETE:**

*Note: Information available via Title 24 computer software used to summarize energy use*

Total Conditioned Floor Area \_\_\_\_\_ square feet

Input all applicable End Uses and their Standard and Proposed Design Energy use below:

<b>End Use</b>	<b>Standard Design Site Electricity (kWh)</b>	<b>Standard Design Site Natural Gas (therms)</b>	<b>Proposed Design Site Electricity (kWh)</b>	<b>Proposed Design Site Natural Gas (therms)</b>
<b>Space Heating</b>				
<b>Space Cooling</b>				
<b>Indoor Air Quality (IAQ) Ventilation</b>				
<b>Water Heating</b>				
<b>Self Util/Flexibility Credit</b>				
<b>Photovoltaics</b> <i>(a negative number)</i>				
<b>Battery</b>				
<b>Flexibility</b> <i>(demand shifting of</i>				



# Thank You

BRIAN REYES

SUSTAINABILITY PLANNER

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY

[BREYES@MARINCOUNTY.ORG](mailto:BREYES@MARINCOUNTY.ORG)

415-473-2797

*Photo Credit: Jeff Wong*



***Building Electrification Survey:  
Lessons Learned From Local  
Government Staff  
2022***

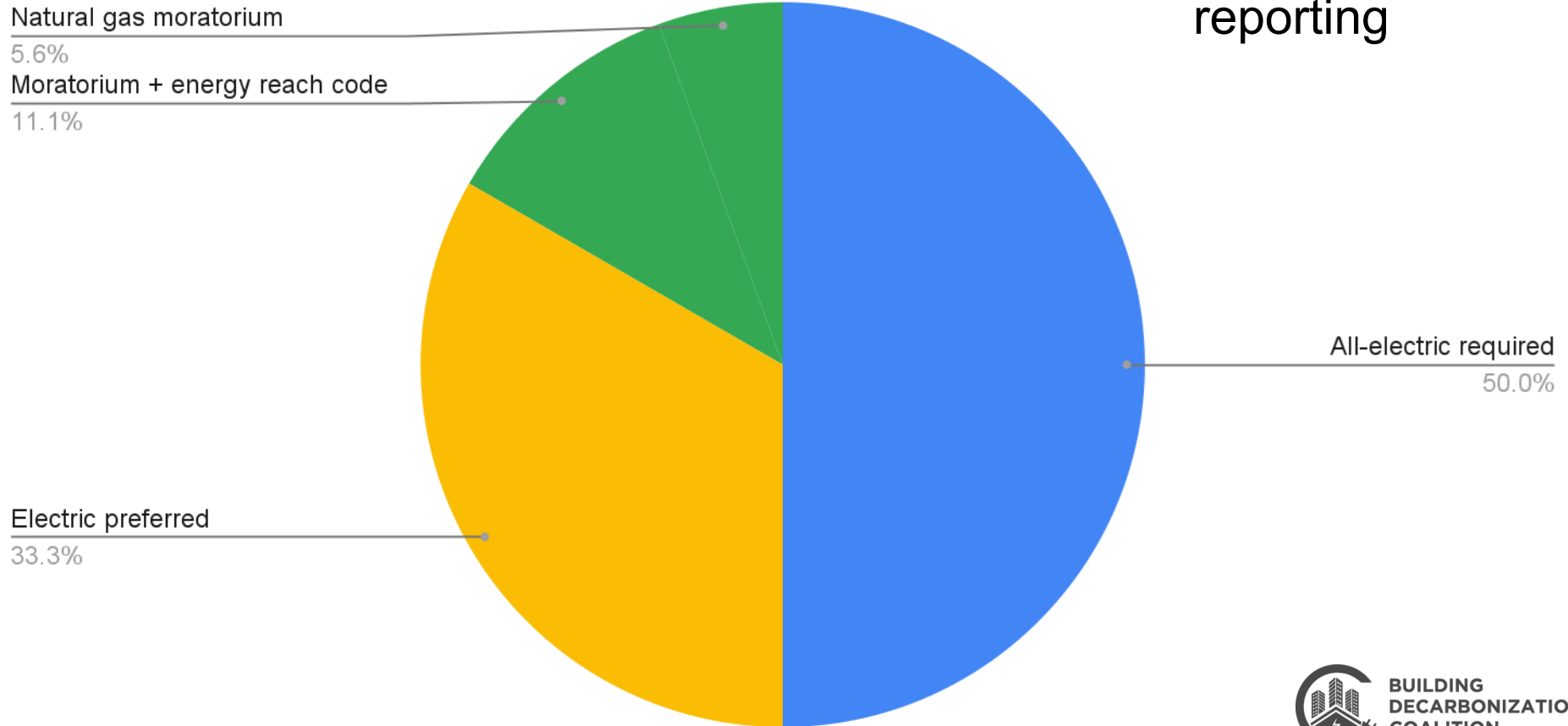
# Survey questions

How is building electrification ordinance implementation going?

