
Reach Code Options

Nov. 8, Board of Supervisors
Monterey County Sustainability Program

Contents

Intro: Recommendation

What are reach codes?

Why reach codes?

What does the public think?

Staff Recommendation

Conclusion

- a) Receive a status update on the Sustainability Program's exploration of reach codes to reduce greenhouse gas emissions from new construction through reach codes in the 2022 Building Code, and
- b) Consider reach code options and direct staff on which options to further develop then return to the Board of Supervisors; and
- c) Provide further direction as appropriate.

Options for Consideration:

1. Bring forward a County ordinance prohibiting the expansion of gas infrastructure in new construction and requiring new construction to be all-electric.
2. Bring forward a County ordinance prohibiting the expansion of gas infrastructure in new construction and requiring new construction to be all-electric with increased requirements for electric vehicle charging.
3. Bring forward County ordinance establishing increased electric vehicle charging requirements for new construction.
4. Provide guidance to staff, postpone adoption of reach codes, and pursue further exploration and engagement of reach code concepts.

What Are “Reach Codes”?

Informal term: Any local code or ordinance that goes above and beyond the State code.

Most Commonly: Tied to Building Code: Title 24 Part 6 & 11

Issue Areas: All-Electric/Electric-Preferred, Energy Efficiency, EV Charging Requirements, Solar, Water Efficiency

60+ CA Jurisdictions passed gas-limiting codes



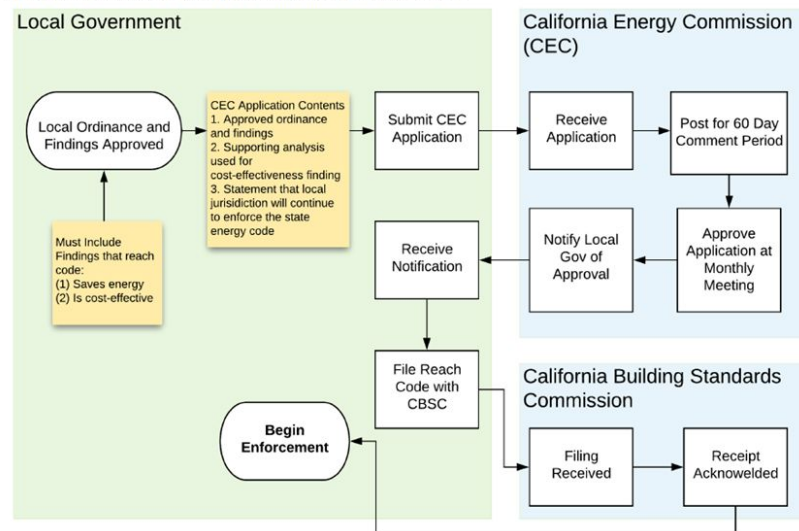
What Are Reach Codes: Requirements

Reach Codes Must:

- Be as stringent as the State Energy Code
- Must include findings that reach code is needed for local climatic, geological, topographical, or environmental reasons
- Cannot exceed federal efficiency preemptions
- Must be Cost-Effective (Part 6)
- Must be approved by CA Energy Commission and/or Building Standards Commission

Primer: Inside the Local Government Reach Code Process

Figure 1: State Reach Code Adoption Requirements and Procedures



Timing

Community Climate Action & Adaptation Plan: Early 2023

Building Emissions = 21%

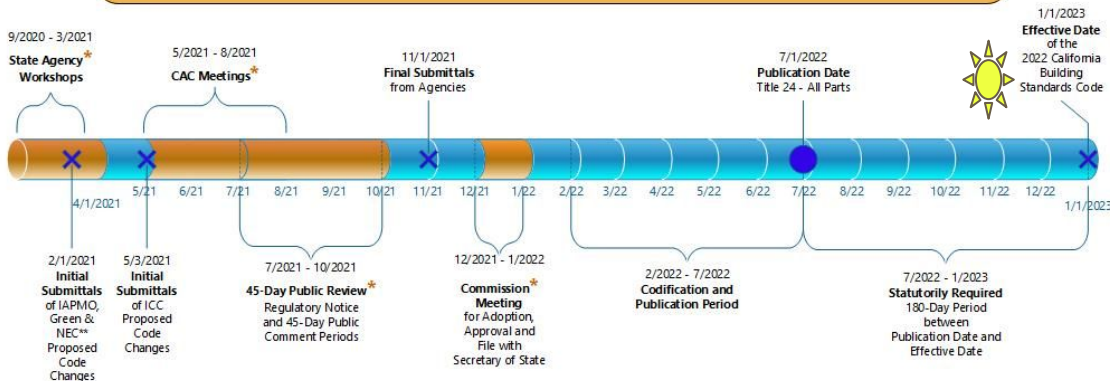
Desire to align with Building Code Adoption



