

Existing Building Electrification Three Ways

UCSB Sustainability Summit

October 18, 2023





Meet the Panelists



April Price
Program Manager
3C-REN



Brian Reyes
Sustainability Planner
Marin County



Anne Wyatt
Executive Director
Smart Share Housing Solutions

3C-REN: Tri-County Regional Energy Network

- Three counties working together to improve energy efficiency in the region
- Services for –
 - **Building Professionals:** industry events, training, and energy code compliance support
 - **Households:** free and discounted home upgrades
- Funded by ratepayer dollars that 3C-REN returns to the region





ENERGY
CODE
CONNECT



BUILDING
PERFORMANCE
TRAINING



HOME
ENERGY
SAVINGS





ENERGY
CODE
CONNECT

- Serves all building professionals
- Three services –
 - **Energy Code Coach**
 - **Training and Support**
 - **Regional Forums**
- Makes the Energy Code easy to follow

Energy Code Coach:
3c-ren.org/codes
805.220.9991

Event Registration:
3c-ren.org/events





BUILDING PERFORMANCE TRAINING

- Serves current and prospective building professionals
- Expert instruction:
 - **Technical skills**
 - **Soft skills**
- Helps workers to thrive in an evolving industry

Event Registration:
3c-ren.org/events





HOME
ENERGY
SAVINGS

Multifamily (5+ units)

- No cost technical assistance
- Rebates up to \$750/apartment plus additional rebates for specialty measures like heat pumps

Single Family (up to 4 units)

- Sign up to participate!
- Get paid for the metered energy savings of your customers

Enrollment:
3C-REN.org/contractor-participation





Thank you!

For more info:
3c-ren.org

For questions:
info@3c-ren.org



TRI-COUNTY REGIONAL ENERGY NETWORK
SAN LUIS OBISPO • SANTA BARBARA • VENTURA

THE INCENTIVE PATHWAY TO ELECTRIFICATION

April Price, UCSB Sustainability Summit

October 18, 2023





Rebates and Incentives

Incentives and Rebates For Heat Pumps: Tri-County

- 3C-REN Single Family Incentive
- TECH Clean California Program (3CE Incentives)
- Water Heater Loaner program
- Tax Credits

What's working locally and what's not?





HOME
ENERGY
SAVINGS

Single Family Program

- Discounted pricing available from enrolled contractors
- Especially discounted pricing for "Hard to Reach" customers
- Quality work because contractor payments are tied to performance





HOME
ENERGY
SAVINGS

Eligibility Criteria

- Single-family residential customer
- Live within the 3C-REN territory
- Receive Investor-Owned Utility (IOU) service
- No added solar previous 12 months
- Incentives must be accessed through contractors enrolled with 3C-REN



Hard to Reach Criteria

- Mobile home
- Language-not English
- Qualify for CARES/FERA rates



Enrolled Contractors



ALLSTAR
HEATING AND AIR CONDITIONING

Allstar Heating and Air Conditioning
Trustworthy HVAC Service

<https://www.allstarcomfortair.com/>

(805) 242-9638

Bee Right There!
HEATING & AIR

Bee Right There
Un"BEE"table Care For Your Heating & Air

www.callthebee.com

(805) 864-2276

CAPSLO
Community Action Partnership of San Luis Obispo

Community Action Partnership of SLO
Helping low-income homeowners buy efficient energy systems in San Luis Obispo.

capslo.org/energy-services

805 541-4122

HIGHLAND AIR
HEATING & COOLING

Highland Air
Furnace + AC service, repair, maintenance & installation

www.highland-air.com

(805) 210-9771

PACIFIC AIRE
HEATING & COOLING

Pacific Aire
Your premier heating, ventilation and air conditioning company.

<https://www.pacaire.com/>

800-869-0057

RR
HOME SERVICE

RR HVAC & Electrical Company
Quality electrical services at a competitive rate.

<https://rrelectrichvac.com/>

(805) 954-9359

SOUTHLAND
Heating and Air Conditioning

Southland Heating & Air Conditioning
Heating & Air Conditioning Installation Services

<https://southlandac.com>

(805) 422-7754

TEMP AIR SYSTEM
HEATING & COOLING

Temp Air System
High-Efficiency HVAC System provider for homeowners in the Greater LA area.

www.tempairsystem.com

(626) 333-3409

TRICOUNTY SERVICES

TriCounty Services
HVAC, Indoor Air, Fireplace & Plumbing in Ventura & Santa Barbara Counties

www.tri-county-aire.com

(805) 500-2944



How to Participate: Connect with a Contractor

Visit **3C-REN.org/for-residents**

First Name

Last Name

Street

City

State/Province Zip

Email

Phone

I am interested in (press cmd or ctrl key to select multiple options):

- Appliances
- Insulation
- Lighting
- Windows
- I'm exploring an all-electric home
- New or tuned up heating and/or cooling system
- Other energy-saving upgrade(s)

I'm not a robot  reCAPTCHA
Privacy - Terms

Submit



Incentive Examples

(Actual value depends on energy savings)

- Average Incentive for HVAC Heat Pump~ **\$3,000**
- Average Incentive for Heat Pump Water Heater~ **\$2,000**





- Receive **\$3,100** for Heat Pump Water Heater equipment and installation
(Equity Customers receive \$4,185)
- Receive **\$1,000** for Heat Pump HVAC equipment
- Up to **\$2,000** for electric panel upgrades/replacements

*All incentives are passed to you via your contractor



Program Participation

Heat Pumps By Program	San Luis Obispo County	Santa Barbara County	Ventura County
TECH- Water Heaters	8	9	13
3C-REN- Water Heaters	1	9	1
TECH- HVAC	34	33	208
3C-REN- HVAC	9	47	48



Heat Pump Water Heater- Barrier

- **PROBLEM:** When natural gas water heaters fail, homeowners need hot water back ASAP—they don't have time to wait for the additional permitting and electrical work associated with heat pumps.
- **SOLUTION:** Provide a “loaner” natural gas water heater while you work on getting a heat pump water heater installed.



Water Heater Loaner Program

- 3C-REN pays contractors \$1,000 to utilize a loaner gas water heater when serving a customer that wants to replace a broken gas water heater with a heat pump.



Barnett Plumbing & Water Heaters Gas Loaner Program

Project Description

Approximately 90 percent of water heater replacements performed by Barnett Plumbing are emergency replacements. The urgency of restoring hot water to a home compresses a customer's timeframe in deciding whether to switch to a heat pump water heater or continue burning fossil fuels. Customers are often unwilling to go without hot water during the time it takes to complete the retrofit requirements. The ability to provide an emergency replacement heat pump water heater solution that doesn't inconvenience the customer is essential to moving California toward their carbon-neutral goals.

- 149 heat pump water heaters installed during the program period
- 127 gas loaners installed during the program period
- The rate of customer conversion from gas water heaters to heat pump water heaters increased from less than one percent to 17.1 percent
- \$975 to cover the added cost of the installation and removal of the loaner water heater. Gas loaners were re-used for multiple installations.



TIMELINE:

January –
December 2022



HOUSING TYPE:

Single Family



EQUITY SEGMENT:

NA



Energy Efficient Home Improvement Tax Credit

Federal Tax Credit (started Jan. 2023, part of the Inflation Reduction Act--IRA):

- 30 percent of the cost of energy-efficiency improvement
 - Limit of \$2,000 for heat pumps and heat pump water heaters
 - Other appliances are subject to a \$600-per-item limit.
 - Rebates of 30% will be based on the actual money spent on the project after incentives are applied.



Access all programs for huge savings!

- All incentives can be STACKED!

How?