- By the numbers (total vs all-electric):
  - Residential dwelling units
  - Single family residential
  - Commercial
- Implementation
  - Tracking
  - Challenges
  - Success stories

# Type of Ordinance

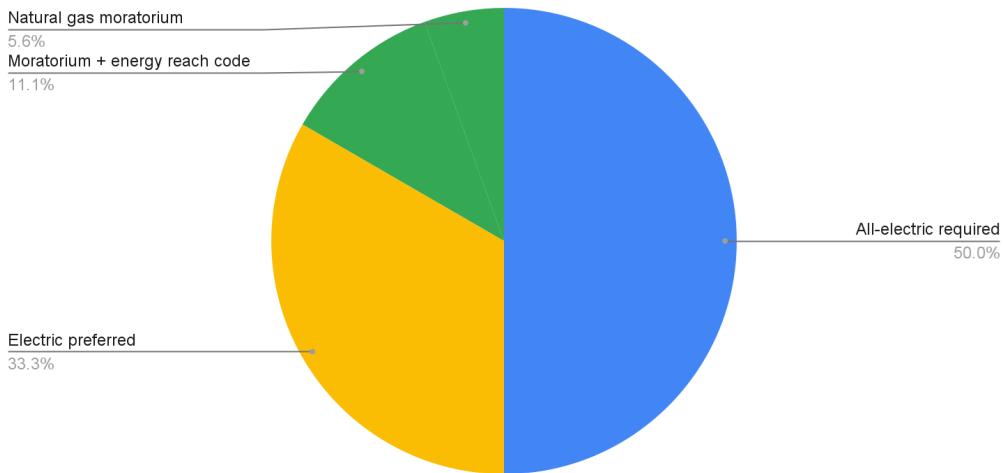
18 jurisdictions  
reporting





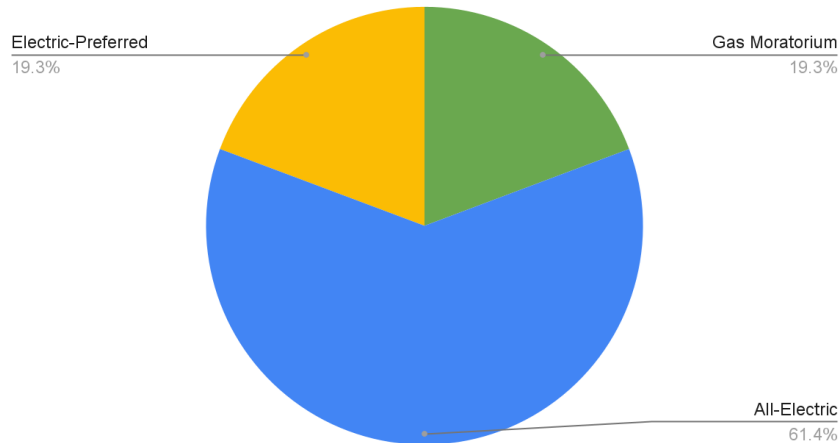
# Type of Ordinance: Survey Response vs Statewide