California Building Standards Commission

2022 California Building Standards Code, Title 24
Effective January 1, 2023

2021 Triennial Code Adoption Cycle



Code Advisory Committees (CAC):

ACCESS – Accessibility
BFO – Building, Fire & Other
GREEN – Green Building
HF – Health Facilities
PEME – Plumbing, Electrical, Mechanical & Energy
SDLF – Structural Design/Lateral Forces

Model Code Publishers:

ICC – International Code Council
IAPMO – International Association of Plumbing and Mechanical Officials
NFPA – National Fire Protection Association
**NEC resubmittal if necessary

* Public Participation Opportunity

dgs.ca.gov/BSC
(916) 263-0916

Rev. 09/2020
All dates are subject to change

Why now? 2022 Code Changes = Growing Opportunities

Electric ready pre-wiring

End of gas line extension
credit- [9/12/2022, CPUC](#)

2030 Zero-emissions Water &
Space Heating- [8/12/2022,
CPUC](#)

Inflation Reduction Act: 10
years of Investment Tax Credit

Heat Pumps: The New Standard

Heat pumps are an electric technology for water and space heating that increases efficiency, reduces GHGs, and enables load flexibility. Current California market share is less than 6 percent in new home construction.

Standards include:

- Single-family homes — heat pump water or space standard.
- Multifamily homes such as apartment buildings — heat pump space heating standard.
- Businesses — heat pumps standard for schools, offices, banks, libraries, retail, grocery.



New Homes to Be Electric-Ready

The standards require single-family homes to be electric-ready, including:

- Electrical circuits for space heating, water heating, cooking/ovens, and clothes dryers.
- Electrical panel, branch circuits, and transfer switch for battery storage.
- Dedicated circuits and panels to easily convert from natural gas to electric in the future.



Solar and Storage Use Expanded

The 2022 Energy Code extends solar and introduces battery storage standards to the following building types:

- High-rise multifamily (apartments and condos)
- Hotel-motel
- Tenant space
- Office, medical office, and clinics
- Retail and grocery stores
- Restaurants
- Schools
- Civic (theaters, auditoriums, and convention centers)



Why Reach Codes: All-Electric = Healthier Communities

Children who grow up in homes with gas stoves are [40% more likely](#) to develop asthma.

Air pollution [disproportionately affects](#) marginalized groups.

Gas stoves burn methane that releases [NOx](#), [Carbon Monoxide](#), [Formaldehyde](#), and [more](#).

[Even when off](#), gas appliances leak harmful pollutants.

Burning gas and propane in buildings is responsible [for 6 times higher nitrogen oxide \(NOx\) emissions](#) than from all in-state power plants.



Why Reach Codes: All-Electric = Resilient Communities

- Gas appliances need electricity
- Heat pump water heaters = batteries
- Gas is responsible for 20%-50% of post-earthquake fires
- All-electric is more resilient: Solar power + battery storage + EV + vehicle-to-building charging



Image:
<https://www.autoevolution.com/news/ford-f-150-lightning-pro-is-a-better-deal-than-a-tesla-powerwall-179807.html>
#agal_21

Why Reach Codes: Climate Impacts

State Goals:

2030: 40% Emissions Reductions

2045: Carbon neutral

According to Housing Element:

County needs 3,300 new units by 2030: 412.5/year OR 1,237 for 3 years of 2022 Code Cycle

17% Emissions Reduction

MoCo Building Emissions	Electricity mTCO2e	Gas mTCO2e	Gas Percent of Total
Residential	2,137	79,613	97.4%
Non-residential	3,931	166,526	97.7%

Margin 0 Min Solar	Affected Units	Compliance Cost	Emissions Reductions mTCO2e	Lifecycle Savings OR Annual Bill Savings	Electricity Savings (mWh)
Climate Zone 3	988	\$ 4,800,662	12,613	\$ (8,314,232)	-36.8
Climate Zone 4	78	\$ (381,288)	922	\$ (581,851)	-2.67
CZ 3/Unit	988	\$ (6,483)	0.610	\$ (609)	-2.6
CZ 4/Unit	78	\$ (6,490)	0.602	\$ (537)	-2.4

