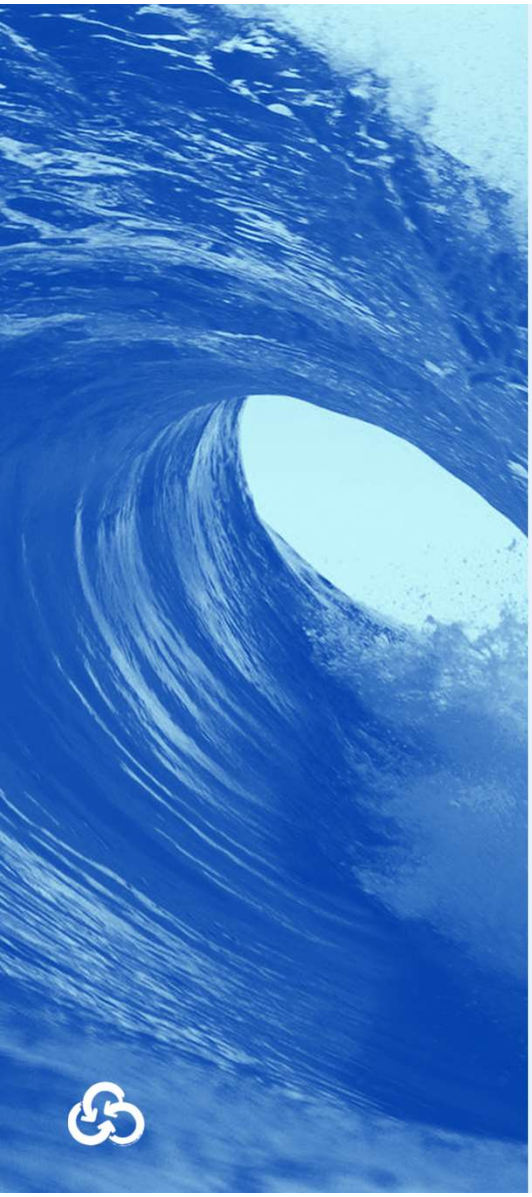
OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

RICAPS Monthly Meeting

February 27, 2024

C/CAG City/County Association of Governments of San Mateo County
SAN MATEO COUNTY ENERGY WATCH
PENINSULA CLEAN ENERGY

RICAPS technical assistance is available due to funding from the City/County Association of Governments (C/CAG), Peninsula Clean Energy, and the San Mateo County Energy Watch program, which is funded by California utility customers, administered by Pacific Gas and Electric Company (PG&E) under the auspices of the California Public Utilities Commission and additional funding provided by Peninsula Clean Energy.



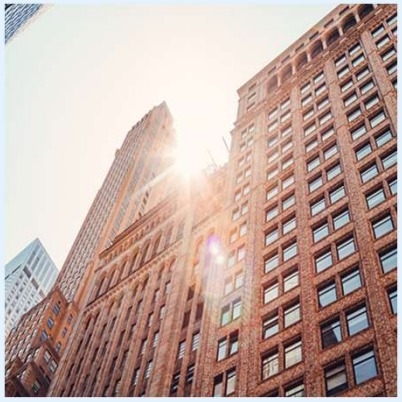
Agenda

1:00-1:20: Welcome, Announcements, Share-Out

- 1:00-1:05: Welcome & Announcements, Avana Andrade & Fatima Khan
- 1:05-1:20: Jurisdiction Peer-to-peer Introductions & Share-out
  - Focus on building electrification status

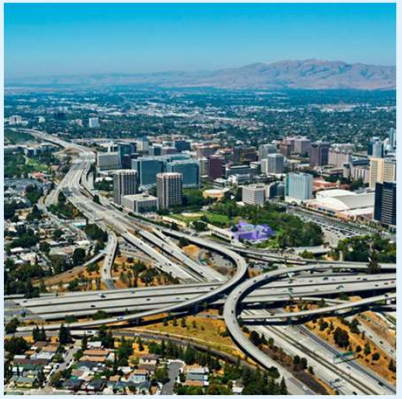
1:20-2:00: Building Electrification and Decarbonization Policy

- 1:20-1:30: Introduction to Reach Code Options- Ryan Gardner, Director of Climate Change Mitigation & Adaptation, Rincon Consultants
- 1:30-1:45: State & Regional Progress on Electrification Codes - Farhad Farahmand, Associate Director of Energy Policy, TRC
- 1:45-2:00: Energy & Climate Policies Overview - Karen Kristiansson, Codes and Standards Program Manager, BayREN



2:15-3:00: Discussion - What's Next for a Regional Approach?

- Q&A for speakers
- Discussion of interests, concerns, and informational needs with reach codes and CAP updates



1: Announcements

Peninsula Clean Energy Funding Availability!

- Member Agency Energy Grants
- Local Government Electrification Program

BayREN Forum: Confluence of Water, Energy, Climate

- March 21st, 9-12

BayREN Single Family Program Redesign Feedback Session

Thursday March 7 2-3:30pm Online
Email Alero Moju amoju@smcgov.org for details

Municipal Electrification First Policy

- Anyone thought more about this?
- Need updates to template?
- Need support in moving forward?