- Contractor must be enrolled in 3C-REN **and** TECH programs. If they're not, ask them to apply!
- Consult your tax professional





Examples

Example project: HVAC Heat Pump

Upfront cost EXAMPLE \$15,000

3C-REN Incentive= -\$3,000

TECH Incentive= -\$1,000

Federal Tax Credit= -\$2,000

Total Cost=\$9,000



Example project: HVAC Heat Pump Customer- **HARD TO REACH**

Upfront cost EXAMPLE \$15,000

3C-REN Incentive= \$6,000

TECH Incentive= \$1,000

Federal Tax Credit= \$2,000

Total Cost=\$6,000



Example project: Heat Pump Water Heater

Upfront cost EXAMPLE \$7,000

3C-REN Incentive= \$2,000

TECH Incentive=\$3,100

Federal Tax Credit= \$570

Total Cost=\$1,330



Example project: Heat Pump Water Heater

HARD TO REACH

Upfront cost EXAMPLE \$7,000

3C-REN Incentive= \$3,200

TECH Incentive=\$4,185 (if income requirements met)

Federal Tax Credit= 0

Total=\$0



Resources

Connect with a Contractor:

- [3C-REN Single Family Program](#)
- [The Switch Is On](#)

Other Resources:

- [Calculate Financial Impacts of Switching to a Heat Pump](#)
- 3C-REN Webinars

Assistance for Residents:

- Assistance with all related incentives for home energy upgrades and electrification: Juan Lares at energy@cecmail.org, 805.770.1525





Thank you!

For more info:
3c-ren.org

For questions:
info@3c-ren.org



TRI-COUNTY REGIONAL ENERGY NETWORK
SAN LUIS OBISPO • SANTA BARBARA • VENTURA

Marin Countywide Energy and Electrification Reach Codes

LEARNED LESSONS FROM THE PAST, PRESENT AND FUTURE
BY

BRIAN REYES, SUSTAINABILITY PLANNER, COUNTY OF MARIN CDA



October 18, 2023

Central Coast Sustainability Summit

Photo Credit: Jeff Wong

Agenda

1. Past

- ✓ Climate Targets
- ✓ Reach Code Basics
- ✓ History in Marin
- ✓ 2022 Model Reach Code Development

2. Present

- ✓ 12 Jurisdiction Countywide Reach Code Status-to-date
- ✓ Countywide Electrification (Energy) Plan Development

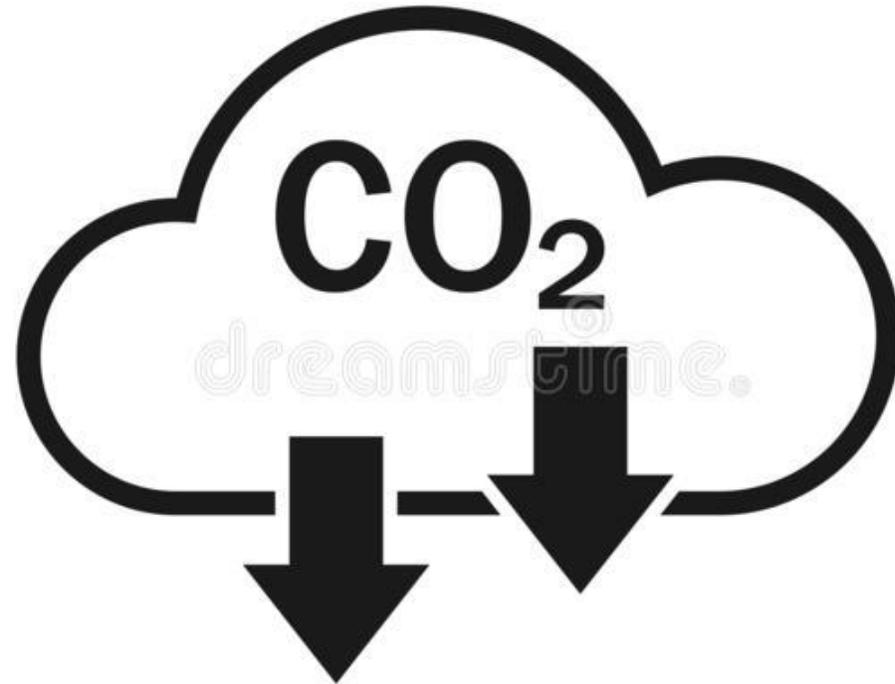
3. Future

- ✓ Influence of Regulatory Environment (Ninth Circuit and more)
- ✓ Programs and Incentives



Our Past

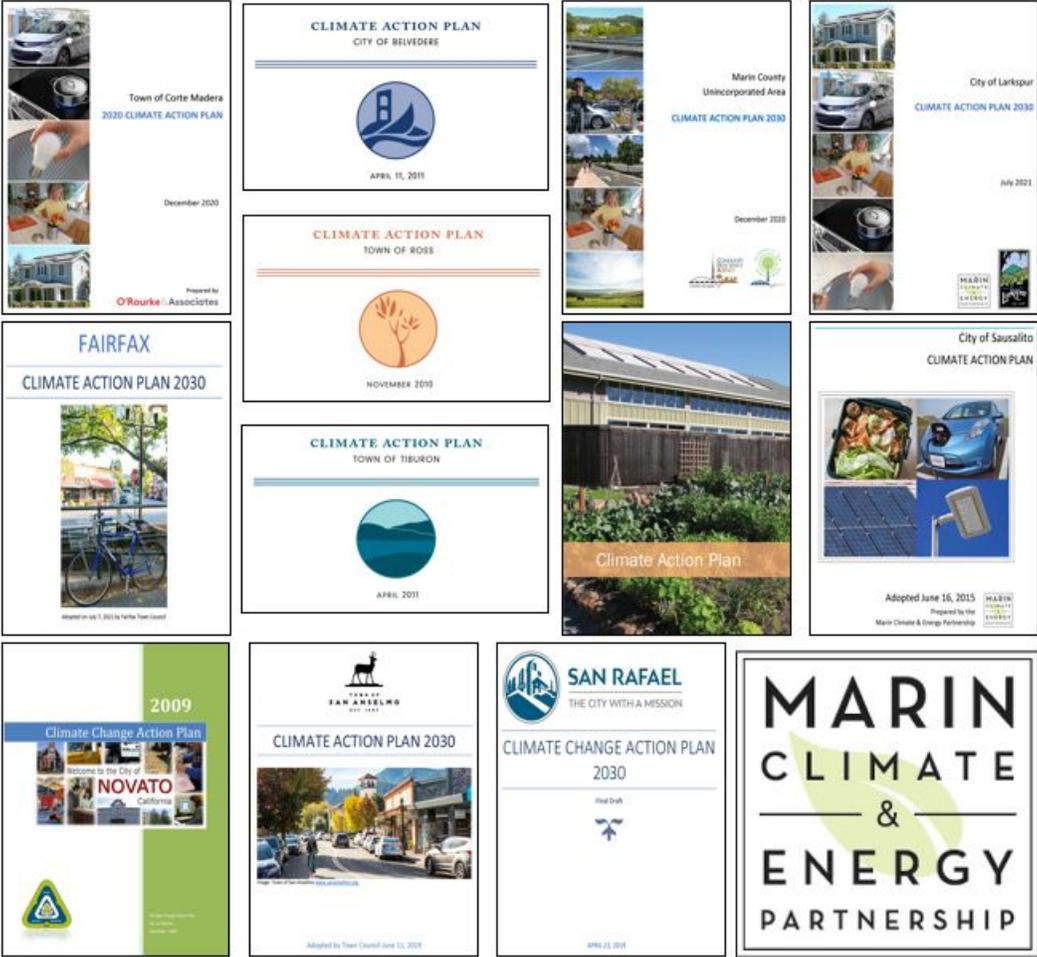




2030: 40%–60% reduction +
sequestration

2045: Carbon Neutral

Climate Action Plan Key Actions



Green Building Reach Code

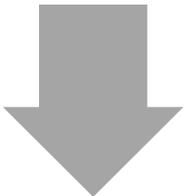




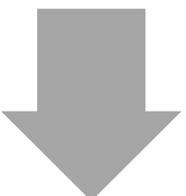
Title 24
State Green Building Standards



Local
Green Building Codes
Pt. 6 and Pt. 11
(Energy and non-Energy)