Public Engagement

Building Emissions Workshop #1- AEEC 5/5/2022

Building Emissions Workshop #2- 8/10/22

Permit Streamlining Group August Meeting

Community Climate Action & Adaptation Plan Workshop 9/29/2022

Monterey/Santa Cruz Building & Construction Trades Council 10/17/2022

Monterey County Association of Realtors 10/27/2022

Monterey County Hospitality Association 10/28/2022

UPCOMING Monterey/Santa Cruz Building & Construction Trades Council 11/14/2022

Public Feedback & Staff Response

Cost of electric appliances- [The Switch is On](#) and Inflation Reduction Act reduce this cost by thousands of dollars. Equity Concern. Electric appliances are [cost-competitive](#). Check out this [guide](#) for more.

Barrier to housing affordability- New Construction: [Affordable Housing programs](#) are shifting to [All-Electric](#). Local Ex, [Soledad Rancho San Vicente](#). Equity Concern- Cost of living. Gas line extension just canceled.

Resiliency- Perception that gas is resilient vs. in reality, All-Electric is more resilient. [F-150 Lightning Resiliency](#) 98-135kwh; [Vehicle to Grid chargers](#) Pg. 84

Preference- Gas stoves are seen as luxury. Induction stoves perform better, are safer, and are chef preferred by a growing number of chefs. Short video & Info Page: [Cooking Electric](#); Longer video: [Chef Chris Galarza](#)

Hesitant about new technologies- Need community workshops to test technology. [Now We're Cooking](#)

Grid stability- PG&E supports all-electric with no exemptions. All-Electric+Batteries+EVs+Solar= [Grid assets](#) for more stable grid.

Overall Take-Away from Community

New Construction: **All-Electric makes sense**, the writing is on the wall. Building code is already tough enough as it is. Additional efficiency requirements could be difficult for developers. Equity concern- shouldn't increase utility costs, especially for renters.

Existing Buildings: Perception that County is not ready to mandate existing building electrification. Equity risks and housing affordability risks.

EV Charging: **We need more EV Charging**. Increasing these requirements is reasonable.

Staff Goals

Take the first step towards building decarbonization in new construction. Build off of 2022 Code. Prepare for EV transition.

Do not increase cost of living for residents.

Tackle existing buildings in due time.

Staff Recommendation

All-Electric Health and Safety Ordinance: New Construction, All Building Types

Exemption: Public Interest, no feasible alternative

Title 24, Part 11: All-Electric New Construction & High-Power EV Charging

If Needed to be Cost-Effective

Title 24, Part 6: Increase Solar PV requirements to 90% of projected energy use

EV Infrastructure– New Construction

	2019 CALGreen	2022 CALGreen	Proposed code	
	Mandatory	Mandatory		
Multi-Family	<p>% of Parking Spaces</p>		<p>% of Dwelling Units with Parking Spaces</p>	
	<p>10% Level 2 EV Capable</p>	<p>5% Level 2 EVCS 25% Level 2 EV Ready (low-power) 10% Level 2 EV Capable</p>	<p><u>Low Power Option</u> 40% Level 2 EVCS 60% L1 EV Ready</p>	<p><u>High Power Option</u> 15% Level 2 EVCS 85% L2 EV Ready (low-power)</p>

AUTOMATIC LOAD MANAGEMENT ENCOURAGED

Conclusion, Options for Consideration:

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A decorative border made of teal triangles with white outlines, arranged in a repeating pattern around the central text.

Questions?

Supplementary Slides

A person with a large red backpack is walking across a suspension bridge that spans a deep valley filled with dense, lush green forest. The bridge is made of metal cables and a mesh floor. In the background, there are rolling mountains under a hazy sky. The overall scene is a scenic view of a natural landscape.

How to pass: After Local Adoption

All-Electric

Title 24 Part 6:
Energy Code

Title 24 Part 11: CA
Green Buildings
NEW

Municipal Health
and Safety
Ordinance



California Energy
Commission

California Building
Standards
Commission



Energy Efficiency
Requirements &
Solar

Title 24 Part 6:
Energy Code

Electric Vehicle
Charging
Requirements

Title 24 Part 11: CA
Green Buildings

Municipal Ordinance Logic and Benefits

Doesn't expire- Reach codes tied to building codes must be updated with each 3-year code cycle

Signal to market, workforce, and consumers.

Reduce stranded assets and cost to electrify later.

Utility Death Spiral- As the jurisdictions transition away from gas, residents who are unable to electrify will bear a higher cost to maintain infrastructure. This will drive people to electrify faster, and create a cycle that is financially damaging for anyone reliant on gas.

