

<b>DOCKETED</b>	
<b>Docket Number:</b>	19-IEPR-06
<b>Project Title:</b>	Energy Efficiency and Building Decarbonization
<b>TN #:</b>	227580
<b>Document Title:</b>	It's Time For Our Buildings To Match Our Ambitions
<b>Description:</b>	Presentation by Panama Bartholomy, of Building Decarbonization Coalition
<b>Filer:</b>	Raquel Kravitz
<b>Organization:</b>	Building Decarbonization Coalition
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	4/9/2019 12:44:41 PM
<b>Docketed Date:</b>	4/9/2019

# IT'S TIME FOR OUR BUILDINGS TO MATCH OUR AMBITIONS

JOIN US



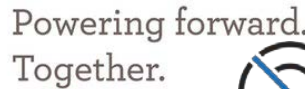
**BUILDING  
DECARBONIZATION  
COALITION**



Greenbank Associates



Innovation has a name.



An EDISON INTERNATIONAL® Company



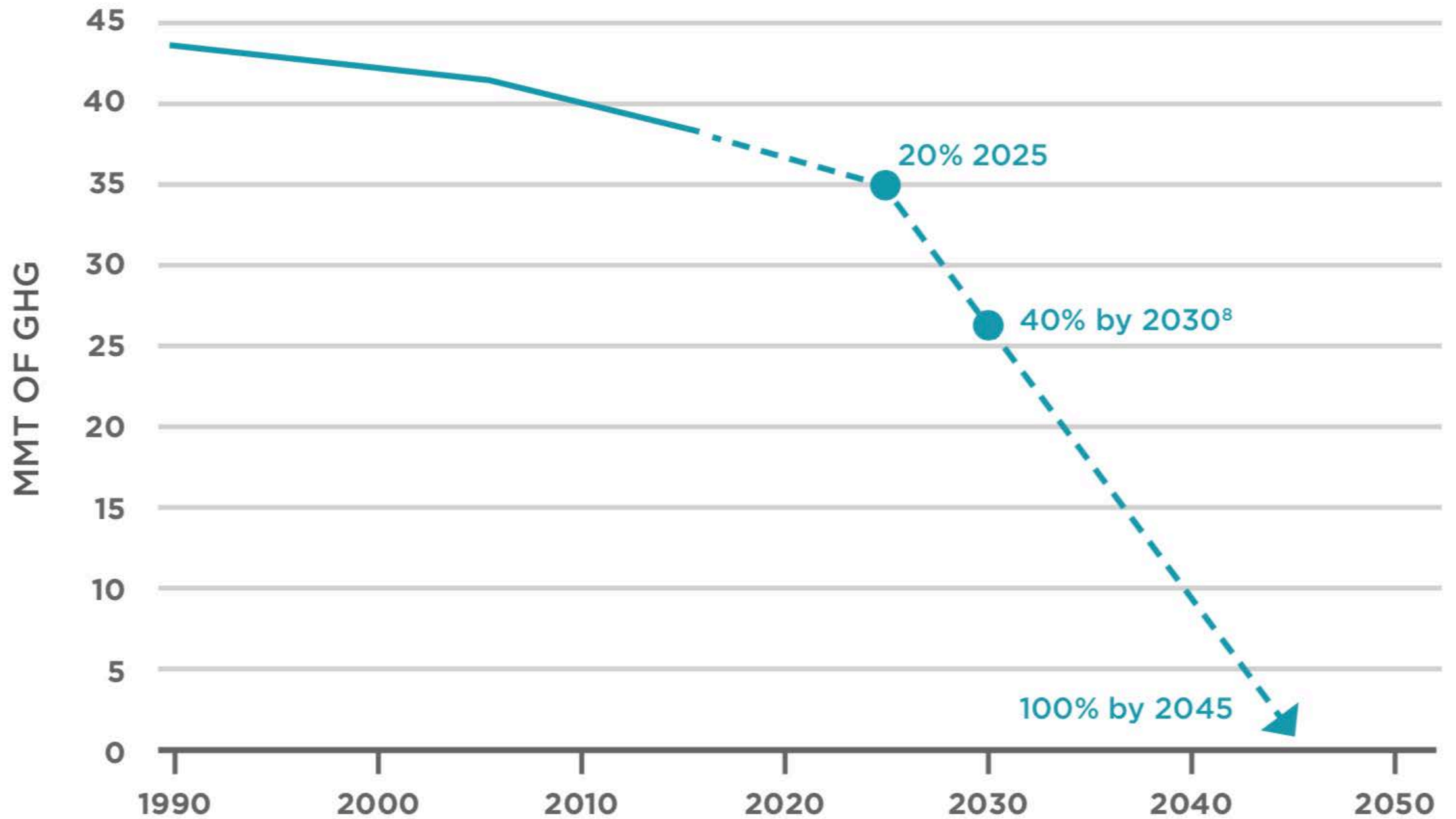
Finding the ways that work



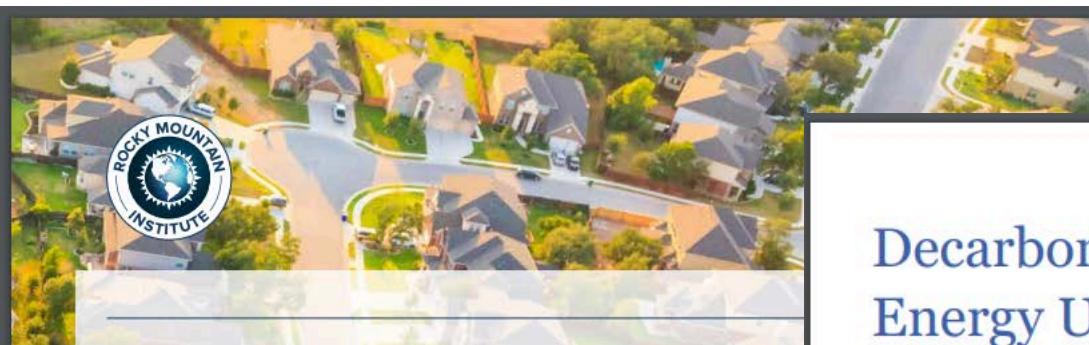
WATER HEATERS



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



## Electrification of buildings and



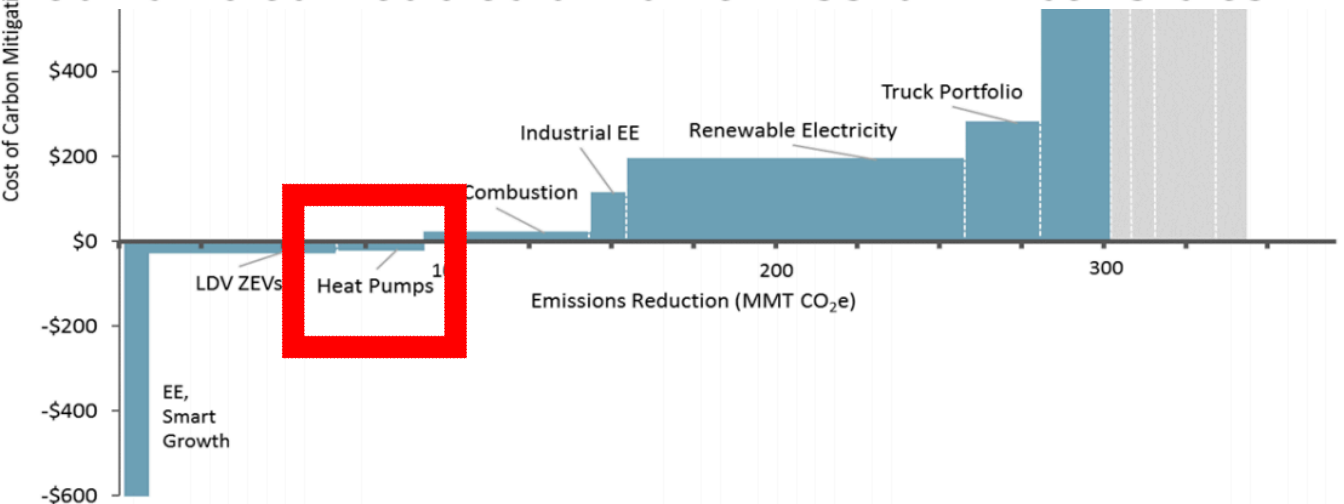
# Decarbonization of Heating Energy Use in California Buildings