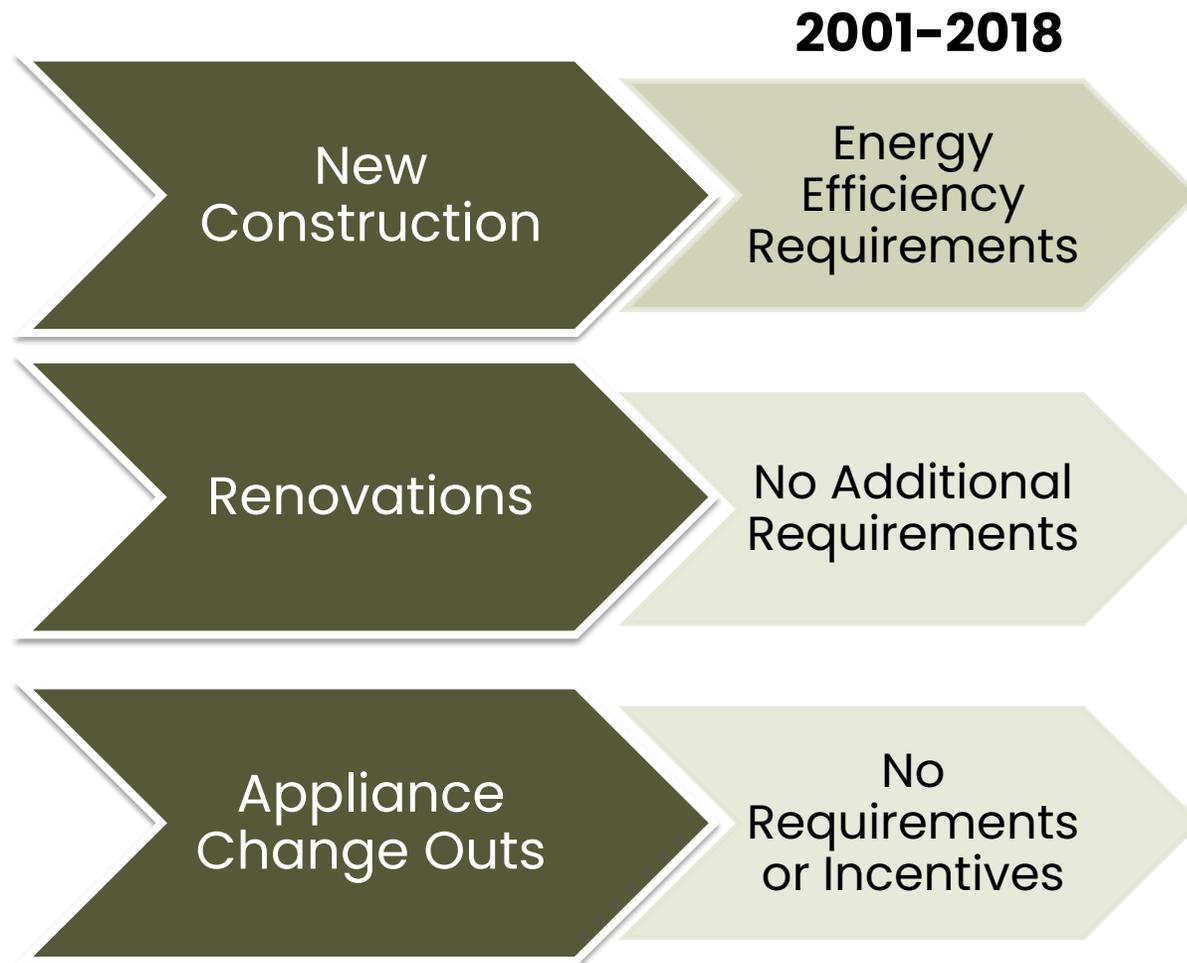


4.2.
Energy Efficiency

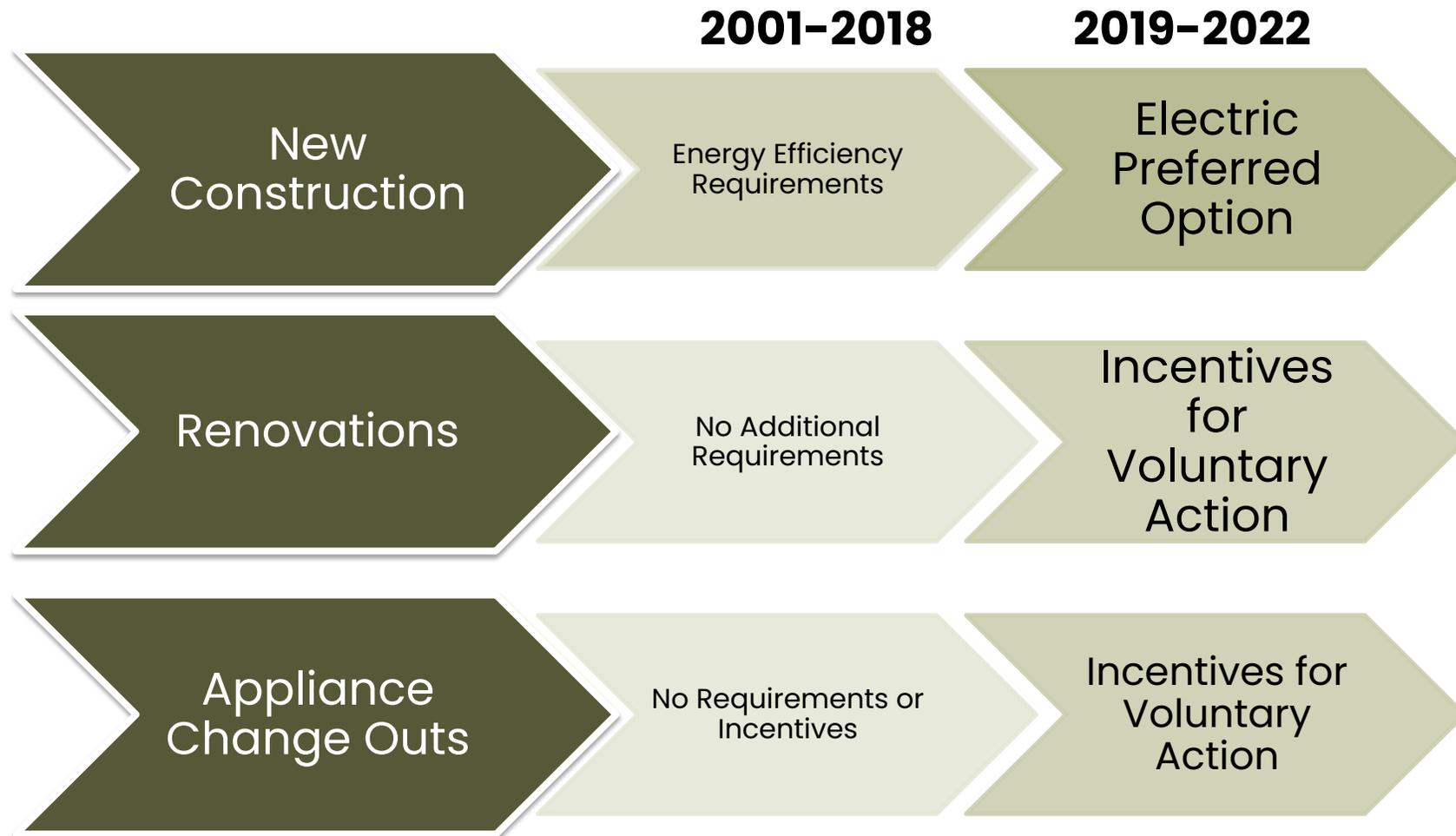


A/4.106.8.1
EV Infrastructure

PHASING: Marin's Building Decarbonization Legacy is 22 Years in the Making



PHASING: Marin's Building Decarbonization Legacy is 22 Years in the Making



2022⁺ Model Reach Code

A Prototype for 12 Marin Jurisdictions



Stakeholder Engagement (1.5 Years)

One Steering Committee Formed and Stakeholder Power Map

Five monthly technical working meetings w/City and Town building officials and planners

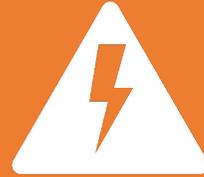
One public community workshop

Three focus group workshops w/community (builders, advocates, community-based orgs)

Ad-hoc presentations and conversations w/community, commissions, electeds

County Reach Codes and Model Reach Codes developed and support other jurisdictions in an ongoing effort to uniform codes

