

# The Roadmap to Zero Carbon

Redwood Energy's Bi-Annual Zero Carbon Conference

Entirely Online

February 5, 2019



Greenbank Associates



Environmental Services



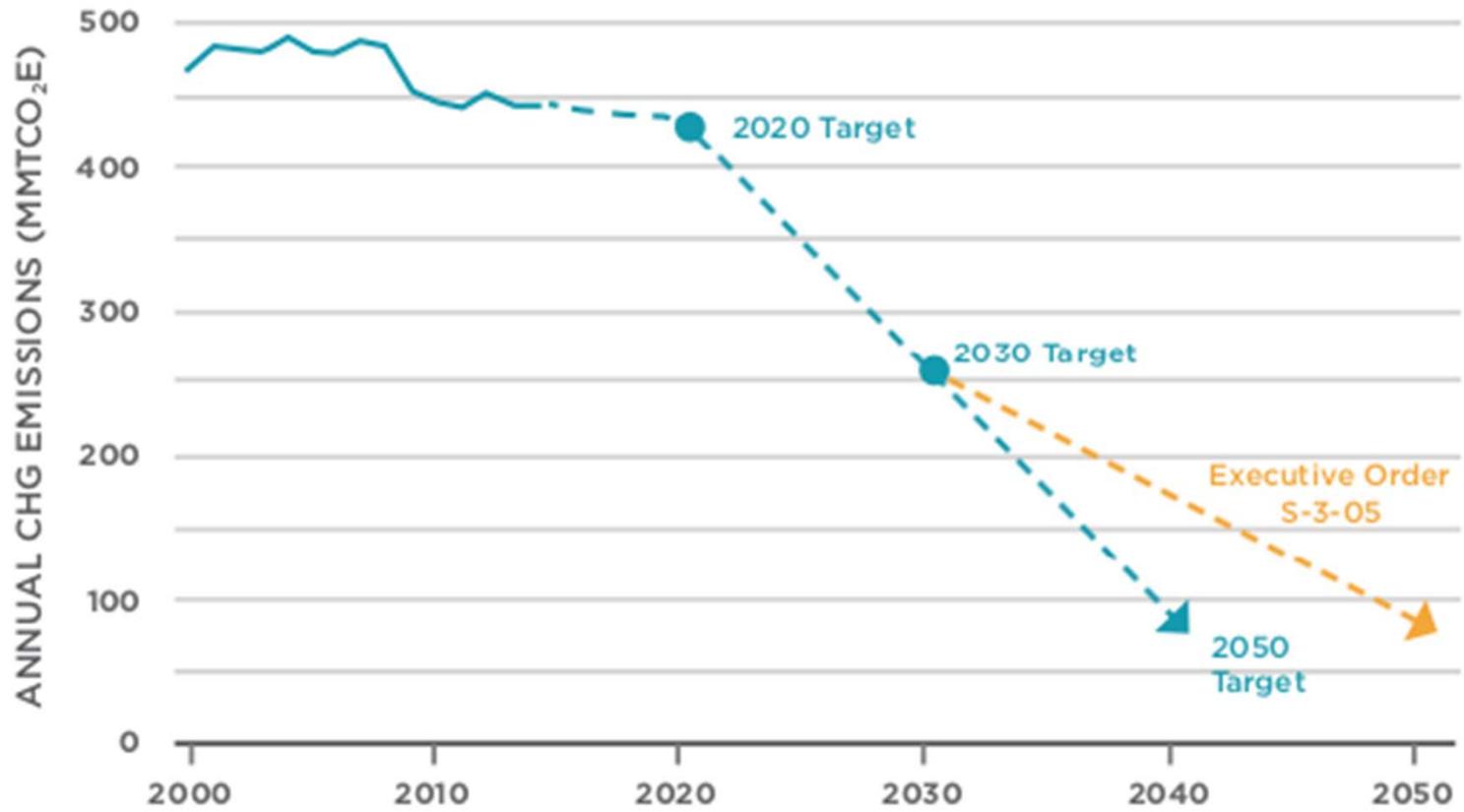
WRNSSTUDIO



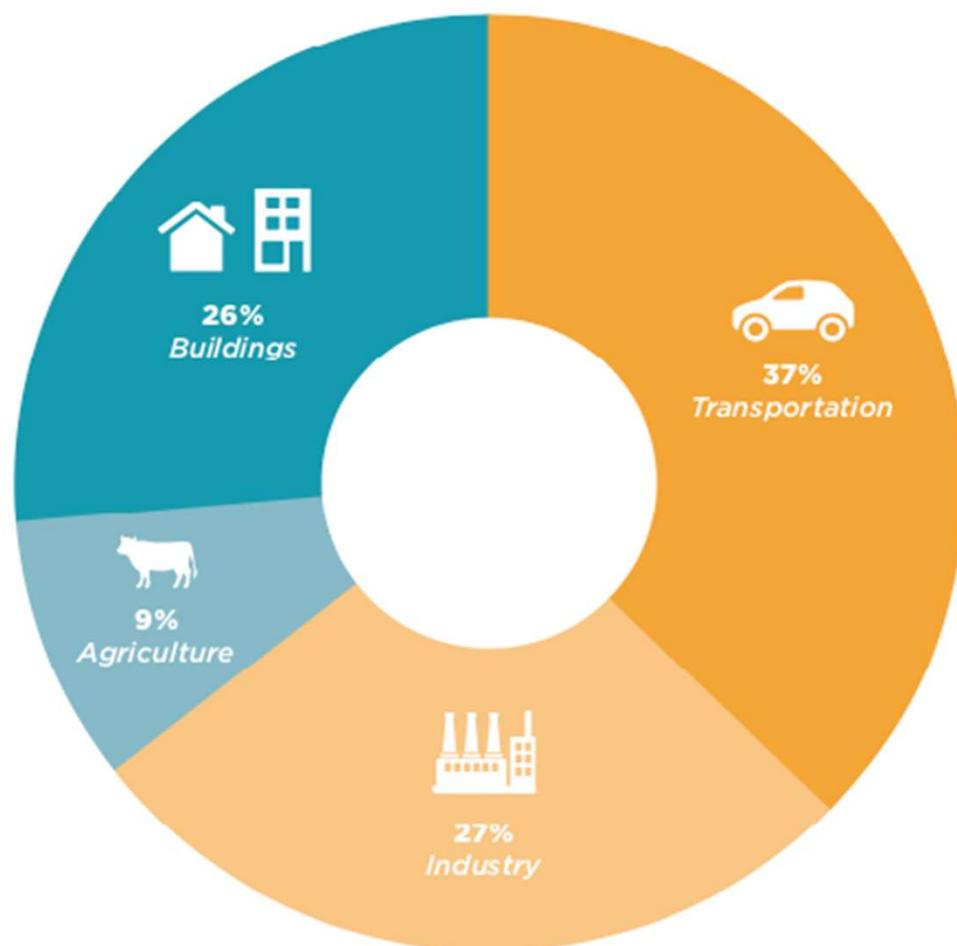
Gensler



## PLOTTING CALIFORNIA'S PATH FORWARD



**CALIFORNIA END USE GREENHOUSE  
GAS EMISSIONS<sup>1</sup>**

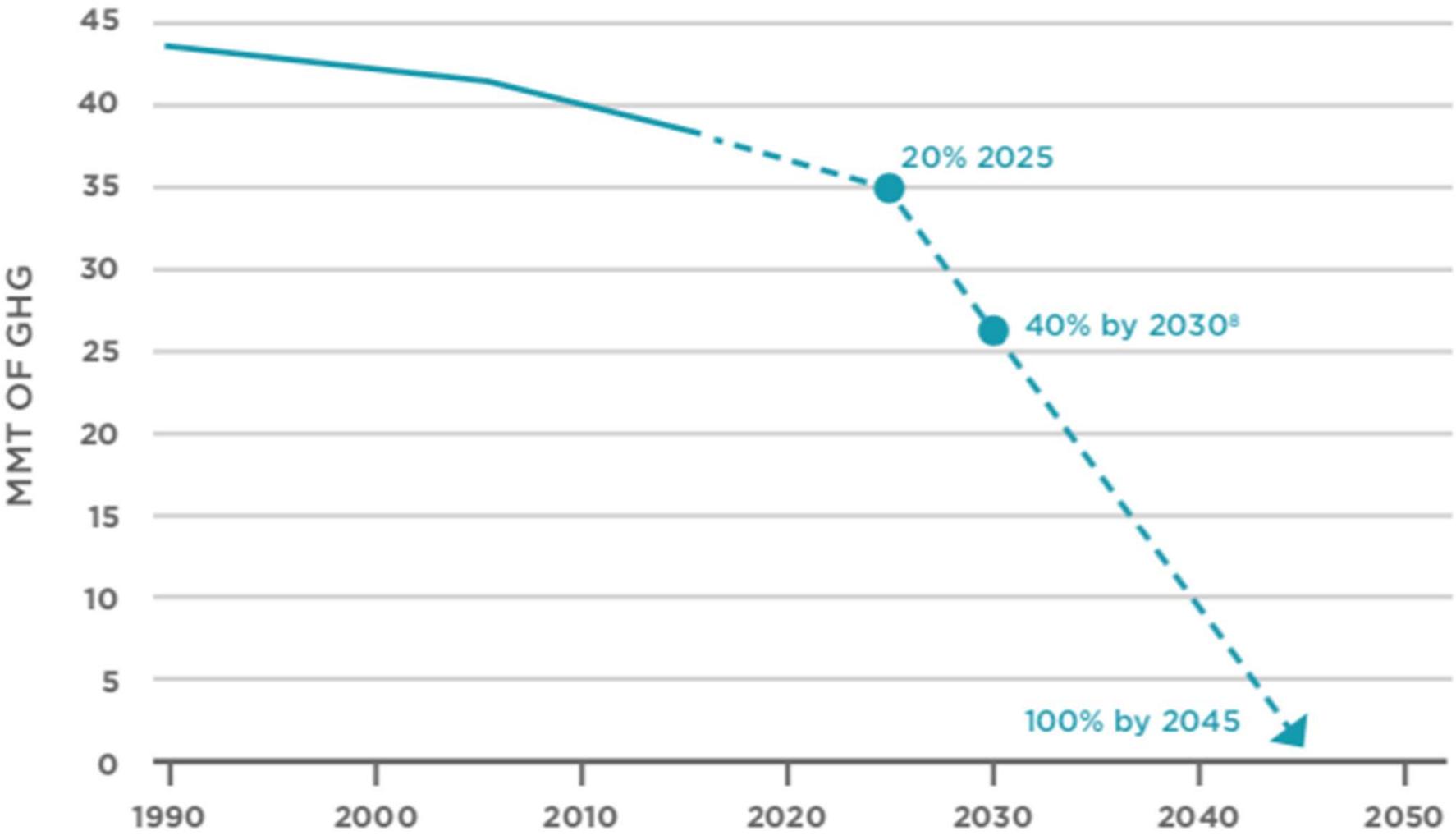


# Roadmap

- Meetings
  - September
  - November
  - January
- Finished January 2019
- Outreach February-March



# DECARBONIZING OF THE BUILDING SECTOR<sup>7</sup>



# Phasing

## **PHASE 1**

**Market Readiness:** Today demand for and supply of building decarbonization measures is minimal. To