*Technology, Markets, Impacts, and Policy Solutions*

Figure 26: 2050 Incremental Carbon Abatement Cost Curve (Total Resource Cost per Ton of GHG Reduction Measures, Net of Fuel Savings), in the High Electrification Scenario

# The Case for Building Electrification

There is a growing consensus that building electrification is the most viable and predictable path to zero-emission buildings. This consensus is due to the availability of off-the-shelf, highly efficient electric technologies (such as heat pumps) and the continued reduction of emission intensities in the electricity sector. With former



**AUTHORS**  
Asa S. Hopkins, PhD • Kenji Takahashi • Devi Glick • Melissa Whited

**Synapse**  
Energy Economics, Inc.

October 2018

**C H O I C E**

Cost

# Gas Infrastructure Costs

\$6,000-\$15,000



\$7,000 X

9,897 = ~60,000 families priced out

\$270-\$850

\$750-\$2,400

Every \$1,000 increase  
in house price prevents  
9,897 California families  
from affording  
-NAHB, 2019





NAVIGANT

## Impacts of Residential Appliance Electrification

Final Report

Prepared for:  
California Building Industry Association



..electric appliances have similar or lower costs than natural gas appliances..

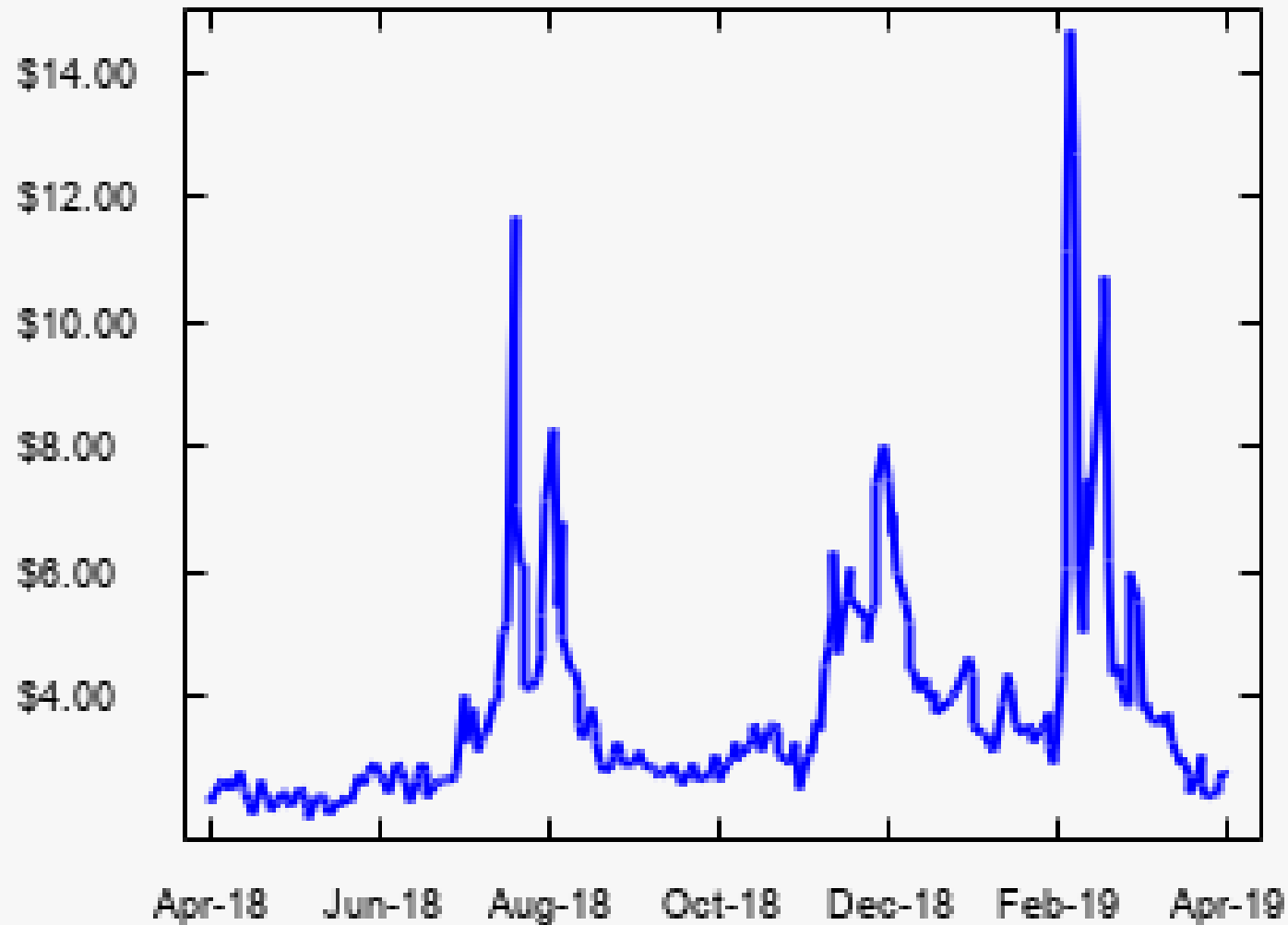
Replacing natural gas appliances with electric reduce an existing home's total GHG emissions by 35-66% in 2020 and 55-60% for new homes.