Recommendations



New Construction

All-Electric



EV Infrastructure for New Construction and Renovations

Increased access, readiness, and charging installations



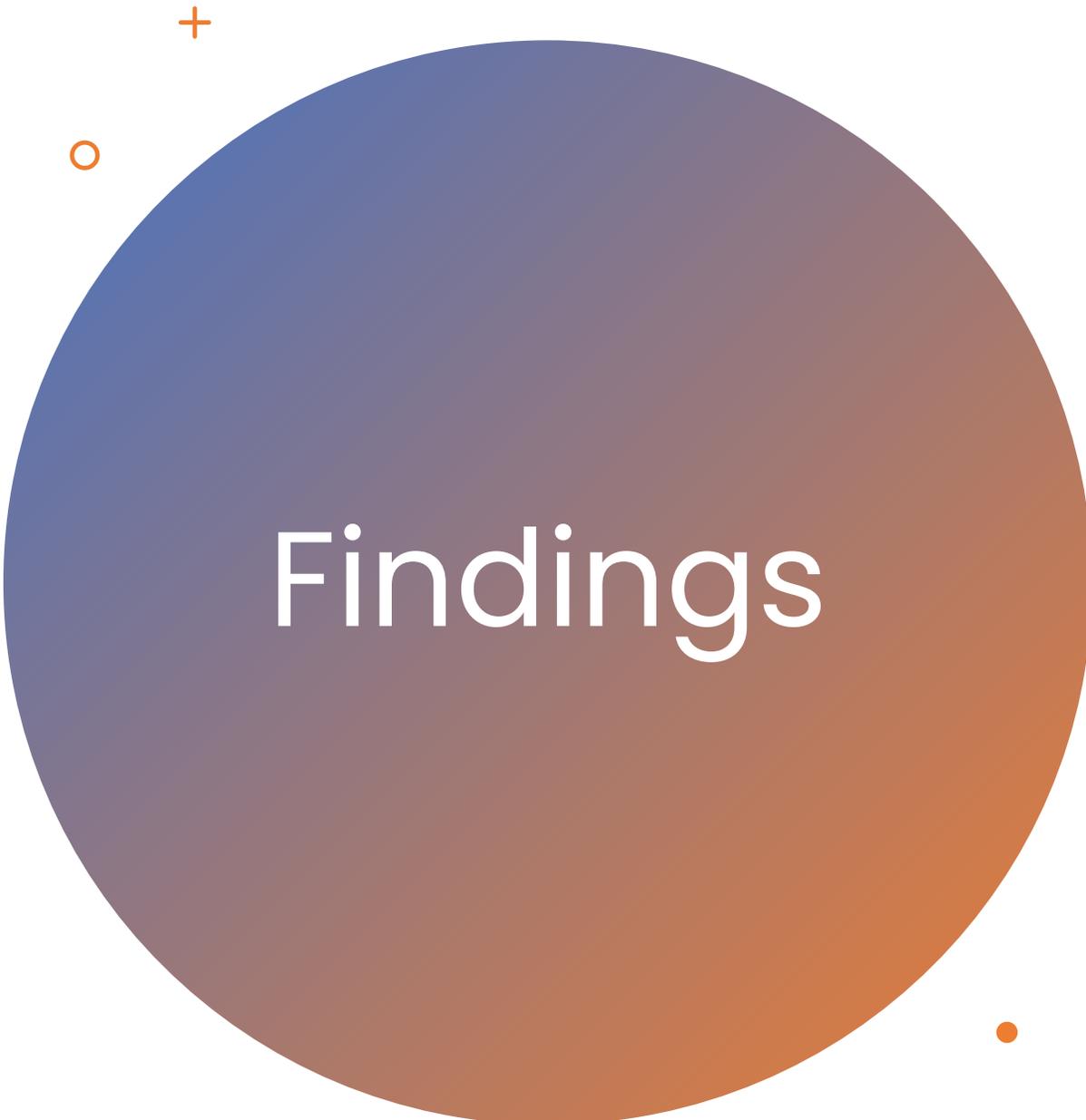
Single-Family Renovations

Additional Energy Efficiency and Electrification Requirements



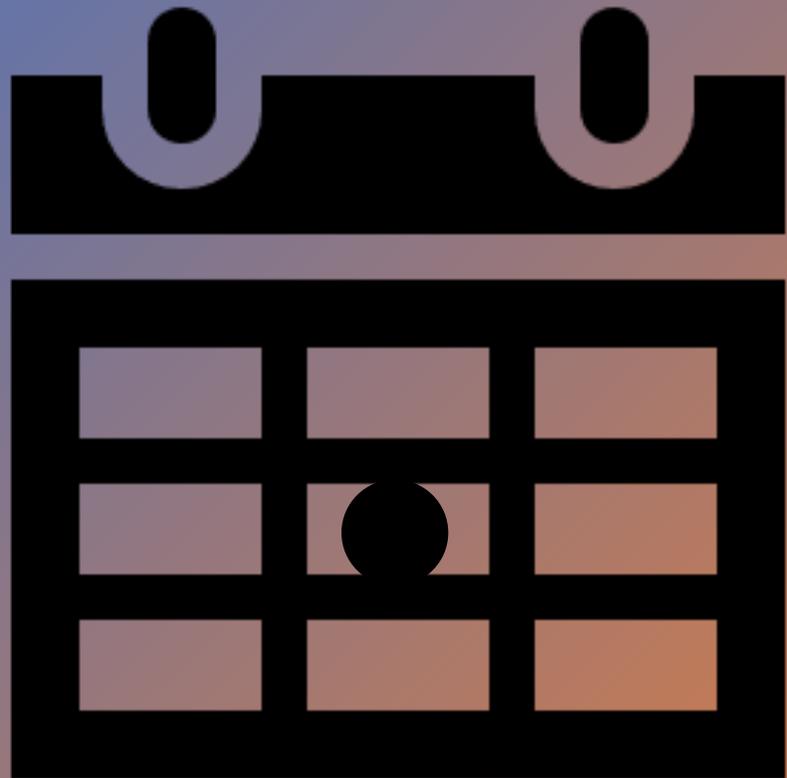
Single Family Renovations
Reach Code: A Flexible
Menu of Measures to
Choose From
([Link to County of Marin
Enforcement Checklist](#))

Table 2: Energy and Electrification Menu of Measures by Climate Zone				
Measure		Climate Zone		Steps
		2	3	1) Choose your Climate Zone using CEC toolfinder ¹
Specification	Spec. ID (Refer to Table 3)	Target Score		2) Minimum Target Score needed to comply (1 point = 1MMBTU savings per yr.)
		8	6	
Lighting	E1	Mandatory		3) Choose a measure or a combination of measures that adds up to the minimum target score above based on CZ. Measures listed as "Mandatory" MUST be installed.
Water Heating Package	E2	1	1	
Air Sealing	E3	1	1	
R-49 Attic Insulation	E4	1	1	
Duct Sealing	E5	1	--	
New Ducts + Duct Sealing	E6	2	2	
PV + Electric Ready Pre-Wire	ER1	12	12	
Electric Readiness Measures	ER2	Mandatory (if remodeling kitchen, laundry, or upgrading panel)		
HPWH	FS1	12	12	
High Eff HPWH	FS2	13	13	
HVAC Heat Pump	FS3	13	10	
High Eff HVAC Heat Pump	FS4	14	11	
Heat Pump Clothes Dryer	FS5	1	1	
Induction Cooktop	FS6	1	1	4) Use the Specification Number (Spec. ID) column as a key and conform to the specifications in Table 3 below. Table 3 describes, specifies, and details compliance with each corresponding measure.