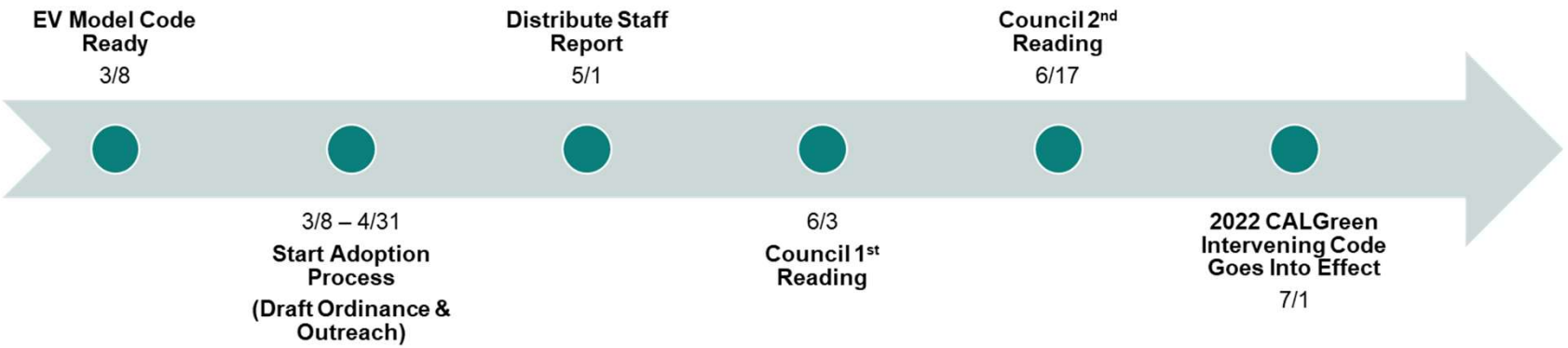
TRC - EV Reach Codes

EV Reach Code Updates

- 2022 CALGreen Intervening code is scheduled to go into effect on **July 1, 2024**.
- There are significant changes that could impact jurisdiction's reach codes, such as:
  - Increased percentages
  - Power Allocation
  - Direct wiring
  - And more

Email communication went out last week, please review and set up a meeting to learn more.

Example Timeline (for those considering going to council):



2: Jurisdiction Introductions

Introduce yourself and city agency role

Share-out:

1. What is your city's status on building electrification reach codes? (new and/or existing)
2. What are you hoping to get out of today's meeting relative to reach codes?

3: Introduction to Reach Codes

Ryan Gardner, Director of Climate Change Mitigation & Adaptation,
Rincon Consultants

Berkeley Electrification Ordinance Litigation

Final Results and Next Steps

What Did the 9th Circuit Find?

- The 9th Circuit determined that Berkeley's Ordinance (which was codified in the Health and Safety section of the City's Municipal Code) preempted EPCA
- EPCA is the federal Energy Policy and Conservation Act which sets countrywide appliance efficiency standards
- The court ruled that banning gas in buildings amounted to preempting these efficiency standards
  - The court interpreted an express preemption clause in EPCA stating that once there is a federal energy conservation standard in place for a covered product, "no State regulation concerning the energy efficiency, [or] energy use . . . of such covered product shall be effective with respect to such product"

What does it mean?

- Shute, Mihaley & Weinberger – “Despite its broad statements, the CRA decision only addressed one type of approach: a non-building code prohibition on gas infrastructure in new construction.”
  - Berkeley pausing enforcement

- Other Approaches not addressed by the decision:
  - Air quality based approaches (NO_x)
  - Energy performance approach (Single margin source energy score)
  - And technically “building code prohibitions”

Why do we need reach codes?

Continuous Signal to the Market	• Avoid a progress gap for new construction from 2024-2026 • Send clear, continuous message to market • Avoid stranded asset cost of continued gas investment
Local Control	• Enables innovative approaches for cost-effective decarbonization policy • Ability to design customized exemptions • Jurisdictions with more progressive climate targets can pass more progressive reach codes
State and BAAQMD Codes are Limited	• Lacks specific existing building measures • Cannot regulate remodels or other types of triggers for cost-effective building electrification • Ignores many methane appliances
Local Reach Codes Influence the State	• Statewide electrification codes incorporate elements from local reach codes • Statewide EV charging codes have been inspired by San Mateo's EV Reach Codes • Smoother implementation of BAAQMD ruling if similar requirements are adopted before 2027
Allows More Action, Sooner	• Greenhouse gas emissions are cumulative, so earlier actions have exponential savings • Existing building policy is needed immediately to meet 2030, 2035, and 2040 climate goals

Building Code Gas Ban – More Risky

Pros

- Benefit of a full ban is more efficient limit of gas infrastructure which provides long term $ savings
- Guarantees GHG reductions
- Technically, the Berkeley code was a “non-building code ban” which banned gas infrastructure, not a building code.

Cons

- Could continue to enforce building code (Part 11/Part 6) ordinance, but would likely lose a legal opinion based on broad findings of the 9th circuit.

Energy Performance Approach – Less Risky

Pros

- Well established pathway for cities to address energy use in buildings
- Setting a very low EDR score would allow for electric buildings to be built to code while mixed fuel would need extensive energy efficiency upgrades
  - Significantly increases cost of mixed fuel buildings

Cons

- Limits GHG reductions
- Allows for some gas to be used (stoves). This increases gas infrastructure buildout and long-term costs

Air Quality Ordinances – A new approach!