## SoCalGas Test Year 2019 GRC Request (2019-2022 Cycle)

Year	Increase (\$000)	GRC Rev. Req. (\$000)	% Increase
2018 (As-Expected Authorized)		\$2,509,000	
2019	\$480,000	\$2,989,000	19.13%
2020	\$255,400	\$3,244,400	8.54%
2021	\$200,800	\$3,445,200	6.19%
2022	\$212,800	\$3,658,000	6.18%
<b>Sum of 2019-2022 Increases</b>	\$1,149,000		
<b>% Increase by 2022 (over 2018)</b>	45.80%		
<b>Cumulative Increase in Revenues</b>	\$3,300,600		

# California Regional Avg.

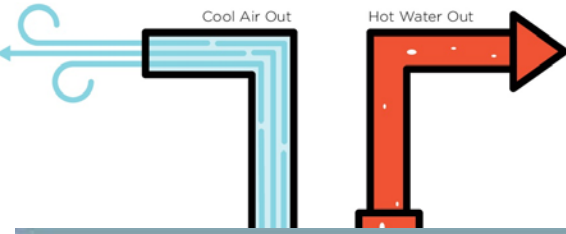
California Natural Gas Prices



Published 04/05/2019



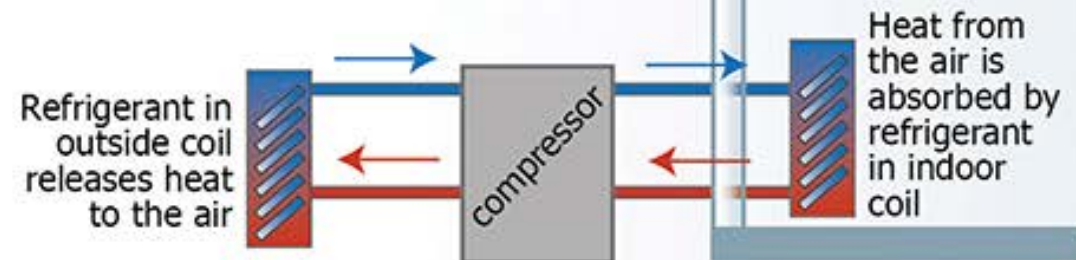
[naturalgasintel.com](http://naturalgasintel.com)



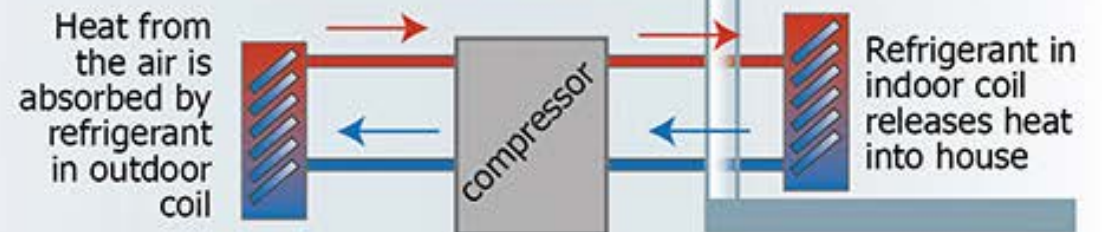
# HOW DO HEAT PUMPS WORK?