Findings

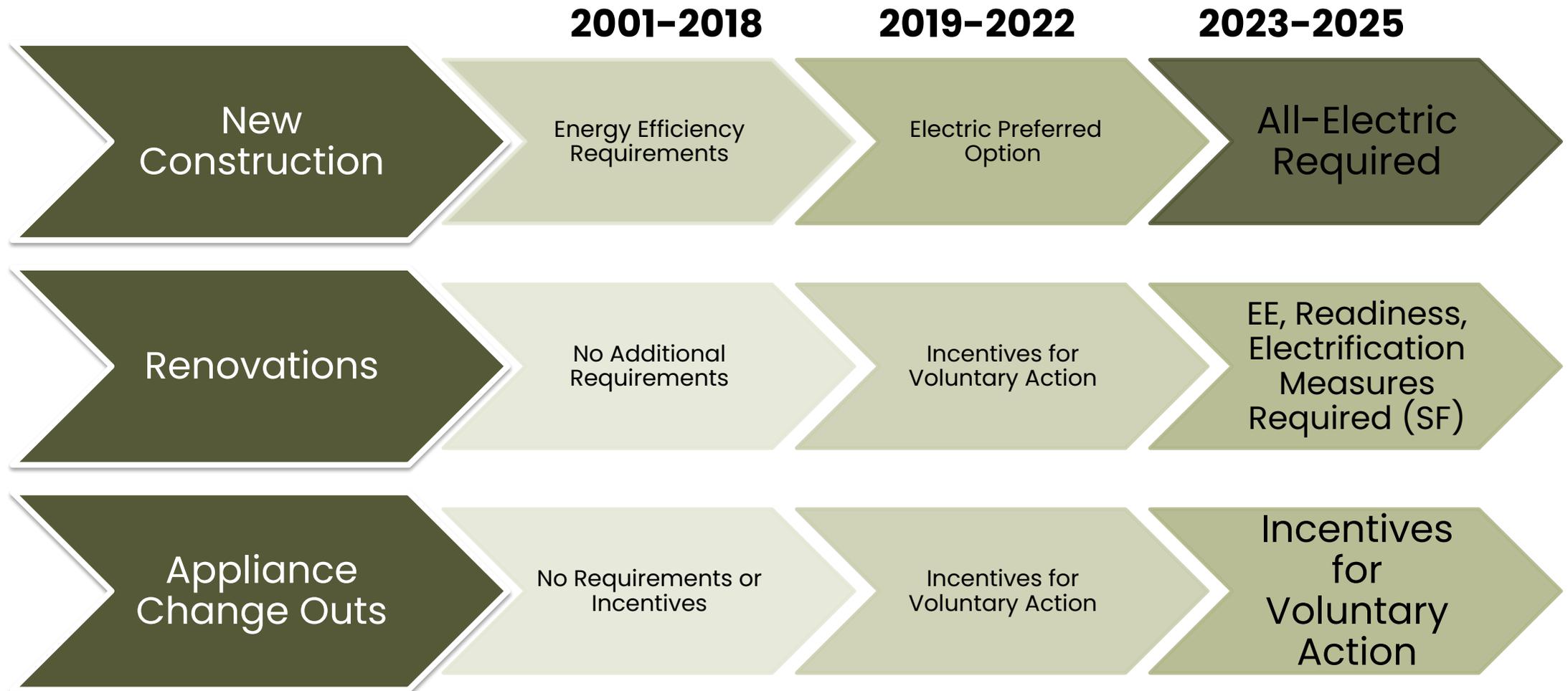
1. **Prototype** for 12 other jurisdictions
2. **Countywide Survey** indicated a majority support
3. **Civil Grand Jury Report** most jurisdictions agreed a holistic coordinated countywide approach to electrification approach is needed
4. **Technical Solutions to electrification are already here**, but our will to act, systems, and capacity to implement needs to keep up

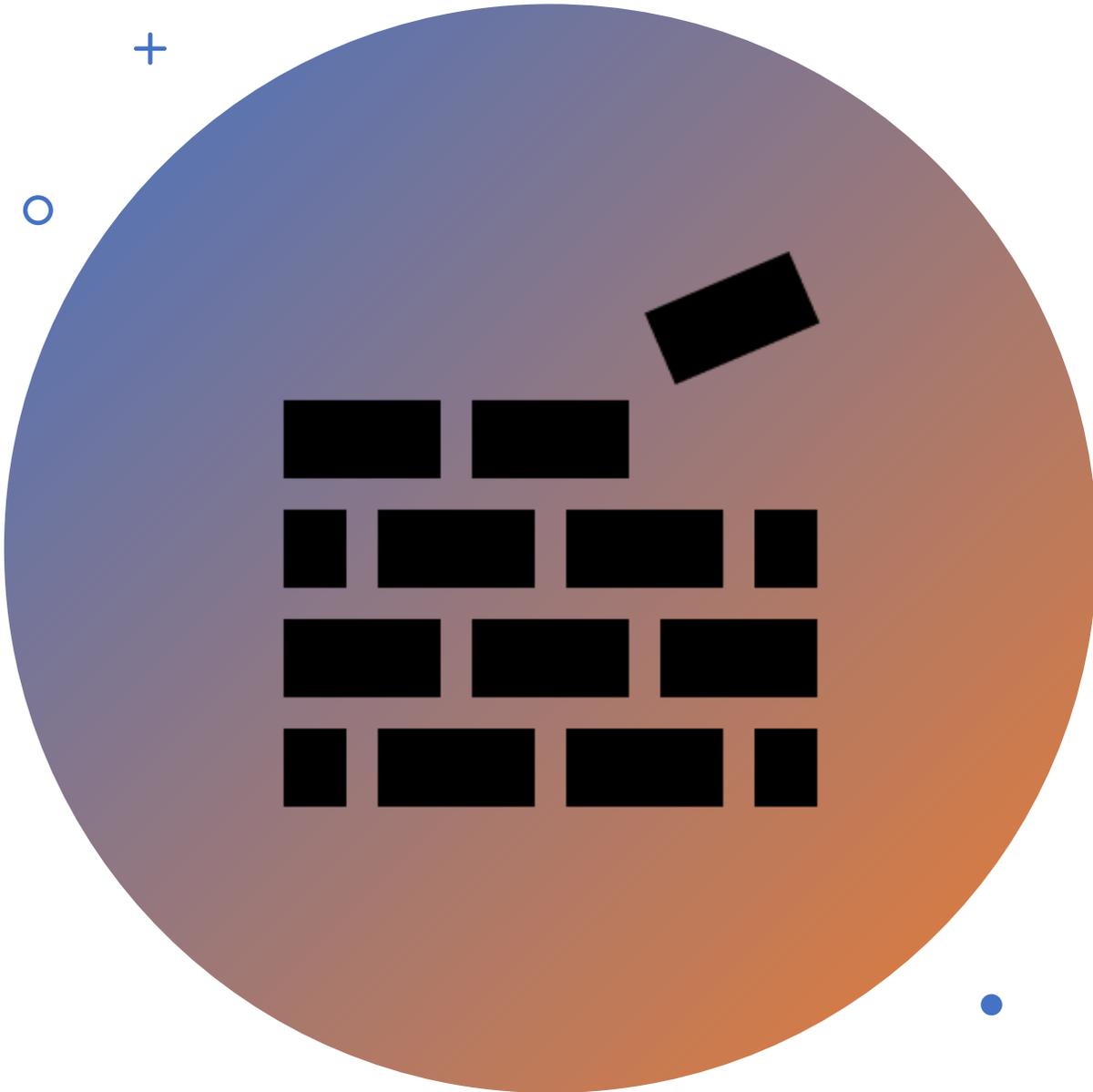


Our Present



PHASING: Marin's Building Decarbonization Legacy is 22 Years in the Making





BayREN (3C-REN?)

Fund, Support and Build
Capacity

Reach Codes-to-date . . . 6, 6, 4

Jurisdiction	New Construction All-Electric	EV Infrastructure Reach	Single-Family Renovations Energy Reach
Marin County			
Fairfax			
Tiburon (Enforcement paused)			
San Anselmo			
San Rafael			
Corte Madera	Considering	Considering	Considering
Sausalito			
Mill Valley			
Larkspur			
Ross	None	None	None
Novato			
Belvedere			



Policy and Program Messaging Today

Climate

CAP brings accountability
"Over 80% of Emissions Comes from Gas"

Health

"... NOx, CO"

Provocative

"What's so "NATURAL" about "NATURAL GAS?"

Streamline and Simplify

All Touchpoints with Community: Marketing, Web, Collateral, Permit Counter, Across Government Agencies

Costs

Be transparent, most can take it

A Transition

To an all-electric future
"We're not going to take your stove away!"

+
◦

Countywide Building Electrification Plan

A Roadmap to Implement Our
Transition Towards Carbon₊
Neutrality ◦

Countywide Equitable Building Electrification Plan: A Roadmap

Vision.Objective

To develop and crowdsource the community to help develop a countywide, whole building electrification roadmap that is implementable for 12 Cities, Towns, County

(January 2023 to January/February 2024)

Goal

All 12 Marin Jurisdictions and their councils adopt, or in-part



What's in a Typical Electrification Plan)?