Why Reach Codes: Climate Impacts

State Goals:

2030: 40% Emissions Reductions

2045: Carbon neutral

According to Housing Element:

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17% Emissions Reduction

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Margin 0 Min Solar	Affected Units	Compliance Cost	Emissions Reductions mTCO2e	Lifecycle Savings OR Annual Bill Savings	Electricity Savings (mWh)
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How is this beneficial for the County: All-Electric + Solar

State Goals:

2030: 40% Emissions Reductions

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18% Emissions Reduction

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Margin 0 90% Solar	Affected Units	Compliance Cost	Emissions Reductions mTCO2e	Lifecycle Savings OR Annual Bill Savings	Electricity Savings (mWh)
Climate Zone 3	988	\$ 1,878,239	13,310	\$ 1,192,205	32.9
Climate Zone 4	78	\$ 81,362	1,003	\$ 812,678	2.28
CZ 3/Unit	988	\$ 275	1.199	\$ 501	1.127
CZ 4/Unit	78	\$ (559)	1.119	\$ 432	0.973

Policies Discussion

New Construction (& Major retrofits)

Electric Preferred - Bad Policy

All-Electric

Increased Energy Efficiency

Increased Solar

Increased Battery Storage

Existing Buildings

Replace on Burnout

Replace on Time of Sale

Replace on Permit/Remodel

Date Final/ End of Flow

Definitions:
EV Charging Station- Built in charging cables

EV Ready- Ready to plug in

EV Capable- Electrical Circuit and Raceways, No Plug

Electric Vehicle Charging

Single Family

1 Lvl 2 & 1 Lvl 1

Capable → 1 Lvl 2 & 1 Lvl 1 Ready

Multi-Family

Code: 5% EVCS, 25% Lvl 2 EV Ready, 10% Lvl 2 Capable



High power: 15% Lvl 2 EVCS, 85% Lvl 2 Ready

Low Power: 40% Lvl 2 EVCS, 80% Lvl 1 Ready

Title 24 Pt. 11 EV Reach Code Costs = .03% of Construction



EV Infrastructure– New Construction

	2019 CALGreen	2022 CALGreen	Proposed Code
	Mandatory	Mandatory	
Single Family Homes and Two-Family Townhomes	(1) Level 2 EV Capable for one parking space per dwelling unit 		2 EV spaces total: <ul style="list-style-type: none">• 1 Level 2 EV Ready circuit• 1 Level 1 EV Ready circuit  <p>ELECTRIC VEHICLE OUTLET</p>

Building Electrification – New Construction

All-electric construction required

- Also restricts extension of any existing gas infrastructure

New construction definition

- If either of the below are replaced over 3 years for purposes other than repair or reinforcement
 - 50% of above-sill framing, or
 - 50% of foundation

Optional exceptions

- Infeasible to construct according to CA Energy Code
- “Public interest”
- Technology-specific exceptions expiring in 2025
- Electric-readiness required
 - Pre-wiring
 - Physical space

Find our codes on:
CentralCoastReachCodes.Org



Central Coast
**Community
Energy**

Wood Burning

Wood smoke contains harmful pollutants:

- PM2.5
- Benzene
- Formaldehyde
- Acrolein
- Polycyclic aromatic hydrocarbons (PAHs)