## HOW AN AIR SOURCE HEAT PUMP WORKS

### SUMMER

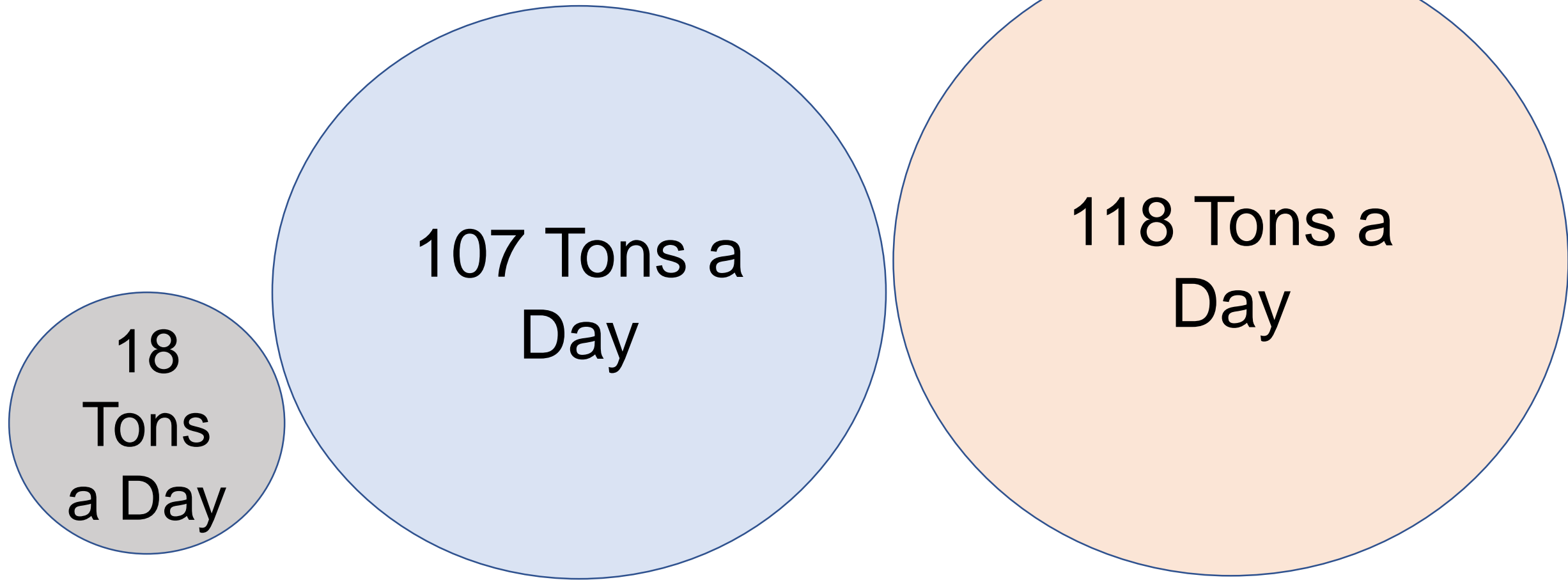


### WINTER



Health

# NOX in California



**Power Plants**

**Buildings**

**Light Duty  
Vehicles**



**Pollutant Exposures from Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California**

**Jennifer M. Logue,<sup>1,2</sup> Neil E. Klepeis,<sup>3,4</sup> Agnes B. Lobscheid,<sup>1</sup> and Brett C. Singer<sup>1,2</sup>, 2014**