([RMI Toolkit](#))



Stakeholder Mapping and Engagement



Building Inventory and Equity Analysis



Actions and Strategies

Comprehensive Policies (Stick) and Programs (Carrots)
Prioritized
Time-Bound



Recommended Next Steps to Implementation



The Future





Policy and Requirements



9th Circuit Court of Appeals Ruling

- **Berkeley first** to adopt natural gas bans for new construction
- **100(ish) local jurisdictions** have since adopted all-electric requirements; all with slight variations
- **CRA sued Berkeley** with District Court siding w/Berkeley
- **CRA appealed** to Ninth Circuit finding Berkeley pre-empted EPCA federal standards
- **Berkeley is fighting**, recently appealing for a rehearing "en banc"
- **Currently binding law** until final decision by courts
- **Estimated timeline** ranging from several months to one year
- **"Flawed"** Legal experts and practitioners see finding of Ninth Circuit broad and sweeping; threatening local and State ability to regulate and protect public health and safety

Considerations



Legal Exposure or Risk



Real World Risk of Suit



Staff and Customer Confusion



Staff Workload: Re-development and Enforcement



Climate Mitigation Risk



Advocate Risk



Five Policy Options Considered

- A. No Action
 - B. Pause Enforcement
 - C. All-electric Reach Code (Resdnt. Only)
 - D. Electric-Preferred Reach Code (back to 2019)
 - E. Undo and Walk back
-

9th Circuit SWOT of Policy Options

(NOT recommendations, I am not an attorney
consult your City/Town Attorney!)



This Photo by Unknown Author is licensed under [CC BY-NC-ND](https://creativecommons.org/licenses/by-nc-nd/4.0/)

• **Note**

- **Still All Unknown; nothing is 100% full proof in our legal system**
- **Reach codes: local government's primary tool to combat climate change**

• **All-electric new construction on books already?**

Learned Lessons

• **Considering all-electric new construction?**

Learned Lessons



Bay Area AQMD Rule 9-4/9-6

Zero NOx Emission Limit
on Building Appliances

Disallows gas space
and water heating
appliances from being
sold or installed

Phased Implementation
(2027-2031)

Four Year Phased Implementation



HPWH

2027



Space HP

2029



Commercial HPWH

2031

2030 (State SIP) =
No Residential
Space or Water
Heaters sold in CA



Rebates, Incentives, and Programs

Funding Flowing from All Levels

- Federal
 - **\$370 billion IRA** tax incentives and rebates
 - Resource: Switch is On [Switch to Electric 2023 Incentives Guide](#)
- State
 - ~**\$1.2 billion multi-year budget** to decarbonize via Legislature
 - \$922 million programs Equitable Decarb Program over four years
 - \$145 million HVAC rebates and contractor workforce capacity building via [TECH Clean California](#) over two years
 - **[Self-Generation Incentive Program \(SGIP\)](#)** via TECH
 - \$80 million HPWH rebates (~\$7-\$10k per project incl. appliance, panel, and size of tank)

Local/Regional

- **Electrify Marin** rebates for single-family residences
- **BayREN** rebates and financing for single-family and multifamily property owners
- **Marin County Green Business** program for businesses
- **MCE (Utility) EV Rebate Program** rebates and technical assistance for multifamily and commercial property owners



Thank You
BRIAN REYES
SUSTAINABILITY PLANNER
COMMUNITY DEVELOPMENT AGENCY

breyes@marincounty.org
415-473-2797

Photo Credit: Jeff Wong



List of Resources



- [Statewide Reach Codes Program](#)
Start Here to begin code development
 - [Equitable Home Electrification Toolkit](#) Start Here to begin your planning process by RMI and Emerald Cities
 - Ninth Circuit
 - [Factsheet by BayREN](#) or <https://tinyurl.com/BayREN9thCircuit>
 - Compliant Reach Codes? talk to [Statewide Reach Codes](#) (Misti Bruceri, mistib@mbaenergy.com)
 - [Marin Green Building Requirements page](#) where our customers land
 - [Marin Model Reach Code Development page](#) documenting our community engagement, development and implementation efforts
 - [BAAQMD 9-4 and 9-6 Ruling Factsheet](#)
 - [CARB 2030 Zero Emissions Appliance Standard](#) for space and water heating
-



Small Houses: Big Benefit

Energy Efficiency & Affordable housing
Checking both boxes in San Luis Obispo

Anne Wyatt, Executive Director

Smart Share Housing Solutions Inc.

501(c)3 non-profit housing developers serving San Luis Obispo County since 2017

Introduction

- Agency History—affordable housing development
 - Through sustainable use of existing infrastructure
 - Recognizing changing demographics & changing need—single senior women one person households
 - HomeShare SLO:
 - Opportunities & Challenges

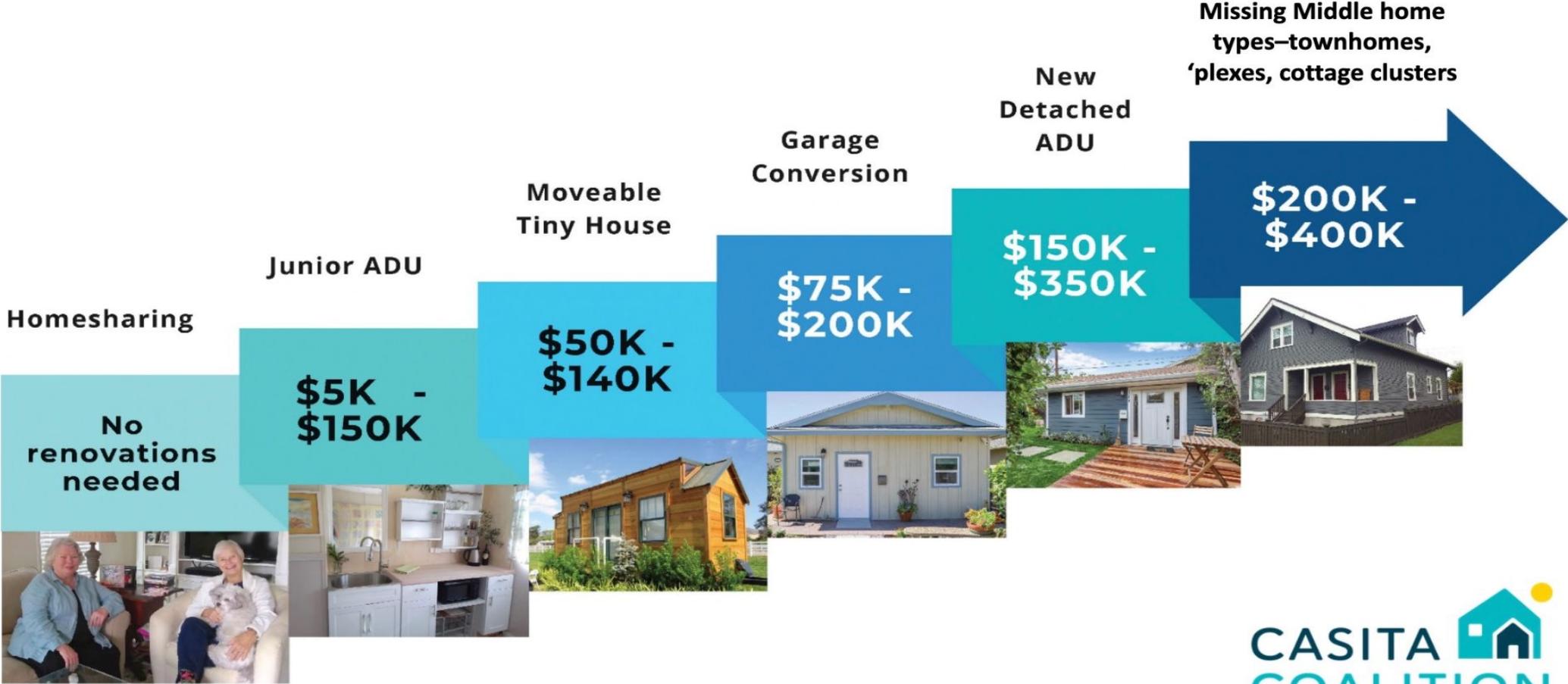


smart Housing Solutions
SHARE



Smart Share Housing: Variety of Housing Solutions

Messaging for Small & "Missing Middle" Homes



ADU SLO & 3C-REN Collaboration:

affordability & energy efficiency in Small housing—
ADU SLO Program: Demo Cottage & Waterman Village



Three Components of Home

- Setting: infrastructure!
- House: embedded energy
- Ongoing Operations
 - Operating Costs
 - Maintenance costs



Look Again
...past the
idyllic prairie &
wildflowers



Infrastructure for houses



Infrastructure

- Roads—construction & travel
- Electrical grid
- Water supply
- Wastewater
- Communications
- Public facilities: fire, police, schools, governance, parks, libraries...