Pros

- Cities are required to take “all feasible control measures” to improve air quality in the region. – California Clean Air Act
- Align with BAAQMD NOx thresholds
- Fully limits new infrastructure and reduces GHG

Cons

- Untested in this context
- NY Litigation ongoing (Mulhern Gas Co. Vs. Rodriguez)
  - Using EPCA as reason

What is Your Risk Tolerance?

There is always a risk of litigation, this is just hypothetical based on the findings of the Berkeley decision!

Building Code Gas Ban

Energy Performance Approach (Single margin source energy score)

More Risky ---------- Less Risky

Air Quality / GHG Thresholds (untested)

4: State & Regional Progress on Electrification Codes

Farhad Farahmand, Associate Director of Energy Policy, TRC

New Construction Reach Code Comparison

Approach	Description	Pros	Cons	Who's done it?
Air Quality 	Regulates building or appliance emissions through CALGreen, Part 11.	• Uses Clean Air Act authority rather than Energy Policy and Conservation Act • Regulates all emitting equipment (cooking, fireplaces, dryers, etc.) • Likely to result in all-electric construction, which includes construction cost savings • Direct benefit to air quality / health • High impact on emissions reduction	• Legally untested • Potentially new enforcement approach	Los Altos Hills New York City CA Air Resources Board has proposed a Part 11 building standard for Housing and Community Development consideration
Energy Performance 	Requires a higher *Source Energy* compliance margin than what the state requires through the performance path of the Energy Code, Part 6.	• Mitigates legal risk by allowing methane gas pathways • Can provide an all-electric cost-effective pathway • Enforcement process is already in place, the compliance margin is increased	• Limited to regulating space heating/cooling and water heating • Likely lower carbon savings compared to all-electric only pathways	Santa Cruz San Jose San Luis Obispo

What is an Air Quality Reach Code?

- The Air Quality approach focuses on regulating **building or appliance emissions** rather than the type of fuel used.

- Specifies the emissions limit of nitrogen oxides (NOx) or greenhouse gases (GHG).
- Air Quality Codes are being pursued by:
  - California Air Resources Board (CARB)
  - Bay Area Air Quality Management District (BAAQMD)
  - South Coast Air Quality Management District (SCAQMD).

- Los Altos Hills and NYC implemented air quality-based policies.

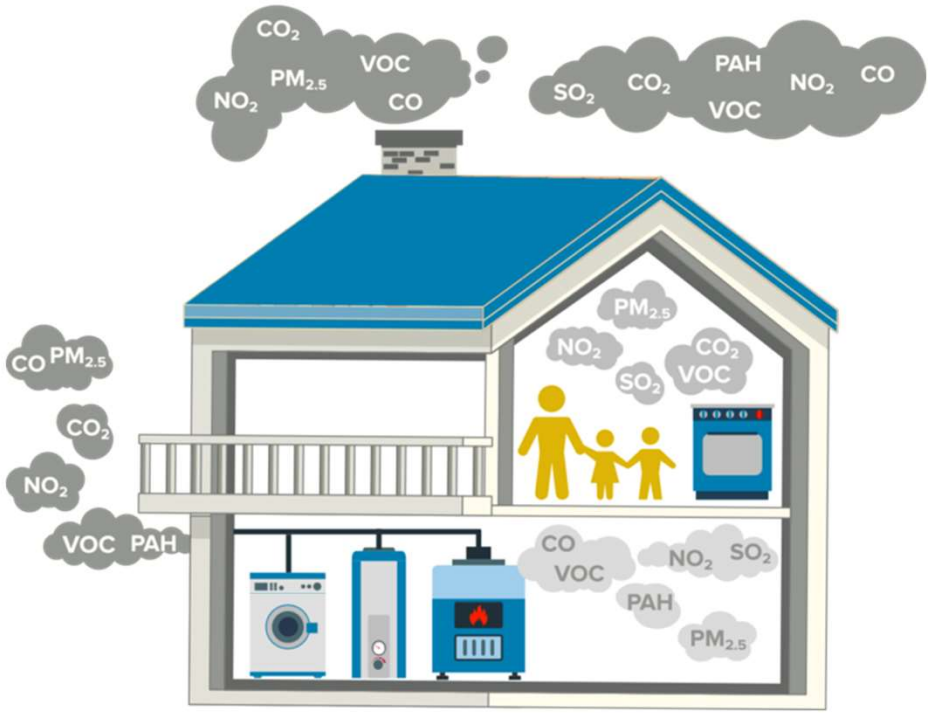


Image Source: Fresh Energy

How Does an Air Quality Reach Code Work?

- Takes effect through amendments to CALGreen Title 24, Part 11.
- Building applicants specify equipment that meets emissions criteria.
- Compliance margin can be set for a low amount, or zero, emissions.

Example Ordinance: Los Altos Hills

ZERO-NOX EMISSION BUILDING. A building with zero NOx emissions that utilizes zero NOx equipment or appliances.

ZERO-NOX EMITTING EQUIPMENT. Any equipment or appliance that emits no more than 0.0 nanograms of nitrogen oxides (expressed as NOx) per joule of heat and/or light output. Equipment and appliance uses include, but are not limited to, space heating, water heating, cooking, clothes drying, and lighting.