## From Survey N = 18

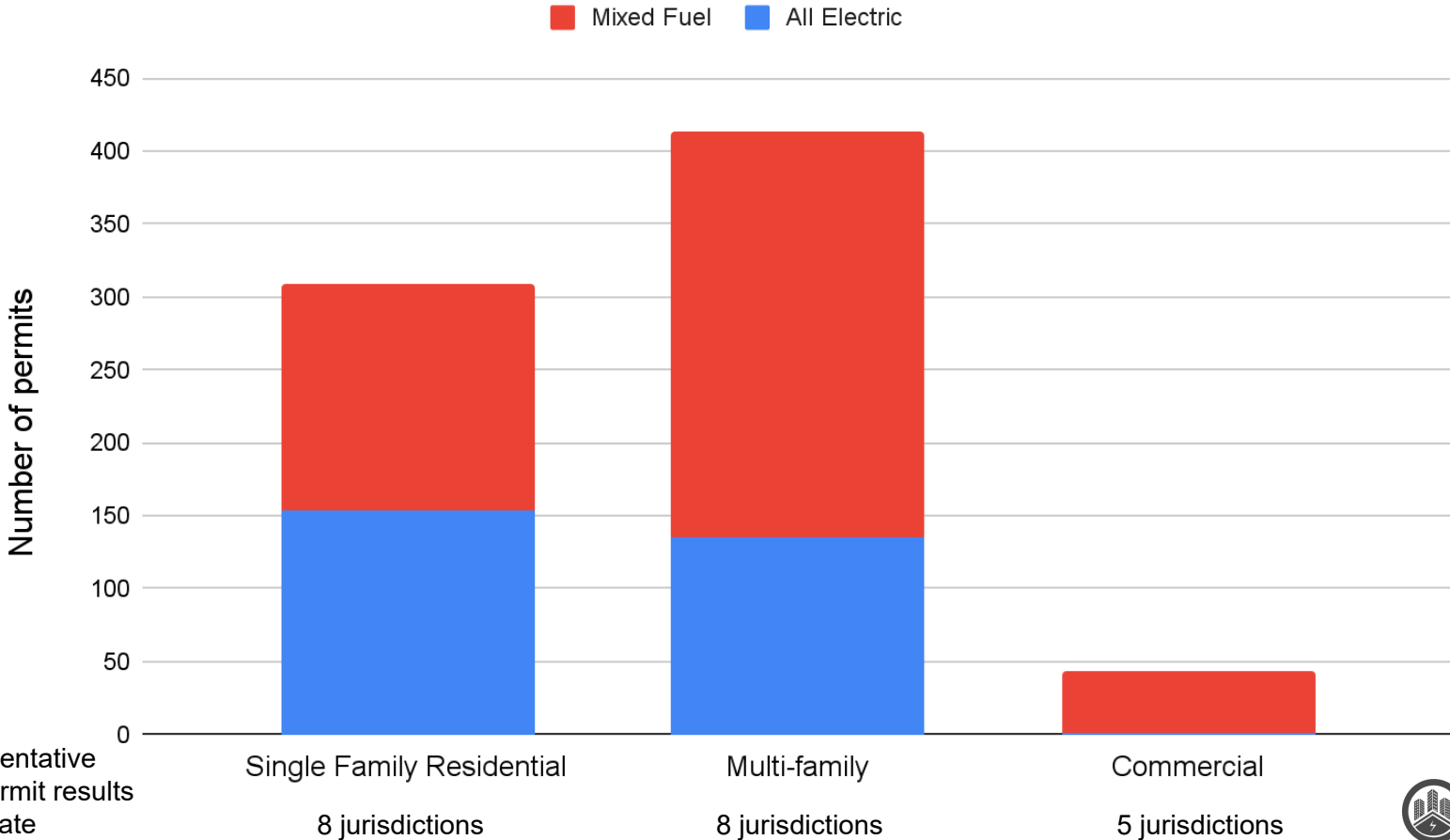


## Total Statewide, N = 59

### Quantity of Ordinances by Approach



# Total Permits Post Building Electrification Ordinance Adoption \*



\*not a representative sample of permit results across the state