All-Electric New Construction Reach Code prohibits wood for heating



Propane

Is less resilient than All-Electric

- No pilot lights
- Only heating
- Refills needed

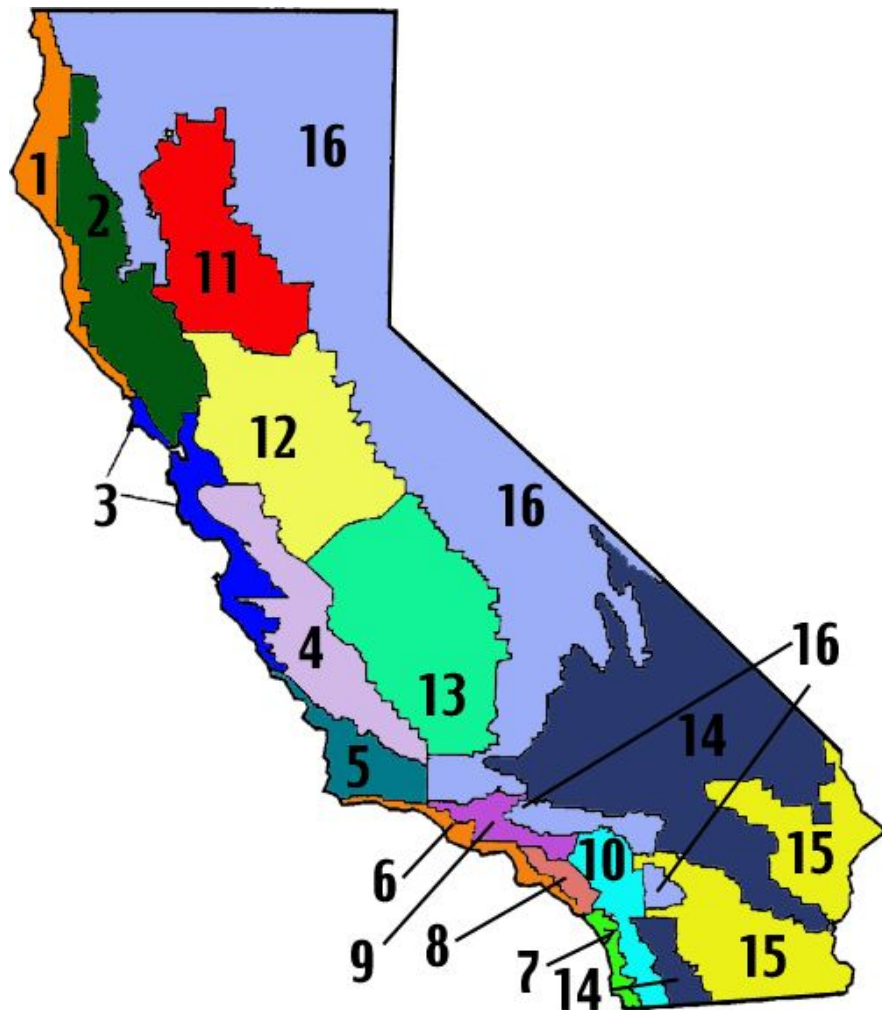
Is more carbon intensive than gas

Rural drivers have more to benefit from EVs than urban drivers

Health impacts: Propane poisoning & explosion/fire risk

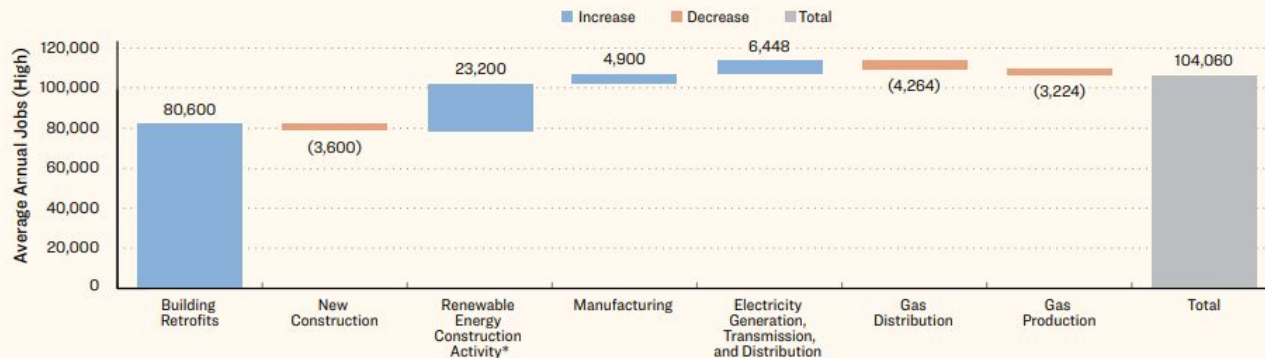
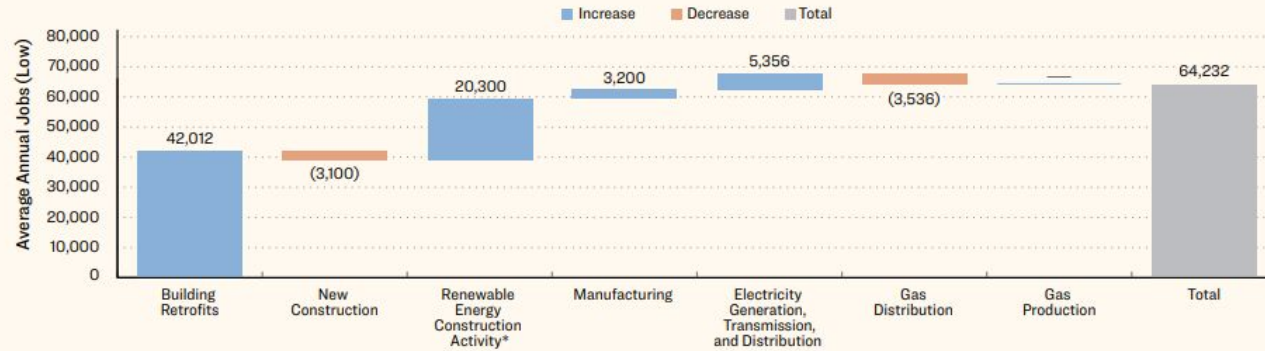


