Regional Approaches to Building Electrification and Decarbonization

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Introduction

Jurisdictions Developing Policy

Technical Assistance

NegaWatt
GHG Goals and Clean Energy Policies

- SB 350
  - Reduce GHG to 40% below 1990 levels by 2030
  - Reduce GHGs to 80% below 1990 levels by 2050
  - Double statewide energy efficiency savings in electricity and natural gas end uses by 2030

- State’s energy targets for new construction aim for:
  - Zero-net-energy (ZNE) 2020-2025 (residential & municipal)
  - ZNE 2030 (nonresidential)

- How?
  - California Air Resources Board (CARB)
  - California Public Utilities Commission (CPUC)
  - California Energy Commission (CEC)

- Local Goals and Policies
  - County of Santa Barbara: 50% emissions reduction by 2030
Buildings produce 24% of total carbon emissions

Source: Building Decarbonization Coalition
Reducing GHG Emissions in New Construction

- Every 3 years CA cities required to adopt new CA Building Standards Code
- Local governments can draft local energy codes that “reach” beyond CA minimum requirements
- Key strategy in building sector: reducing GHGs through All-Electric Buildings
- 50+ cities in CA have adopted codes above state requirements related to electrification in 2019-2022
Co-Benefits of All-Electric Buildings

- Reduced construction costs
- Reduced indoor air quality/health concerns
- Reduced hazards
- Improved outdoor air quality
- Improved vistas/views
Electrification is Cost Effective

- Avoided costs of new natural gas infrastructure makes all-electric relatively cheaper to build in lifetime analysis.
- All-electric new construction is cost-effective* in all climate zones.
- All-electric + PV is on-bill cost effective in all climate zones.

*lifecycle savings greater than initial costs
What about Reliability?

- Extreme heat, wildfire and Public Safety Power Shutoffs, exacerbated by climate change, pose a constant threat.
- Gas appliances that rely on electric ignition may also not be operable in the face of electric outages.
- Aging methane natural gas infrastructure also remains a critical concern.
- New all-electric buildings would not significantly change the overall demand for electricity.
- Investments in clean and reliable energy sources and grid infrastructure will continue to be made.
General Purpose of Collaboration

Develop local codes that “reach” beyond or exceed the State code to reduce greenhouse gas emissions in new construction to be effective in:

- County of Santa Barbara (unincorporated area)
- City of Goleta
- City of Carpinteria

Replace fossil fuel use with clean electricity to reduce GHG emissions and improve air quality

CA Energy Codes and Standards group studies conclude that All-Electric Buildings are cost-effective
Concepts & Coordination

Planning Meetings
● Local Govts and Technical Assistance Providers review & prepare code, prepare community engagement activities

Internal Meetings
● Lead staff meet with internal stakeholders to vet policy, process and implementation

Santa Barbara South Coast Chamber
● Monthly updates to Public Policy Committee

Technical Advisory Committee
● Industry and high-touch stakeholders (invited) to provide feedback on policy, community workshops, and outreach

Public Workshops
● Open meetings to introduce the concept, respond to concerns and ideas