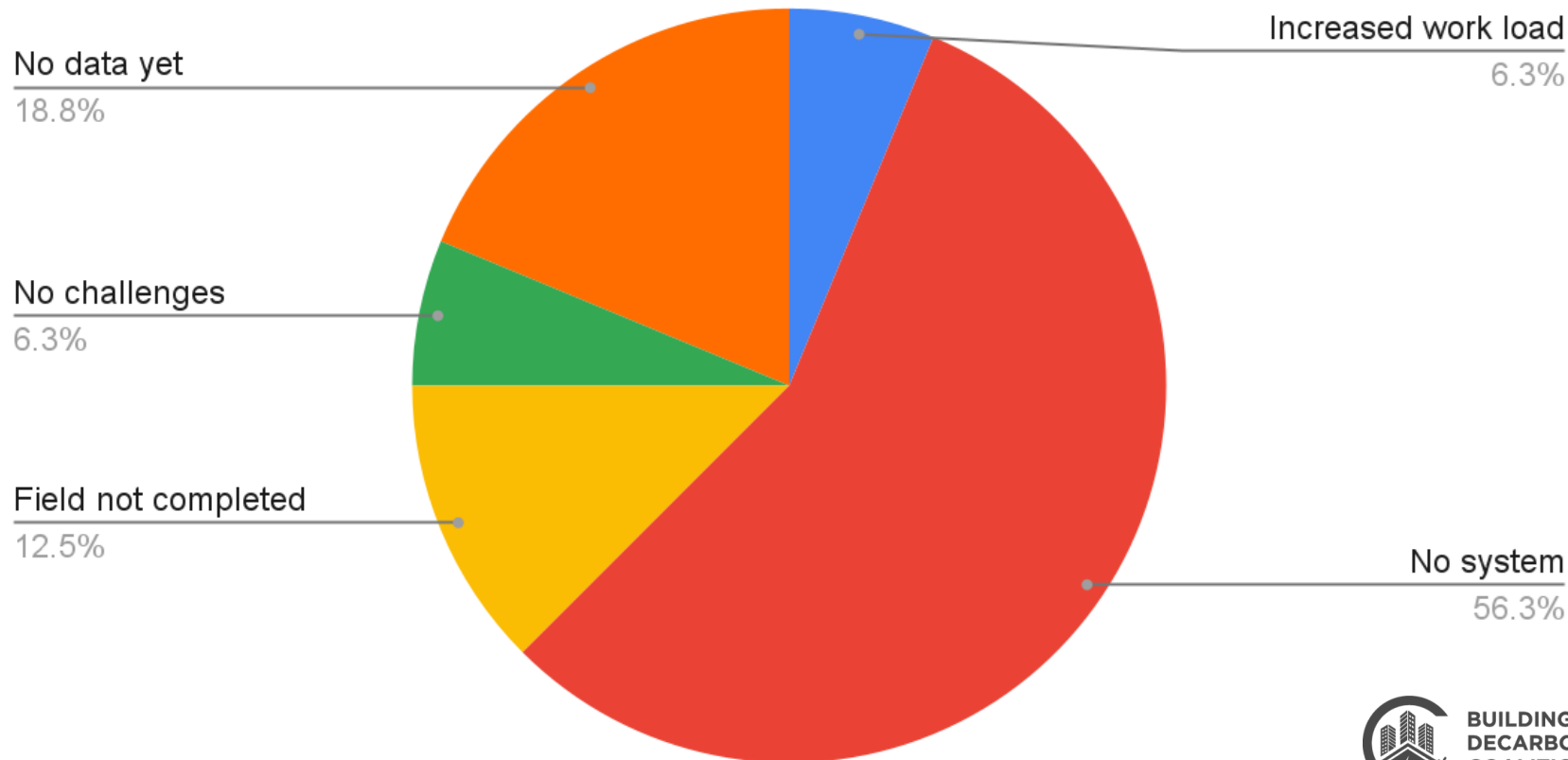
# Analysis

Why were mixed fuel permits allowed?

- Too early for data
- Exemptions due to planning entitlements
- ADU exemptions
- Occupancy type exemptions
- Additions to an existing house