ready the market, reverse these conditions through ambitious targets, policy alignment, coordinated marketing, retail price reductions, clear signals to suppliers and coalition building.

## **PHASE 2**

**Market Deployment:** Once readied, deployment of building decarbonization measures can be accelerated through support of the full- supply chain via mid- and upstream incentives to manufacturers and builders and financing solutions ready to reach all customers, including underserved communities.

## **PHASE 3**

**Scaling the Market:** Leverage the success of Phases 1 and 2 to reach scale through downstream incentives, grid integration, and targeted solutions for hard to reach customers.

# Barriers to Electrification

**LOW  
AWARENESS  
AND INTEREST**

**LOW PERCEIVED  
CUSTOMER  
VALUE**

**LOW PERCEIVED  
CONTRACTOR  
AND BUILDER  
VALUE**

**LOW  
AVAILABILITY**

**MISALIGNED  
POLICY**

# Roadmap Goals

Goal 1: Build customer, builder, contractor and policy-maker awareness and interest in decarbonization.

Goal 2: Ensure that customers receive a good value from adopting building decarbonization measures.

Goal 3: Ensure that building decarbonization provides a better value to builders and contractors than fossil-fuel heating.

Goal 4: Prepare supply-chains and delivery agents are to meet rising demand for carbon-free building technologies with a quality product.

Goal 5: Align Policy to meet other goals.