Cost-Effectiveness Studies
● Statewide studies to provide justification
<table>
<thead>
<tr>
<th>Meeting Name</th>
<th>Meeting Purpose</th>
<th>Stakeholders</th>
<th>Approx. Timeframe</th>
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</thead>
<tbody>
<tr>
<td>Planning Meeting</td>
<td>Reach Code overview; 3C-REN services, SCE services, timeline, future coordination</td>
<td>3C-REN, County, cities</td>
<td>7/18/2022</td>
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<tr>
<td></td>
<td>Outreach &amp; Engagement – stakeholder mapping, advisory committee, partners</td>
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<tr>
<td></td>
<td>Timeline – Cost effectiveness studies, stakeholder engagement, ordinance timelines</td>
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<tr>
<td>Phase 1: Technical Development</td>
<td>Determine if the ordinance will be sited as a Title 24 Overlay, a municipal code, or a local amendment.</td>
<td>3C-REN, County, cities</td>
<td>8/1/2022</td>
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<tr>
<td>Planning Meeting</td>
<td>Review ordinance language, cost effectiveness studies, building sector types and considerations</td>
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<td></td>
<td>Begin identifying and engaging stakeholders to inform scope.</td>
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<tr>
<td>Internal Meetings</td>
<td>Review ordinance language, cost effectiveness studies, building sector types and considerations internally and with Building Official and legal counsel and revise, as necessary.</td>
<td>Project leads with internal agency staff</td>
<td>8/8/2022</td>
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<tr>
<td>Date</td>
<td>Event</td>
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<tr>
<td>Sept 1, 2022</td>
<td>Reach Code Advisory Committee Meeting #1</td>
<td>Oct 18, 2022</td>
<td>Reach Code Advisory Committee Meeting #2</td>
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<td>Sept 28, 2022</td>
<td>Santa Barbara South Coast Chamber of Commerce Public Policy Committee</td>
<td>Oct 17, 2022</td>
<td>Cities-County Joint Affordable Housing Task Group Meeting</td>
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<td>Oct 4, 2022</td>
<td>County Board of Supervisors</td>
<td>Dec 5, 2022</td>
<td>Santa Barbara Association of Realtor's Meeting</td>
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<td>Oct 6, 2022</td>
<td>County Agriculture Advisory Committee</td>
<td>Dec 7, 2022</td>
<td>Santa Barbara Regional Climate Collaborative - Equity, Outreach &amp; Advocacy Subcommittee Presentation</td>
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<td>Oct 10, 2022</td>
<td>Carpinteria City Council</td>
<td>Jan 23, 2023</td>
<td>City of Goleta Green Committee</td>
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<td>Oct 12, 2022</td>
<td>City of Goleta Green Committee</td>
<td>Jan 26, 2023</td>
<td>Reach Code Advisory Committee Meeting #3</td>
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<td>Oct 13, 2022</td>
<td>Public Workshops for New Building Electrification Codes</td>
<td>Feb 21, 2023</td>
<td>Public Workshop for New Building Electrification Codes</td>
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<td>Feb 23, 2023</td>
<td>Memo to Santa Barbara South Coast Chamber of Commerce Public Policy Committee</td>
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<td>Mar 13, 2023</td>
<td>City of Goleta Green Committee</td>
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<td>Mar 17, 2023</td>
<td>Electric Cooking Demonstration at Goleta Valley Library</td>
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<td>Mar 18, 2023</td>
<td>Electric Cooking Demonstration at Carpinteria Library</td>
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<td>Mar 29, 2023</td>
<td>Santa Barbara South Coast Chamber of Commerce Public Policy Committee</td>
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<td>Apr 18, 2023</td>
<td>Goleta City Council</td>
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9th Circuit Decision - City of Berkeley

- April 17, 2023 - 9th Circuit Court of Appeals overturned City of Berkeley’s prohibition on natural gas in new construction in *California Restaurant Association v. City of Berkeley*
- Paused adoption/implementation of many natural gas prohibitions
- May 31, 2023 - Berkeley submits petition for rehearing, supported by National League of Cities, NY State Public Service Commission & others
9th Circuit Decision - City of Berkeley

Why is this important?

- Other prohibitions, including *Reach Code Working Group* draft ordinances, based on Berkeley's ordinance
- Other states & agencies, including New York, have adopted similar regulations

What’s Next?

- Continuing to monitor this case while exploring other options.
Collaboration across Jurisdictions

Environmental regulations and policies have changed the way local governments approach working together.

- Solid Waste
- Water Quality
- Community Choice Energy
- Santa Barbara Climate Collaborative
Collaboration & Lessons Learned

- Collaborative efforts leverage resources and provide regional consistency when developing policies
- Working together allows us to have a wider reach and more capacity when educating the community
- We can’t anticipate everything!
City of Carpinteria Reach Code Adoption

- Alignment with City policies & plans
  - Sustainable Community Policy: Reduce GHG emissions, develop and implement standards to reduce energy use; continue to collaborate with regional and state entities to reduce impacts to the environment and reduce energy consumption
- Internal support from Community Development and Building & Safety for regulations
October 10, 2022 - City Council initiates a building electrification ordinance
January 9, 2023 - Council receives an update on ordinance, as well as energy resilience & reliability and available trainings
April 10, 2023 - Natural Gas Prohibition in New Construction passed upon first reading 5-0
City of Carpinteria - Ordinance Process

Applicability:

*Newly constructed building*: A building that has never before been used or occupied for any purpose, or a construction project where an alteration where the size or the value of the alteration exceeds 50-percent of the size or the value of the existing building

*Exemptions* Attached accessory dwelling units where fuel gas infrastructure already exists in primary building, labs or clean-rooms, commercial cooking, & public interest projects
Reach Code Alignment with Goleta