# What challenges does your jurisdiction face in tracking implementation information?

N = 16



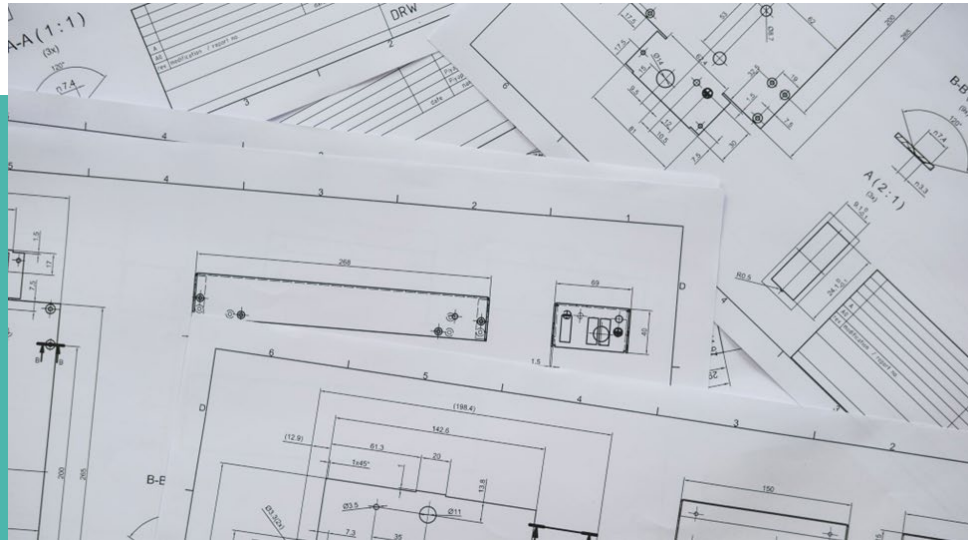
# Implementation

- Challenges summarized
  - PGE lead times
  - CEC delay
  - Pushback from developers
  - Lack of staff to implement
  - No system to track data
- Success stories summarized
  - Some NOT getting pushback from developers
  - A few large all-electric buildings under construction.

# Discussion / Q&A



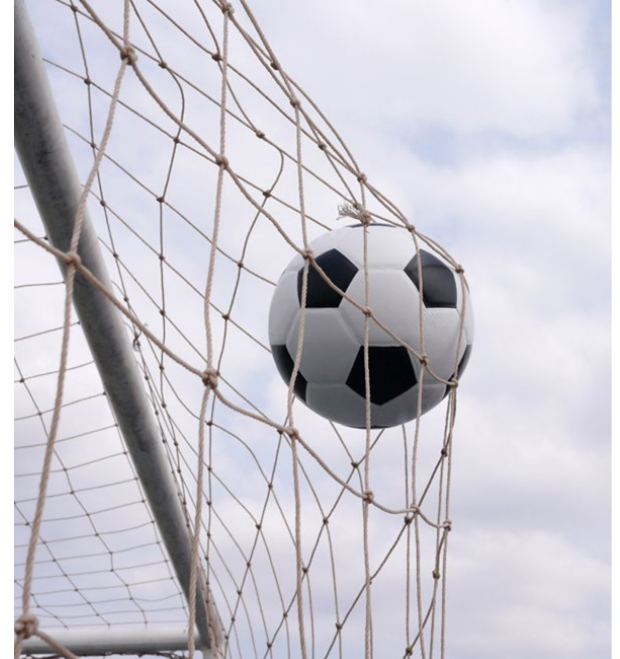
# Framework for Reach Code Implementation





# Goals of Implementation

1. **Realize the policy goals** of the reach code  
(energy savings, greenhouse gas reductions)
2. Identify problems and places for improvement
3. Track successes



# Who is involved?

## Jurisdiction staff:

- Sustainability
- Planning
- Building



## Applicants:

- Property owners
- Developers
- Architects
- Energy consultants
- Contractors

**Others:** Elected officials, environmental organizations, manufacturers, and more

# Outward Facing Resources

## Purpose

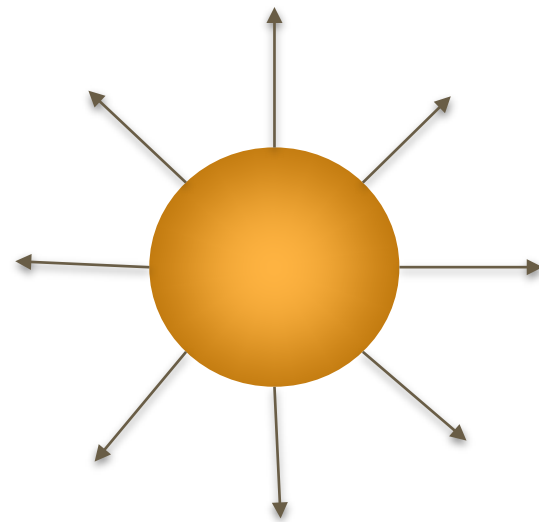
To communicate reach code requirements to **project applicants**

## Considerations:

- Content – **What** do applicants need to know?
- Timing – **When** do applicants need to know?
- Format – **How** to best communicate with applicants