(b) Chapter 4, **Residential Mandatory Measures**, is amended by amending the following sections to read:

DIVISION 4.1 PLANNING AND DESIGN SECTION

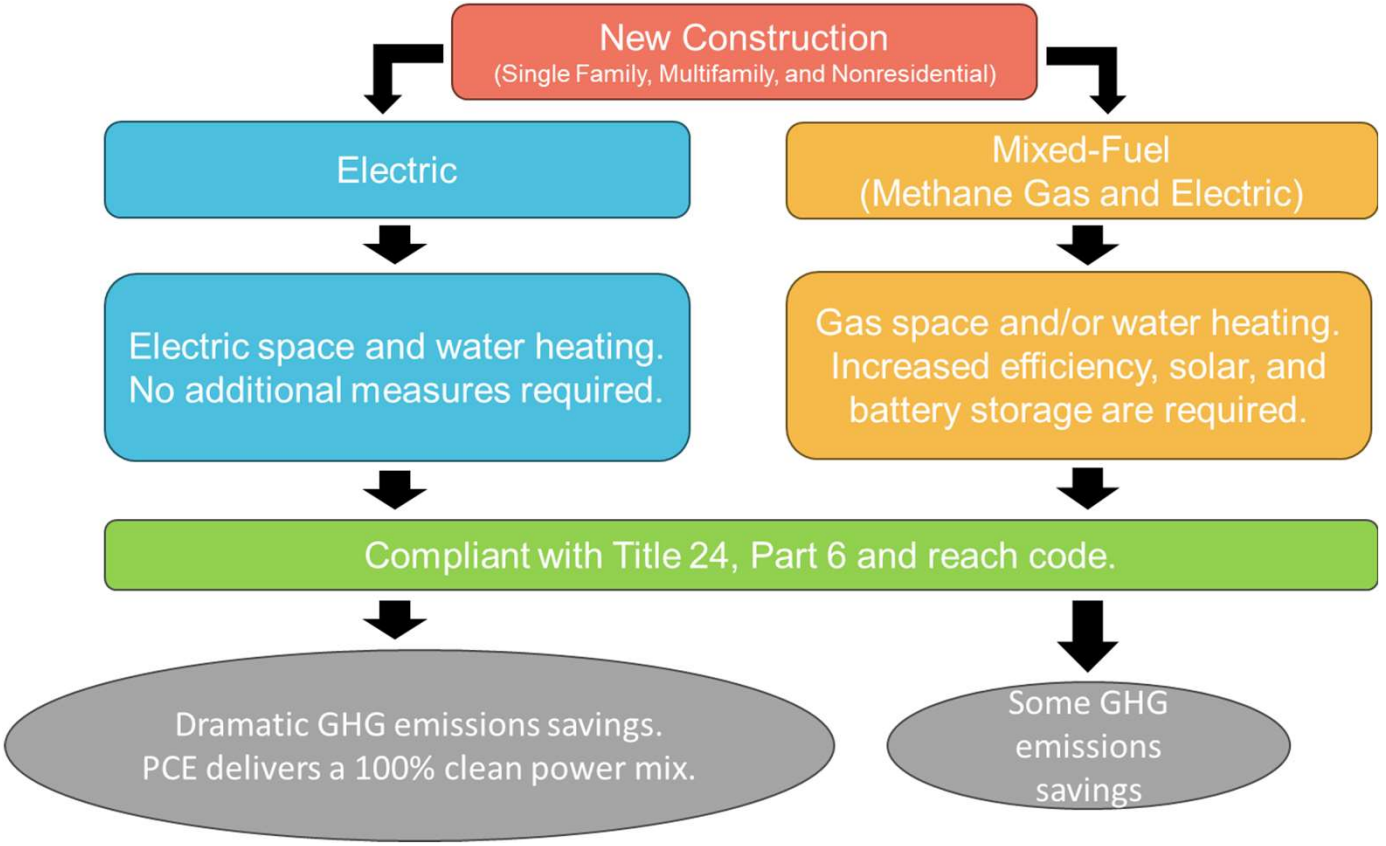
4.106 SITE DEVELOPMENT

4.106.5.1. New construction. All newly constructed buildings, newly constructed detached accessory dwelling units, and other newly constructed detached habitable structures shall be Zero-NOx Emission Buildings.

Exemptions:

1. Outdoor cooking equipment, outdoor fireplaces, portable space heaters, generators, and pool/spa heaters for residential building projects are exempt from the requirements of 4.106.5.1, or
2. Indoor cooking equipment for residential building projects is exempt from the requirements of 4.106.5.1. The applicant shall comply with Section 4.106.5.3.

What is the Energy Performance Approach?



Which Appliances are Regulated?

What's included?

- Space heating/cooling
- Water heating

What's not included?

- Stoves
- Laundry
- Pools
- Fireplace/pit

How Does Compliance Work?

A compliance margin of “x” or higher is required for Single Family, Multifamily (low & high rise) and Nonresidential buildings.