- 2021-23 Goleta Strategic Plan
  - 1.1.4. Explore adoption of a "Reach" Building Code
  - 1.1.5. Continue to work with the Santa Barbara County Regional Climate Collaborative to share resources to address climate change
- Reach Codes identified by Council as the top priority for Sustainability's upcoming projects during the 2022-23 PER Annual Work Program process
- City Reach Code was developed and passed on first hearing in April 2023
City of Goleta - Ord. Passed on First Reading

Key Definitions

- Newly Constructed Building
  - A building that has never before been used or occupied for any purpose
  - A construction alteration that includes replacement or addition of over 50 percent of the existing foundation for purposes other than a repair or reinforcement
  - When over 50 percent of the existing framing above the sill plate is removed or replaced for purposes other than repair
Core Components:
- Would not apply to portable propane appliances
- Electric readiness for qualifying exemptions; all exemptions granted should pre-wire for electric conversion in the future
- Periodic review (every 3 years)

Applications for exemptions would be available for:
- Attached ADUs & JADUs, in which fuel gas infrastructure already exists
- Commercial cooking (limited time, at least 2 years)
- Public interest projects
Current Status of Building Electrification

- April 18, 2023 - Goleta City Council unanimously passed all-electric new construction ordinance
- City paused second reading on ordinance due to *California Restaurant Association v. City of Berkeley*
- CA cities pursuing alternative options for electrification
- Goleta monitoring local government best practices as they develop across the state to support electrification
- Actively developing an EV reach code to advance transportation electrification
Alternative Electrification Policies

Policies Goleta is considering:

- Electric-preferred reach code policy
  a. Heavily incentivize all-electric construction
  b. Recently adopted model codes by City of San Luis Obispo
  c. Bay Area jurisdictions exploring similar models

- Reducing new and existing building electrification barriers
  a. Researching reducing or removing permit fees for all electric appliances (electric heat pumps, induction cooktops, etc.)

- Developing an EV reach code for all new construction
  a. Expand L1 & L2 charging access in multifamily residential and workplaces (office, industrial zoning)
Climate Goals

California:
- SB 32 40% GHG reduction by 2030
- SB 350 50% increase in energy efficiency
- SB 100 100% carbon free energy by 2045
- AB 1279: Carbon neutrality by 2045

City:
- Carbon neutrality by 2035
- SBCE predominantly eliminated emissions from electricity sector in 2022
- Buildings remain second largest GHG sources
Reasons for City to Adopt Electrification Reach Code

- Eliminate fossil fuel use
- Lower carbon footprint and reduce GHG emissions
- Save money* with greater energy efficiency
- Take advantage of any local utility rebates and incentives
- Maximize the benefits of solar panel installation
- Better indoor air qualify / Community Health
- Technology Exists and is Proven
- CA electric grid is a summer peaking system, Increase in demand would be mostly in winter months when capacity is available**
- Best available solution now

*California Energy Codes & Standards New Construction Reach Code Cost-Effectiveness Study’s 2019, 2022
**SCE Pathway 2045, (2019)
Prohibition of Natural Gas in New Construction Ordinance Timeline

- **2019-2021**: Code development and outreach
- **July 27th, 2021**: City Council adoption
- **Jan 1st, 2022**: Ordinance Effective date
- **April 17, 2023**: 9th Circuit Court Ruling: Berkeley
- **June 15, 2023**: City Suspends Enforcement of Ordinance
Code Development & Stakeholder Engagement

- Building Industry
- Trades
- Architects
- Utilities
- CBO’s
- Real Estate Industry
- General Public
- Internal City Staff
- Academia

- Regional/Local Code Consultants and Decarbonization Advocacy Groups
- Statewide Codes and Standards Team
Stakeholder Concerns

- Realign Definition of New Construction
- Government Mandate – Removal of Choice
- Technology Familiarity & Effectiveness
- Reliability
- Outdoor Fire Pits & Radiant Heat
- Pipefitters Labor Union-Jobs
- Pool Heaters and Fireplaces
- Medical Facilities / Labs
- Commercial Kitchen Equipment
- Fireplaces & Cooktops
- ReBuild
- ADU’s
- Existing Buildings
Details of Ordinance