350F

TEMPERATURE

LOCK/UNLOCK

PREHEAT  
BROIL  
KEEP WARM  
DEFROST  
CANCEL

# Consumer Reports Prefers Induction

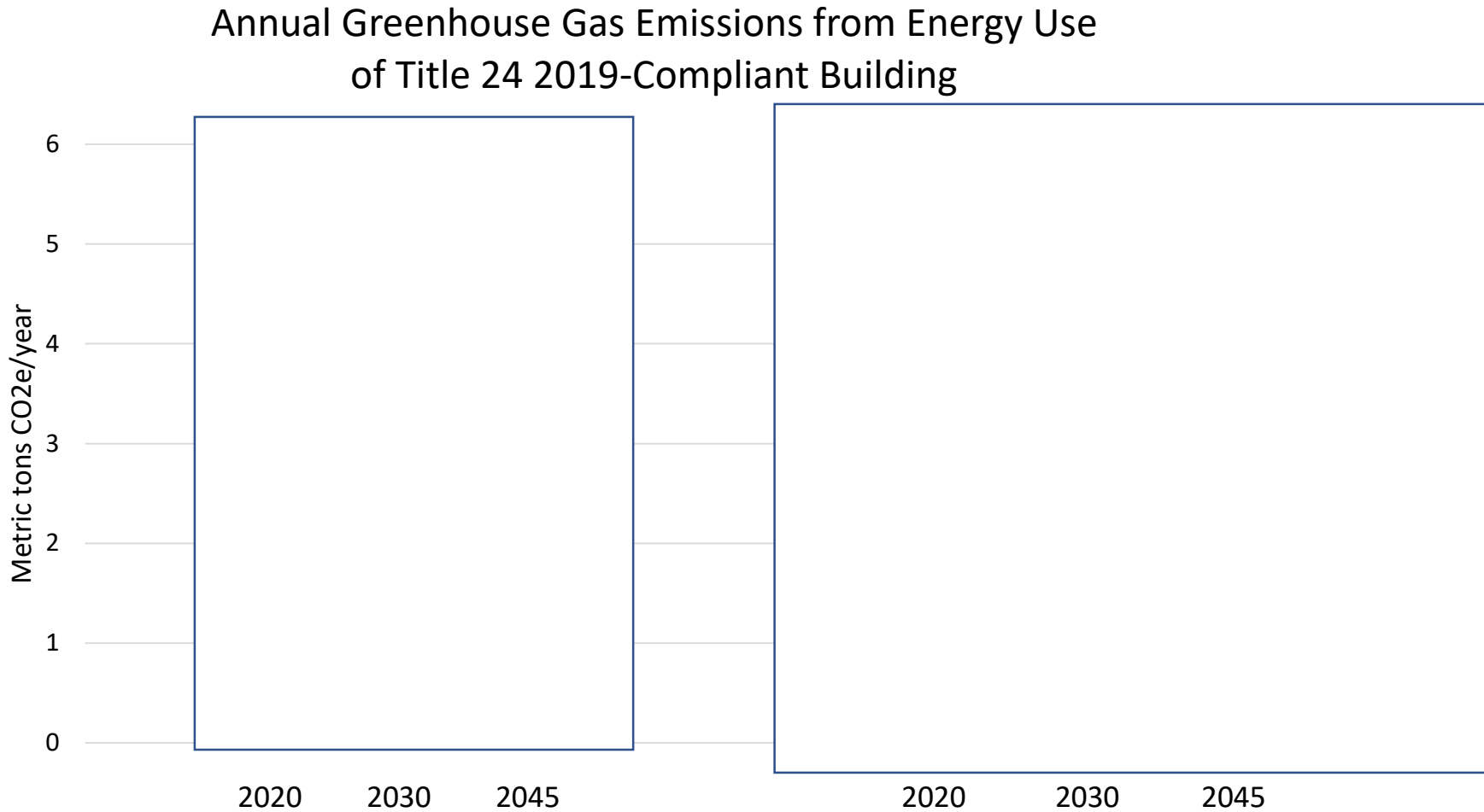
Top 9 Ranges for 2018 were electric, top 2 were Induction