Single Family Example:

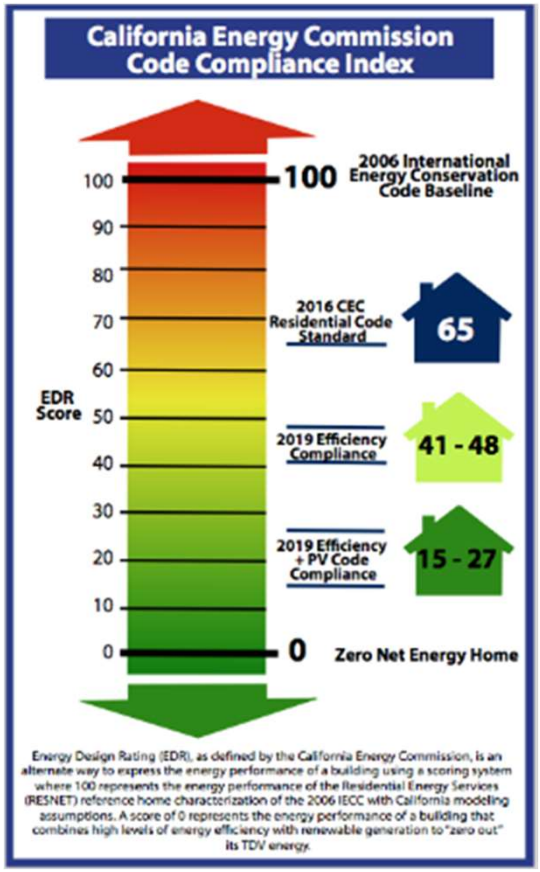
ENERGY DESIGN RATINGS						
	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	35.6	45.8	31.3			
Proposed Design	26.5	39.6	28.4	x	6.2	2.9
RESULT[3]: PASS						

[1]Efficiency EDR includes improvements like a better building envelope and more efficient equipment
[2]Total EDR includes efficiency and demand response measures such as photovoltaic (PV) system and batteries
[3]Building complies when source energy, efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

- EDR2efficiency & EDR2total must achieve a score of “0” or higher to pass (per 2022 Title 24, Part 6).

What is Source Energy?

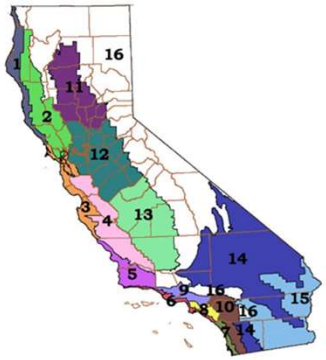
- A rating system within the performance path that is used to regulate energy performance.
- Based on hourly source energy which establishes a carbon-based performance metric.
- For single family homes, Source Energy is 1 of 3 Energy Design Rating (EDR) metrics.



Package Definitions

All-Electric Standard:	All-Electric Efficient:	All-Electric Eff w/ PV:	Mixed-Fuel Eff w/ PV:	Mixed-Fuel Eff w/ PV & Battery:
				
All-Electric	All-Electric	All-Electric	Mixed Fuel	Mixed Fuel
Minimal efficiency	Expanded efficiency	Expanded efficiency	Expanded efficiency	Expanded efficiency
Minimal solar	Minimal solar	Optimal solar	Optimal solar	Optimal solar
No battery	No battery	No battery	No battery	Battery

Energy Performance Approach Impacts: CZ3



	All-Electric Standard:	All-Electric Efficient:	All-Electric Eff w/ PV:	Mixed-Fuel Eff w/ PV:	Mixed-Fuel Eff w/ PV & Battery:
Construction Cost: (compared to mixed-fuel baseline)	$5,100 **savings**	$3,500 **savings**	$2,200 **cost**	$3,500 **cost**	$7,700 **cost**
Bill Impact: (compared to mixed-fuel baseline)	$45/month **cost**	$25/month **cost**	$45/month **savings**	$20/month **savings**	$25/month **savings**
EDR1	8	11	13	3	14
% CO2 Savings:	36%	43%	46%	7%	31%