• Health & Safety Ordinance, not Building Code Amendment
• Only affects New Construction and Major Demolition (75% rule)
• Used Existing Cost Effectiveness studies
• Exemptions for
  • Medical Labs
  • Commercial Kitchen
  Cooking Equipment
  • Physically Infeasible
  • Public Interest
Resources

- Press Release
- Recorded trainings
- FAQ’s
- Info Flyer for Architects & Engineers
- Notification Letters to permit & planning applicants
- Planning Handout:
  - Ordinance Overview
  - Submission Guideline
  - Verification Worksheet
  - Exemption Request Form
Lessons Learned

- Biggest gap is contractor comfort/knowledge
- Large Additions not Captured
- Technology is evolving: Commercial Kitchens
- Certain Industries are slow to adopt
- Still some misinformation about Technology
- Overall, positive reaction from most stakeholder groups
- Clear information, rules and guidelines help avoid confusion & frustration
- Have a main POC for stakeholders to ask questions
COUNTY OF SANTA BARBARA

- 2030 Climate Action Plan adoption slated for Q1 2024
- New construction ordinance on hold
- Exploring options for policies and programs affecting existing buildings, including electric vehicle charging, also non-building code options for new construction
Draft White Paper to Help the Community Understand Costs of Electrification (CAP Implementation)

- Conceptual analyses of use cases that may represent some experiences across the community
- Summarize and present existing industry research and experience to provide conceptual costs that would be informative - but not authoritative - to decision makers, households and businesses
- Relatable rough orders of magnitude costs associated with transitioning to low-carbon or carbon-free, or all-electric, lifestyles and operations
### Federal
- Inflation Reduction Act
  - Tax credits
    - Building systems
    - Vehicles & charging
  - Rebate programs (not yet available)
    - Performance Based
    - Point of Sale

### State
- TECH rebates
- Golden State rebates
- Equitable Building Decarbonization Direct Install Program (not yet available)

### Regional/Local
- Investor Owned Utilities
  - PG&E, SCE
- Publicly Owned Utilities
  - City of Lompoc
- Regional Programs
  - Central Coast Community Energy
  - Tri-County Regional Energy Network
<table>
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<tr>
<th>Appliance/Equipment</th>
<th>Estimated Installed Cost</th>
<th>IRA Upfront Discount</th>
<th>IRA 30% Tax Credit</th>
<th>State Incentives</th>
<th>Local Rebates</th>
<th>Final Cost</th>
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<tbody>
<tr>
<td>Central Heat Pump</td>
<td>$15,000-$20,000</td>
<td>-$8,000 (rebate)</td>
<td>-$2,000 (25C)</td>
<td>$1,000 (TECH)</td>
<td>$2,500-$3,500 (3CE*) +$1,000 for Low-Income</td>
<td>$0-$500</td>
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<tr>
<td>Ductless Mini-Split Heat Pump</td>
<td>$6,100</td>
<td>-$1,830 (25C)</td>
<td>$1,000 (TECH)</td>
<td>$2,500-$3,500 (3CE*) +$1,000 for Low-Income</td>
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<td>Window Unit Heat Pump</td>
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<td>-$2,000</td>
<td>$1,000 (TECH)</td>
<td>$500-$750 (3C-REN)</td>
<td>$0</td>
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<td>Heat Pump Water Heater</td>
<td>$4,300-$6,500</td>
<td>-$1,750</td>
<td>-$765-$2,000 (25C)</td>
<td>$1,000 (TECH)</td>
<td>$300 (PGE)</td>
<td>$0</td>
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</table>

*3CE’s FY 22-23 Electrify Your Home program funds have been fully spent or reserved. A budget for FY 23-24 was approved, but incentive amounts may change.
All-Electric Lifestyle Costs Less

**TODAY (2023)**
- Gasoline $4,232
- Solar + Storage $97
- Total Spend $6,677 >7% Energy Burden

**PATHWAY 2045**
- Gasoline $449
- Electricity $2,098
- Home Gas $857
- Total Spend $3,674 <3% Energy Burden

**COUNTDOWN TO 2045**
- Gasoline $568
- Electricity $2,927
- Home Gas $180
- Total Spend $3,873 <3% Energy Burden

Costs are represented in a bar graph showing the financial impact of switching to an all-electric lifestyle by 2045.
3C-REN Water Heater Loaner Program

**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.

**GET PAID:** 3C-REN’s Gas Water Heater Loaner Program pays participating contractors $1,000 per project to use a loaner natural gas water heater while helping customers upgrade to a heat pump water heater.