## Common Types:

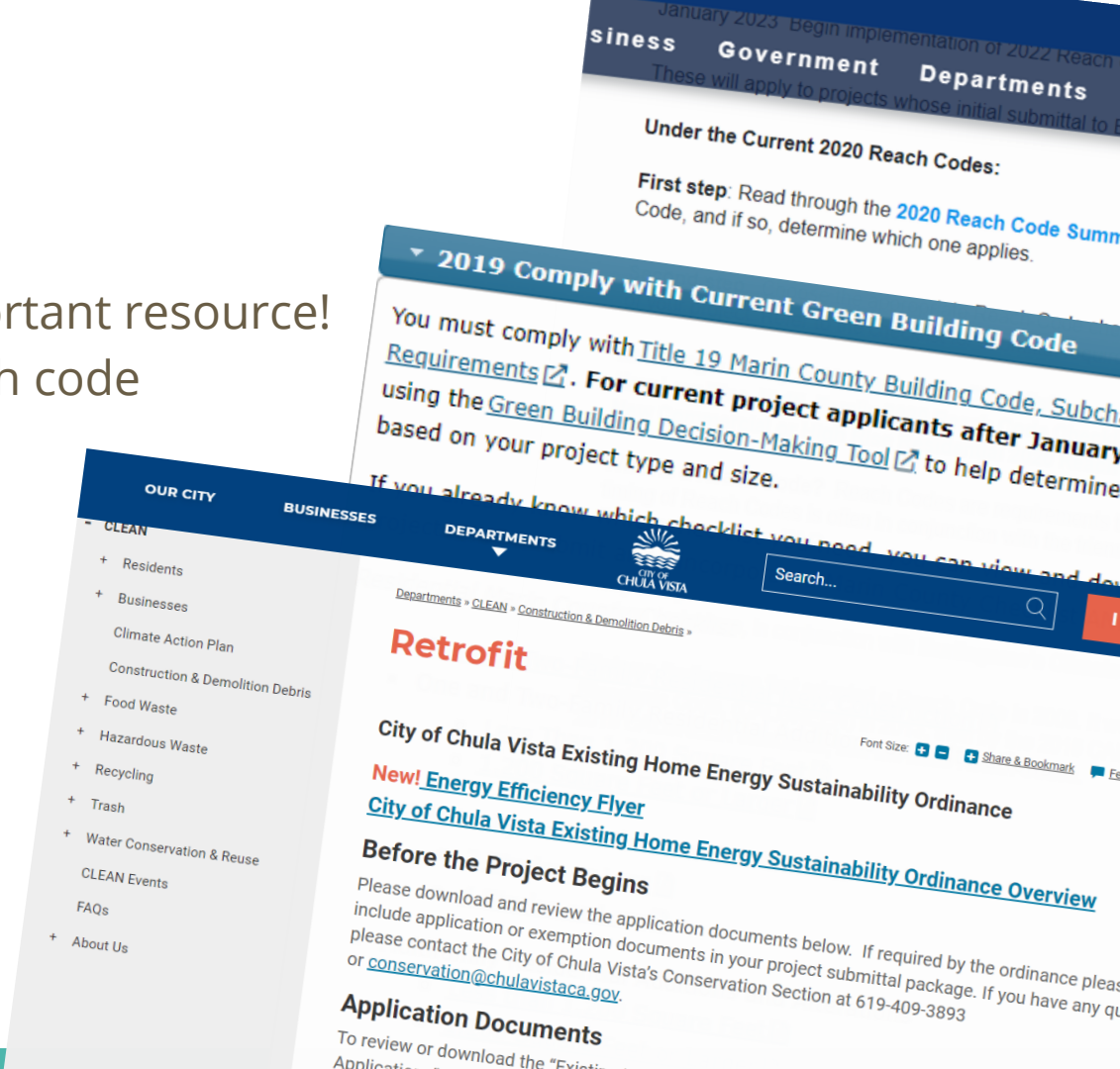
- Handouts: Summary sheet, etc.
- Websites



# Website examples

Jurisdiction's website is an important resource!  
Examples of websites with reach code information:

- [Berkeley](#)
- [Burlingame](#)
- [Chula Vista](#)
- [Encinitas](#)
- [Marin County](#)
- [San Luis Obispo \(City\)](#)