Source: 2022 Single Family NewCon Cost-eff Study

5: Energy & Climate Policies Overview

Karen Kristiansson, Codes and Standards Program Manager, BayREN

BAYREN

Local Governments Empowering Our Communities

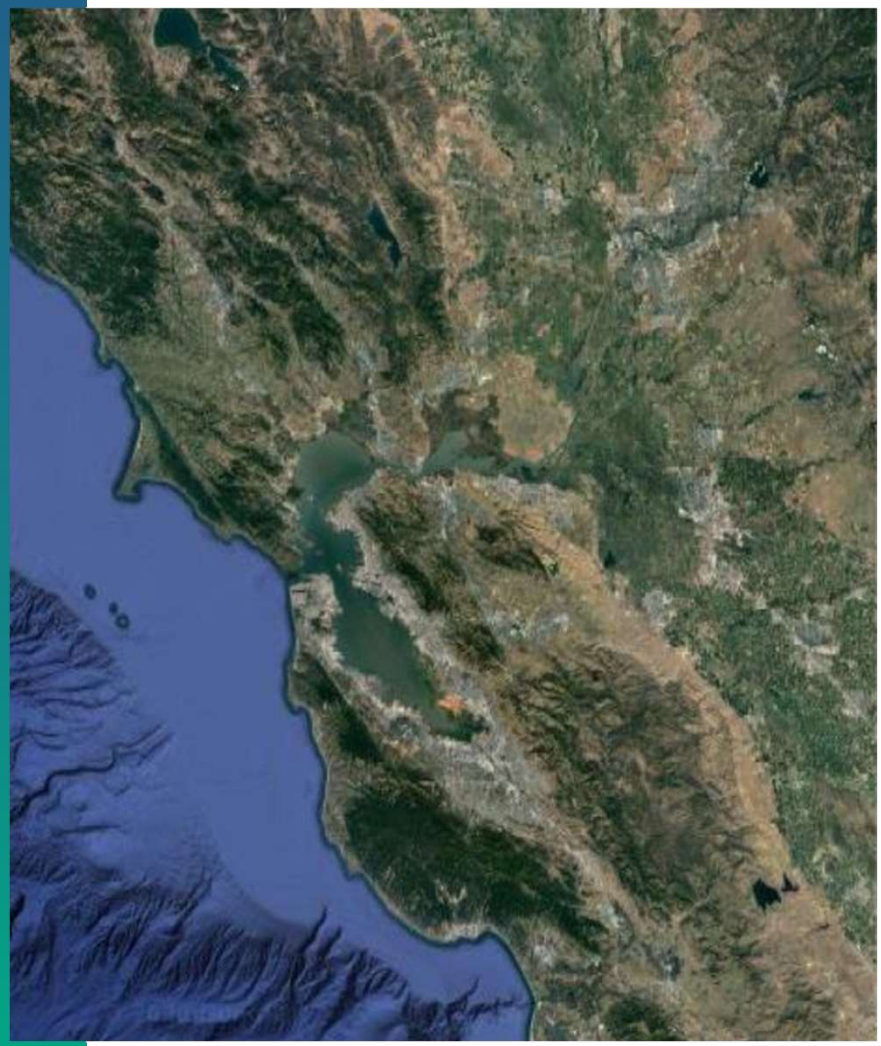
Energy & Climate Policy Options for Local Govts

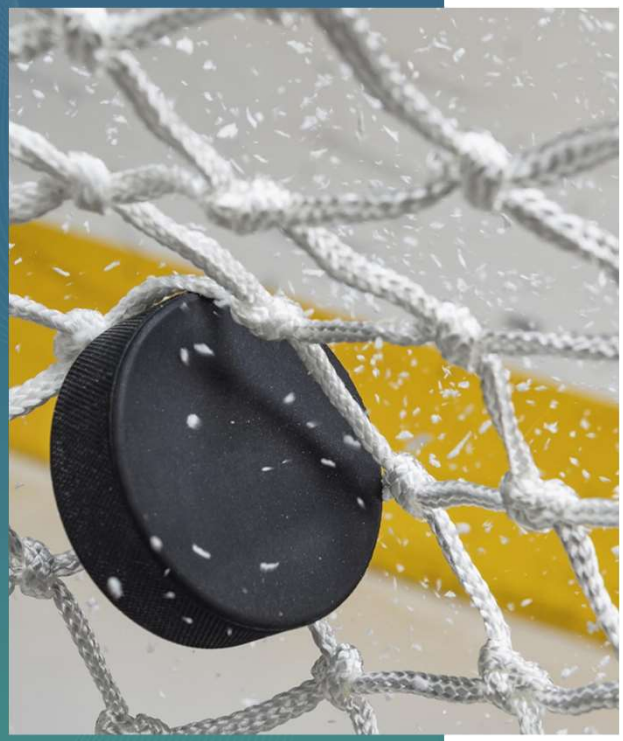
Presentation to San Mateo County RICAPS

Karen Kristiansson | February 27, 2024

What is a local energy or climate policy?

Any policy or ordinance that can be adopted by a local government to reduce energy use and/or greenhouse gas emissions





Several Possible Goals

- Reduce **GHGs** to help reach CAP and other climate goals
- Save **money** by reducing energy costs
- Improve **comfort** with lighting, heating, AC

Many Options

- Energy Performance Reach Codes for new or existing buildings
- Air Quality Code
- Time of sale reporting or improvement codes
- Benchmarking or benchmarking plus
- Building performance standards
- Electric-ready design
- Municipal buildings ***…. And more***

New Construction

Most impactful:

- Energy performance
- Air quality

Complementary Approaches:

- Municipal building policy
- Water-energy reach code
- EV charging infrastructure
- Electric ready design
- CEQA GHG threshold/mitigation
- In-lieu fee for carbon emissions