*Houses cannot float
in & exist on air*

*Infill housing causes
roughly 66% of
infrastructure impacts
of development outside
existing urban zones*





House: embedded energy

Materials & transport of materials

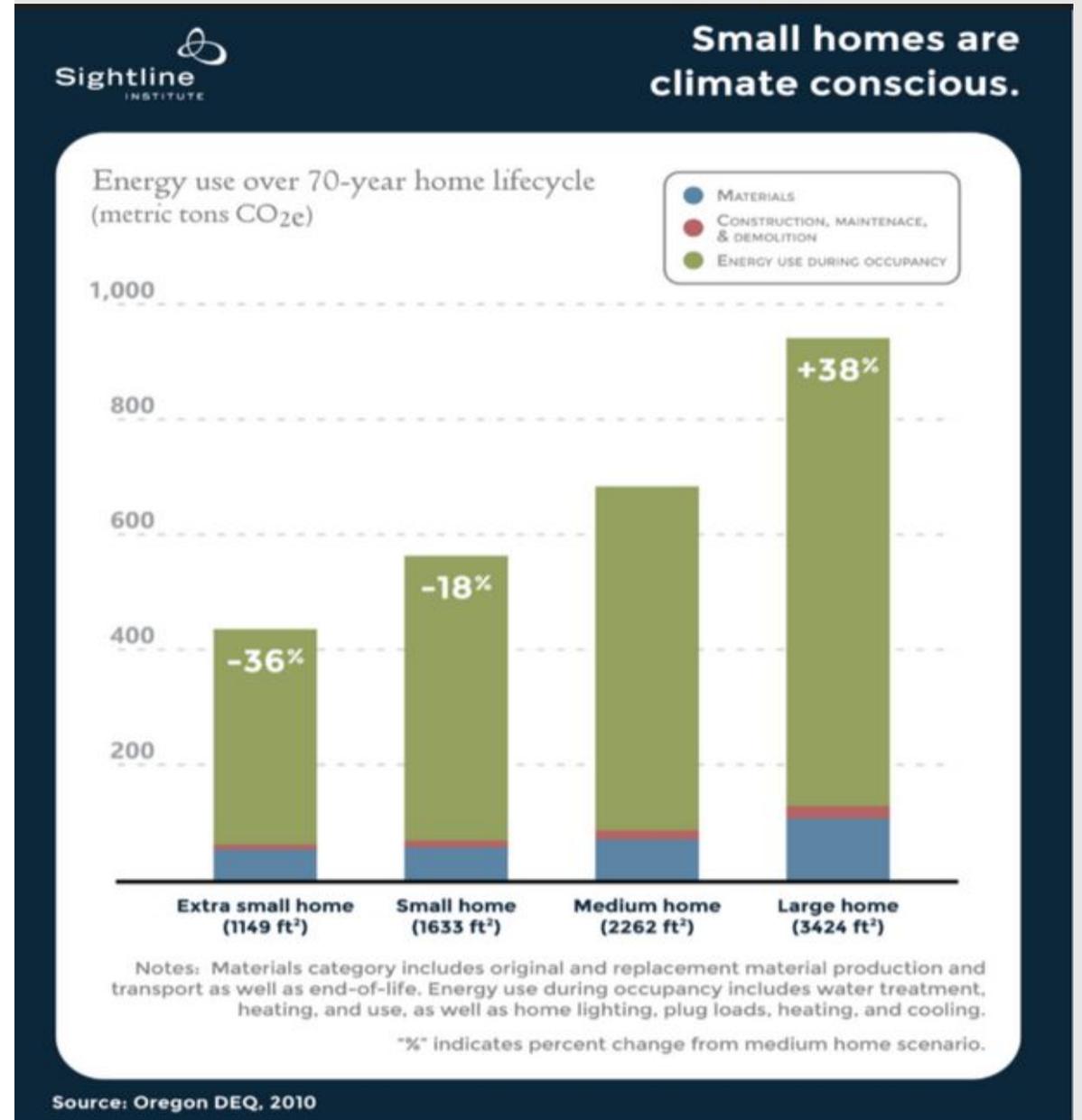
Type & quantity of materials

- Renewable materials?
- From nearby?
- Energy intensive materials—e.g. Concrete?
- Materials that will last over time?

Operational Energy

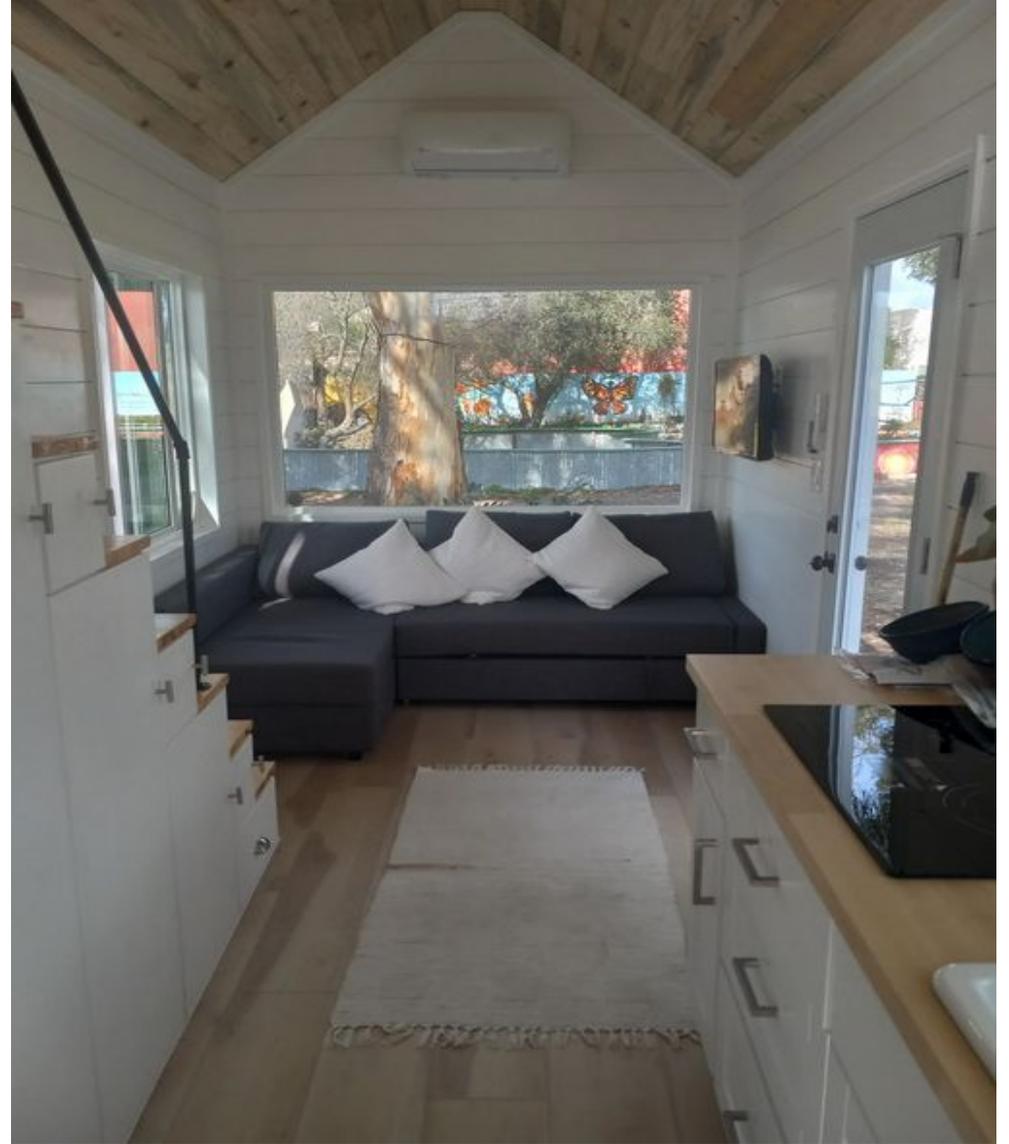
Off the Charts savings tiny homes:
More research necessary

Chart: courtesy Sightline Institute
www.sightline.org



Efficient All Electric Home

1. Induction cooking
2. Heat pump wash/dry
3. Heat pump space heating & a/c
4. Heat pump water heating



All Electric is here now



AUX ASW-H12U3

\$657.00 ~~\$730~~



Rheem - Heat Pump - ...