# Inward Facing Resources

## Purpose

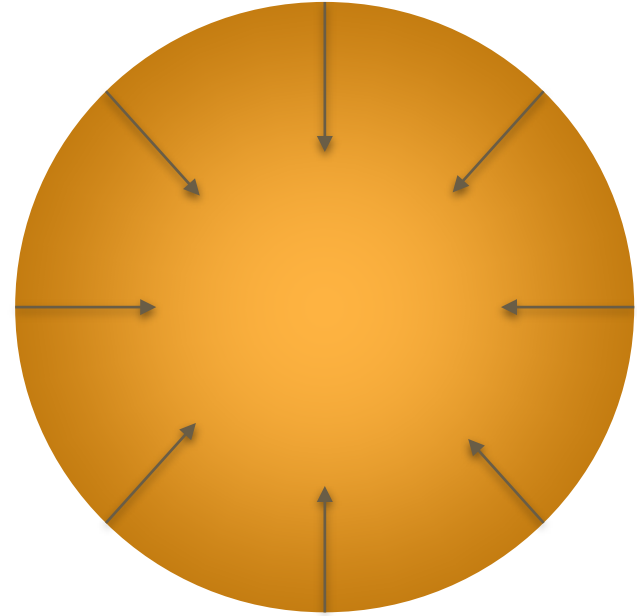
To communicate about reach code requirements with **jurisdiction staff**

## Considerations:

- Who – **Who** on staff will be **explaining** the reach code? Who will be **enforcing** it?
- How – **How** to best support staff?

## Common Types:

- Handouts: Checklists, etc.
- Training



# Local Government Perspectives and Approaches



# Santa Barbara



All new construction buildings have a prohibition of installing natural gas infrastructure:

- Applies to building permits submitted after 12/31/21
- Exemptions allowed for commercial kitchens, clean rooms, laboratories, and projects where electrification is not feasible.
- Includes build-backs and renovations involving major demolition

# Burlingame

New buildings required to be all electric

- Applies to all building permits submitted after 10/16/20
- Single family exceptions for cooking appliances, fireplaces and fire-pits
- Non-residential exceptions for for-profit restaurants or commercial kitchens
- All buildings with exemptions must pre-wire

Burlingame also has:

- EV requirements for all building types
- Solar PV requirements for multifamily and non-residential buildings





# Discussion / Q&A



# Burlingame

Reach code implementation recommendations:

- Get as much onto the plans as possible
- Give clear instruction with verbatim notes
- Verify that the plans and the CF1R match
- Rely on inspectors in the field
- Verify energy features on the HERS registry so I don't have to go to jobsites



# Discussion / Q&A



# Reach Code Implementation Resources



# Reach Code Fact Sheets, Summaries & Checklists

- To communicate and summarize reach code requirements
- Can be general or customized for particular types of projects
- For both applicants and staff
- Customizable templates available online

Link to [customizable templates](#)

**LOCAL LOGO**

**SUMMARY OF LOCAL BUILDING ENERGY STANDARDS**  
This document is intended as a companion to the Electric-Deferred Reach Code application checklists. It should be modified.

**LOCAL LOGO**

**LOCAL BUILDING ENERGY STANDARDS FOR RESIDENTIAL NEW CONSTRUCTION**

PROJECT ADDRESS: \_\_\_\_\_  
APN: \_\_\_\_\_  
APPLICANT NAME: \_\_\_\_\_

**1. ENERGY EFFICIENCY AND ELECTRIFICATION**  
Note: all projects must comply with mandatory elements of the 2019 Building Energy Efficiency Standards as demonstrated on the 2019 Certificate of Compliance form.

All-Electric  
 No natural gas or propane appliances  
 No gas meters or propane infrastructure  
 Compliance with energy efficiency standards required by the State (no additional requirements are met for each:

OR

Mixed-Fuel  
 Improved Energy Efficiency (choose either performance or prescriptive)  
 Performance Option:  
 Total EDR Margin greater than or equal to [X], [CALGREEN] - "Total EDR" for single family and Y for multifamily  
 Efficiency Standards CF1R-PRF-01 Certificate of Compliance form  
 Prescriptive Option:  
 Install all measures specified in [reference prescriptive section of local code]

All-electric readiness: Check the box for each appliance that uses natural gas or propane additional requirements are met for each:  
 Water Heater  
 Dedicated 240V, 30A circuit and receptacle within 3 feet  
 Condensate drain  
 Stove/Cooktop - Dedicated 240V, 40A circuit and 50A receptacle within 3 feet  
 Stand Alone Oven - Dedicated 240V, 20A receptacle within 3 feet  
 Clothes Dryer - Dedicated 240V, 20A receptacle within 3 feet  
 Furnace/Space Heater  
 Dedicated 240V, 30A electrical receptacle located within 3 feet  
 Condensate drain  
 Shared Gas Appliances - Electrical circuit within 3 feet of designated location