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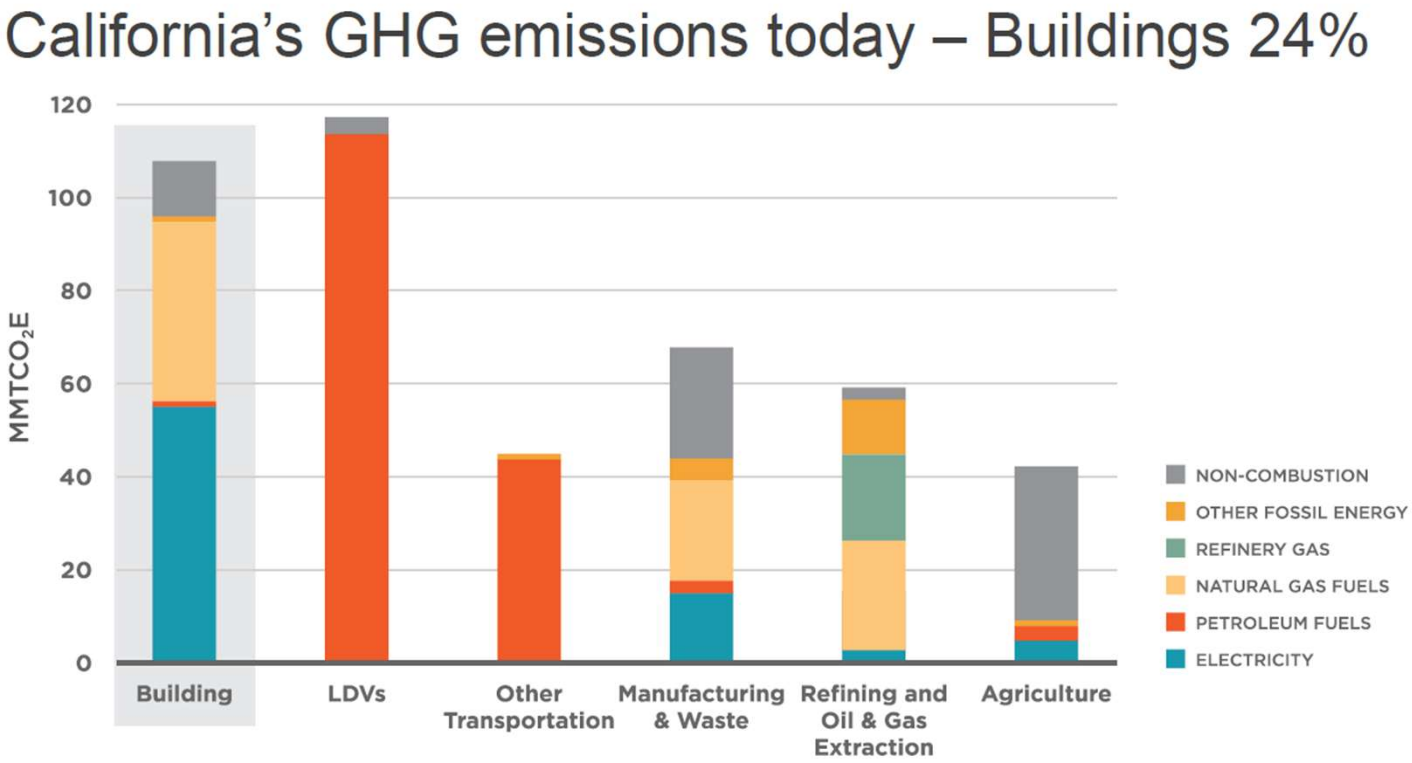
Existing Buildings



Source: Building Decarbonization Coalition presentation to California Energy Commission, June 21, 2022

Existing Buildings

"The challenge of building decarbonization is much greater for existing buildings than new buildings."

Challenging because:

- Wide variation in existing buildings makes a single policy challenging
- Building design may make retrofits challenging
- Some retrofits may be more difficult when building is occupied
- Cost and potential for equity impacts

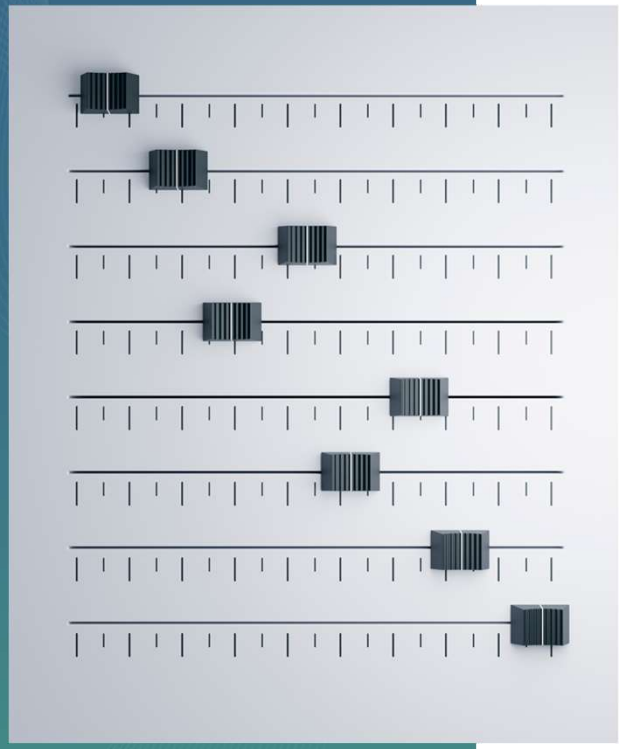
Decarbonizing existing buildings is a long-term project that will require multiple approaches over multiple years

Existing Buildings: Single Family

Option	Description	Adopted where?	Notes
Weighted menu of measures for additions or alterations	Requires choice of energy improvements at time of renovation	Marin County, Fairfax, San Anselmo	Model code exists with support for adoption
Time of sale reporting requirement	Requires report on home energy characteristics at time of sale	Berkeley, Piedmont	Important to design so as not to slow real estate transactions; need to coordinate with realtors
Time of sale improvement requirement	Requires home improvement at or around time of sale	Berkeley is developing	May make sense to start with time of sale reporting requirement

Existing Buildings: Large Buildings

Option	Description	Adopted where?	Notes
Municipal building policy	Cities can set any requirements for their own buildings	Many! (San Diego's ZEMBOP is new & interesting)	Can apply to both new and existing buildings
Benchmarking/Plus	Requires report on building energy use or emissions; some also require actions	Berkeley, Brisbane, San Francisco, San Jose	Best for buildings with professional managers; takes a lot of staff time
Building Performance Standard	Requires buildings to meet an energy or emissions standard	Chula Vista, States of OR & WA; Seattle; Reno (others working on versions of this)	May be better to start with benchmarking; takes significant staff time; many resources available



Factors to consider

- Legal risk
- GHG impact
- Cost impact
- Equity issues
- Ease of adoption
- Effort to implement

What's best for your jurisdiction?