# Principles

**EQUITABLE AND AFFORDABLE:** Deliver building decarbonization **equitably and affordability to all communities** to prevent disproportionately burdening customers least likely to be able to overcome the awareness and capital costs barriers.

**ALIGNED:** All stakeholder (customer, contractor, utility, agency, manufacturer) value propositions for building decarbonization must be **recognized and aligned** to achieve the speed and scale of transition California needs.

**GRID FRIENDLY:** Ensure building decarbonization solutions serve **as a benefit to the grid**, especially the need to reliably integrate renewable energy into California's power supply at least cost.

**FORWARD THINKING:** Transform the building heating market through **forward-thinking, long-term commitments** and investments, avoiding the uncertainty and churn of start-stop programmatic cycles, and working in concert with decarbonization of other sectors of the economy.

**DATA-DRIVEN:** Measure marginal carbon values correctly and send a price signal to ensure the actions taken to decarbonize buildings are **data-driven** and produce the results they are intended to.

**INNOVATIVE:** Let California's **innovators design the business models** to meet the need. Keep it simple and do not micromanage.

# NEAR-TERM PRIORITY ACTIONS AND STAKEHOLDERS CRITICAL TO THEIR SUCCESS

## KEY INITIATIVES

Initiative	Building Decarb Coalition	Utilities	CCAs	Manufacturers	CEC	CPUC	Local Governments	Workforce Associations	Environmental NGOs
1 GENERAL MARKETING CAMPAIGN	●	●	●	●			●		
2 STRATEGIC LONG TERM CUSTOMER INCENTIVES		●	●			●			●
3 BUILDING ELECTRIFICATION FINANCE	●	●	●						
4 MIDSTREAM INCENTIVE PROGRAMS FOR BUILDERS		●	●			●	●		●
5 BUILDER SUPPORT THROUGH INQUIRY, ASSISTANCE, AND POLICY	●	●	●		●		●	●	●
6 VOLUNTARY CONTRACTOR SUPPORT AND ACCREDITATION PROGRAM	●	●	●	●	●			●	
7 ELECTRICAL PANEL UPGRADE AND SERVICE INNOVATION PROGRAMS	●	●	●				●	●	
8 LEGACY SYSTEM EVALUATION	●	●				●			
9 REACH CODE SUPPORT	●	●	●		●	●	●		●

# Retrofit-Ready Heat Pump Hot Water Heater Summit

## October 22-23

### Oakland, CA

#### Demand-side

- Policy Makers
- Program administrators
- Permitting agencies
- Installers

#### Supply-side

- OEMs

- Size
- Amperage
- Voltage
- Grid-interactivity

#### Outcomes

- Beginnings of a specification
- Programmatic design outlines
- On-going working group
- Product lists
- Testing procedures



2019!

# Market Transformation



- Builder and contractor electrification needs assessment
- Contractor accreditation program
- All-electric development and building recognition program
- Finance
- Retrofit-ready HPWH spec and 2 other leadership specs
- Electrical panel innovation report

# Consumer Inspiration

- Consumer campaign
  - Survey Existing and develop New Market Research
  - Target Audience Development
  - Messaging and Creative Development
  - Campaign Branding and Visual Identity
  - Brand, Message and Creative Testing
  - Campaign Strategy and Rollout Plan
  - Paid and Earned Media Plan
- Induction campaign



# Public policy

- State policy alignment
  - Rates
  - EE and Weatherization
  - Funding
- SB 1477
- Title 24
- Existing building policy analysis
- Procurement
- Local government
  - Codes
  - Permitting



# Research

- Research Agenda

- Customer heating and cooling needs and how decarbonized solutions can meet them
- Meta-analysis on active, relevant pilots and policies with iterative reporting and promotion of solutions that may work for California.
- Technical and commercial readiness of new decarbonization technologies and business models; partner with research institutions to close the gaps.
- Best practices for trade ally networks and contractor incentives, looking at successful models such as NEEA, and how these could be applied in the CA context to electrification technologies



Together this Roadmap and Coalition has the strength and diversity to create momentum, but reaching California's goals will require leaders in state government, industry, and the public to join together to chart the course and take action. **To gain that engagement California needs a critical third ingredient: visionary leadership from Governor Newsom. Governor Newsom can help California and the world unlock a better way of life, and buildings hold a critical key.**

Questions?