Other: \_\_\_\_\_ - Electrical panel and raceway capacity for equivalent electrical appliances

**2. GREEN BUILDING**  
 The permit application includes a completed CALGreen checklist

Occupancy Type	Requirements
All-Electric P	• Meet or exceed Efficiency
Mixed-Fuel P	• Exceed the Standards margin of [For CALGreen Energy D] • Install circuit conversion
Single Family	• 1 EV Ready • 1 space per unit
Multifamily E	• [X]% Lev • [X]% Lev • [X]% Lev • [X]% spa Stations
All-Electric P	• Meet or exceed Efficiency • Install a [modify a]
Mixed-Fuel P	• Exceed the Standard [X]% • Install circuit conversion • Install a [Zone line]

Residential Projects (3 stories or less)

Residential Projects (4 stories or more)

# Training

- Can be helpful for enforcement staff
- Talk with staff about training options
- Choices range from informal to formal
- Don't forget new staff!

## REACH CODE IMPLEMENTATION RESOURCES TEMPLATE

This template is intended for educational purposes only, without any express or implied warranty of any kind, including warranties of accuracy, completeness, or fitness for any particular purpose. You agree that your use of the template is without any recourse whatsoever to PG&E, SCE, SDG&E, SCG, or their affiliates. The template is a draft, and anyone using this document should seek the advice of an attorney to develop appropriate ordinance language to meet its jurisdiction's specific needs, as state and local laws may differ.

**This document is the product of a collaborative effort:**

Building Decarbonization Coalition  
BayREN  
Peninsula Clean Energy  
Silicon Valley Clean Energy  
East Bay Clean Energy  
New Buildings Institute  
Statewide Utility Codes and Standards Program: Reach Codes  
& Staff from Multiple California Jurisdictions  
For additional information contact [info@LocalEnergyCodes.com](mailto:info@LocalEnergyCodes.com)

[Link to generic training slide deck](#)

The logo for BayREN, featuring the word "BAYREN" in a bold, teal, sans-serif font. The letters are slightly shadowed to give a 3D effect.

Local Governments Empowering Our Communities

## Reach Code Training – City of Milpitas

BayREN Codes & Standards

Amy Dryden  
[www.BayRENcodes.org](http://www.BayRENcodes.org)

[Link to BayREN trainings](#)



# Tools for Tracking

Think early about what you might want and how to get it

- Permit tracking system
- Permit forms
- Project files
- Spreadsheets



# Wrap up





# Keys to Implementation

## Staff time

- Plan for time for implementation
- Designated champion for ongoing implementation
- Time for all staff for initial training and refreshers

## Communication

- Clear, early communication with applicants
- Clear communication with staff
  - What kind of support do they want?
  - Ongoing challenges

## Tracking

- Consider what you'll need to understand and document the policy impacts in a couple years
- Set up systems for collecting data
- Monitor and adjust (and report out!)



# Discussion / Q&A



# Contact Information

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# Reach Code Resources

- California Energy Commission Local Ordinance page: <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency-3>
- Local Energy Codes: <https://localenergycodes.com/>
- BayREN Energy Policies & Reach Codes: <https://www.bayren.org/local-government-resources/energy-policies-reach-codes>
- California Building Standards Commission Local Amendments page: <https://www.dgs.ca.gov/BSC/Codes/Local-Amendments-to-Building-Standards---Ordinances>
- [BDC's Clean Building Compass for Local Governments](#)



# Newcomer's Reach Code Webinar Series

## Five webinars:

1. Introduction to Reach Codes – January 25
2. Reach Code Process and Timing – February 22
3. Cost-Effectiveness Analyses – March 22
4. Reach Code Ordinance Options – April 26
5. Implementation – September 27

*Slides and recordings are available online at:*

<https://www.bayren.org/events/topics/reach-code-newcomers-webinar-series>

or

[https://www.youtube.com/channel/UCs5oIFOvtMRgwoB7N\\_O6yag](https://www.youtube.com/channel/UCs5oIFOvtMRgwoB7N_O6yag)



**Thank you!**