\$1,753.00

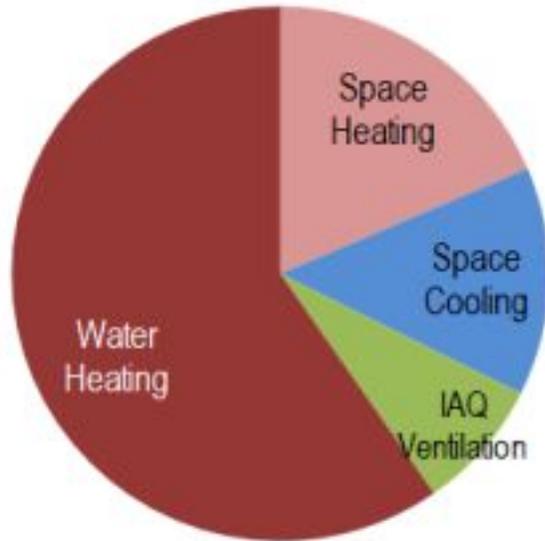
Home Depot

★★★★☆ (13)

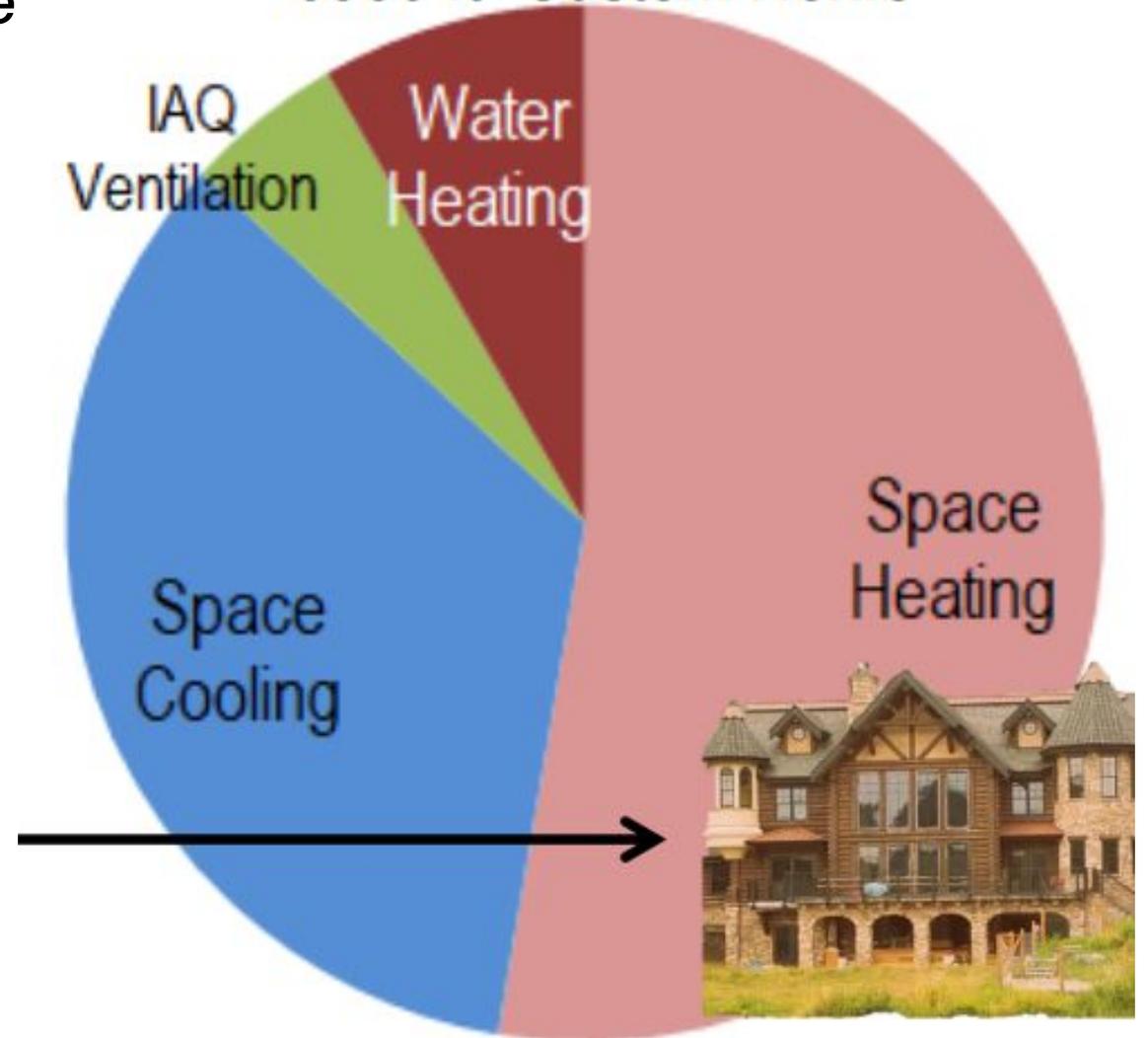
Electric · 40

Ongoing Operations & Maintenance

300 ft² Accessory Dwelling Unit



6900 ft² Custom Home



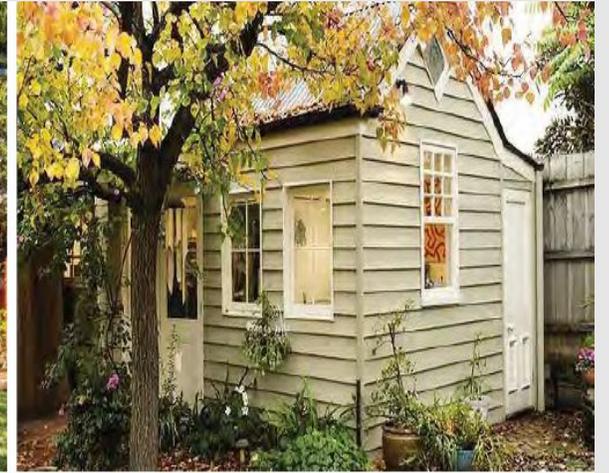
Big Savings

Small, efficient homes in
already developed areas with
services and infrastructure

**Reduce infrastructure,
embedded energy &
ops/maintenance costs**

Photos: HCD ADU Handbook:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj7houii_mBaxUYMTQIHf5mBIAQFnoECA0QAQ&url=https%3A%2F%2Fwww.hcd.ca.gov%2Fsites%2Fdefault%2Ffiles%2F2022-07%2FADUHandbookUpdate.pdf&usg=AOvVawIAATgnRJhTaieJhiTvLK54&pi=89978449



Variety of Benefits of small infill homes

- Lower cost homes
 - Less infrastructure
 - Minimize travel costs & impacts
 - Reduced embedded energy
 - Reduced operating cost & energy use
 - Open space preservation
- Housing Options/Choice
 - Family flexibility
 - Aging in place
 - Strengthens communities
 - More affordable
 - Build Wealth and extra income
 - Sustainable/existing resources



Yet to Overcome:

Perverse Incentives & Policy Limitations

Codes need to catch up to
changing demographics
and economic & climate
realities

Movable homes generally
not allowed

System pushes toward
larger footprint

-  Permit/fixed costs of
entry
-  Complexity

Title 24–energy code:
applied as if for larger
homes–needs to recognize
inherent efficiencies of tiny
homes

Thank you very much for your work & passion

*We look forward to
working with you toward
sensible housing
solutions*



Anne Wyatt

<https://www.smartsharehousingsolutions.org/>

anne@smartsharehousingsolutions.org

(805) 215-5474

More info:
CasitaCoalition.org