Climate Zones Map



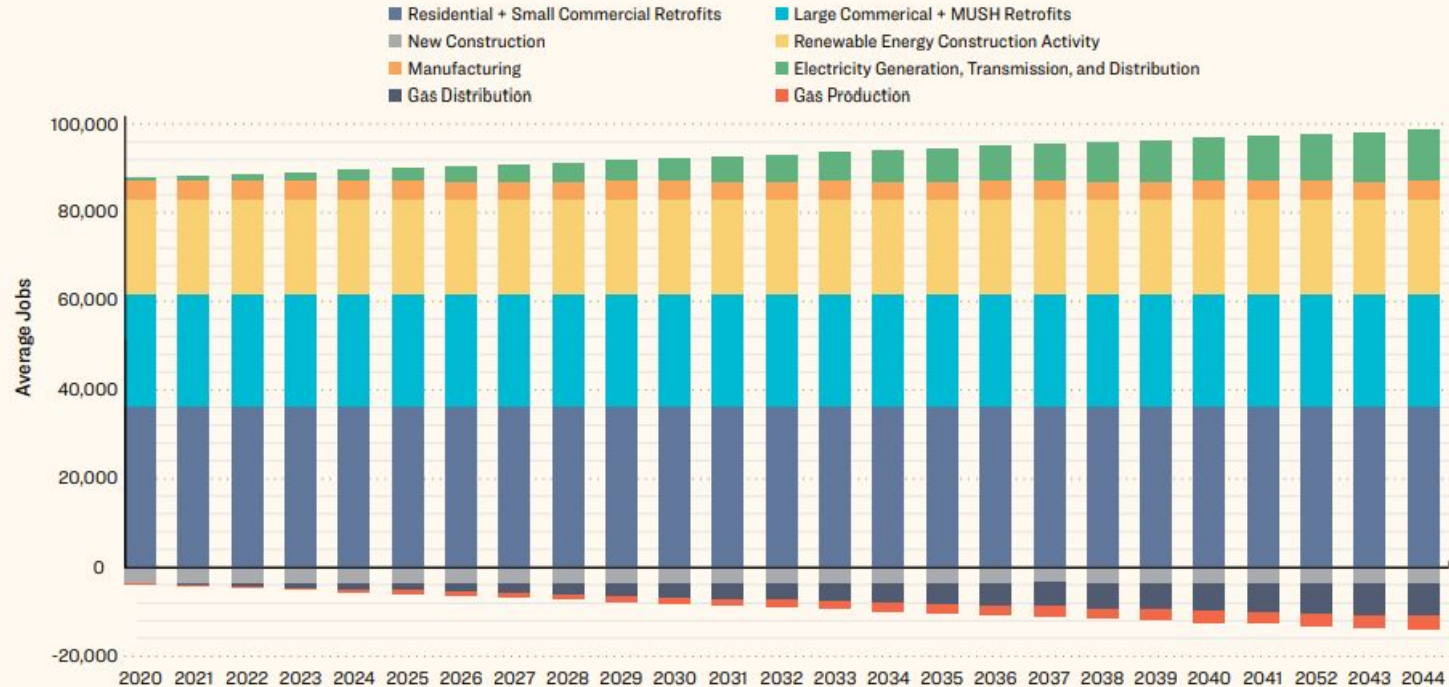
Building Electrification Employment Impacts Pt. 1

ES Figure 2. Employment Impacts by Industry, Low and High Estimates (Average Annual)



Building Electrification Employment Impacts Pt. 2

ES Figure 3. Average Annual FTE Jobs Due To Building Electrification



Editable Slide Deck for Regional Colleagues

Please feel free to **make a copy** of this deck and edit it to fit your reach code needs. (File→make a copy→entire presentation).

[Here is the link!](#)

3CE Reach Code Portal

Model Code information and more available [here](#).