- What are your main goal(s)?
- What is the risk tolerance?
- How much new construction will there be in your community?
- What types of buildings are more likely to be built?
- How much help do you need with development & adoption?
- How much can you invest in implementation?

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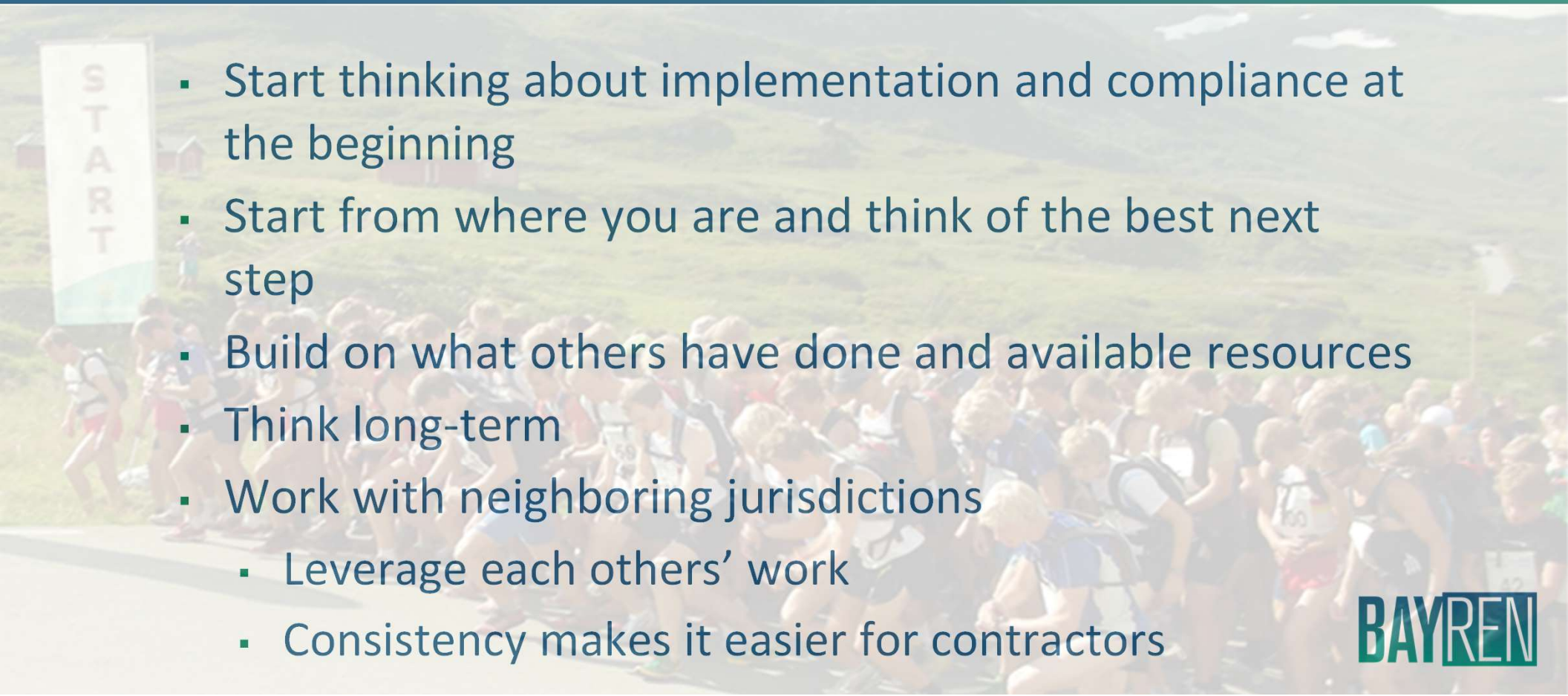
Other Recommendations



- Start thinking about implementation and compliance at the beginning
- Start from where you are and think of the best next step
- Build on what others have done and available resources
- Think long-term
- Work with neighboring jurisdictions
  - Leverage each others' work
  - Consistency makes it easier for contractors

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BayREN 2024 Related Projects

Bay Area Existing Building Study

Purpose: To provide information about the existing building stock in Bay Area jurisdictions and pathways for building decarbonization

Three main tasks:

1. Data collection & categorization
2. Document detailed building characteristics and common issues for a subset of building types
3. Develop appropriate decarbonization pathways

Deli[illegible] ons

BayREN 2024 Related Projects

Municipal Buildings Policy Resources

- Will provide examples and resources for cities and counties interested in establishing and implementing a policy about the energy or emissions related to their own buildings
- To start in May
- Let us know what you'd find helpful!

6: Discussion: What's Next for a Regional Approach?

Discuss

1. Which reach code options are you interested in?

1. What concerns do you have with the reach code options?

1. What additional information do you need to move forward?

1. What pathway do you anticipate to move forward with? What is your timeline?

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THANK YOU