Fuel	Model	Rating	Cost
Induction	Kenmore Elite 95073	89	\$1,530
Induction	Kenmore 95103	88	\$1,000
Electric Smoothtop	Samsung NE58F9710WS	85	\$1,800
Induction	GE Profile PHS930SLSS	83	\$2,430
Electric Smoothtop	Samsung NE59J7850WS	82	\$1,300
Electric Smoothtop	Samsung NE59J7750WS	82	\$1,600
Induction	LG LSE4617ST	82	\$3,330
Induction	Frigidaire Gallery FGIF3036TF	82	\$990
Gas	LG Signature LUTD4919SN	81	\$3,000



Climate

# Electric Heat Offers Pathway To Zero Emissions



Energy Research and Development Division  
**FINAL PROJECT REPORT**

# Deep Decarbonization in a High Renewables Future

Updated Results from the California PATHWAYS Model



**Energy+Environmental Economics**

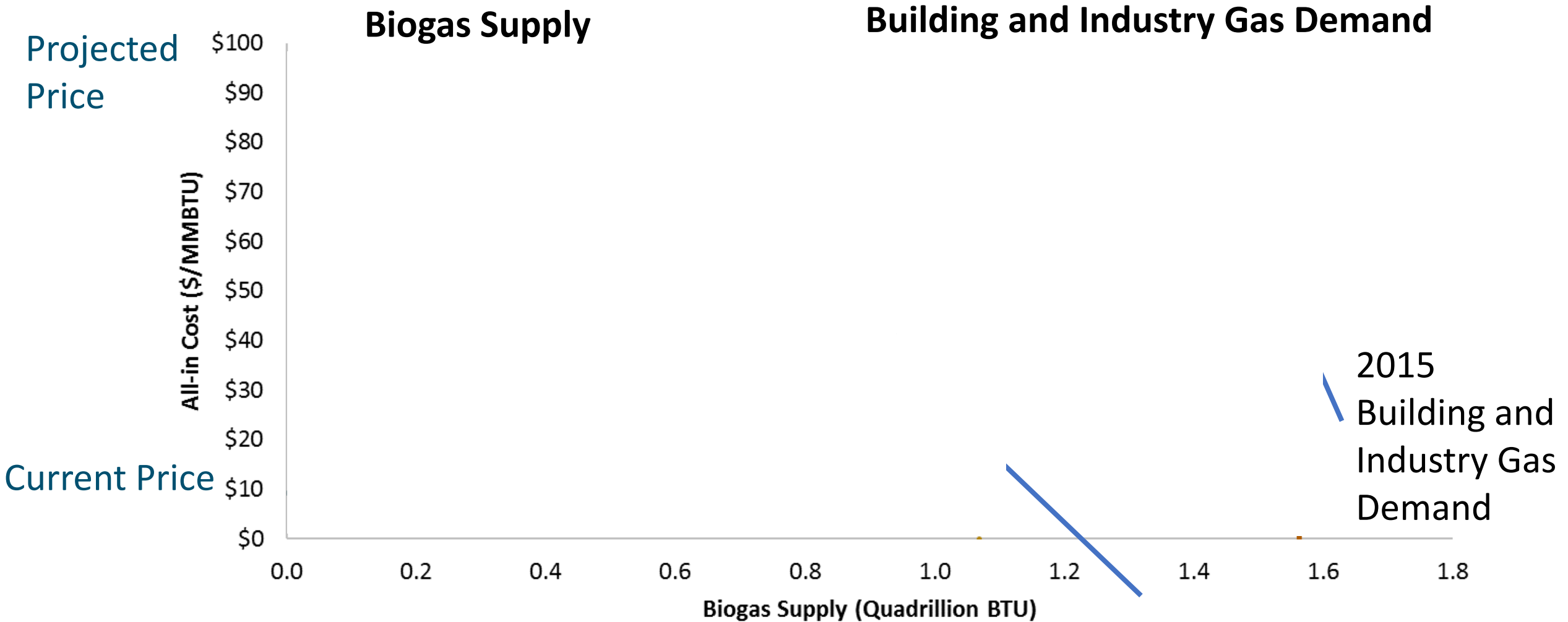
**California Energy Commission**

Edmund G. Brown Jr., Governor

June 2018 | CEC-500-2018-012

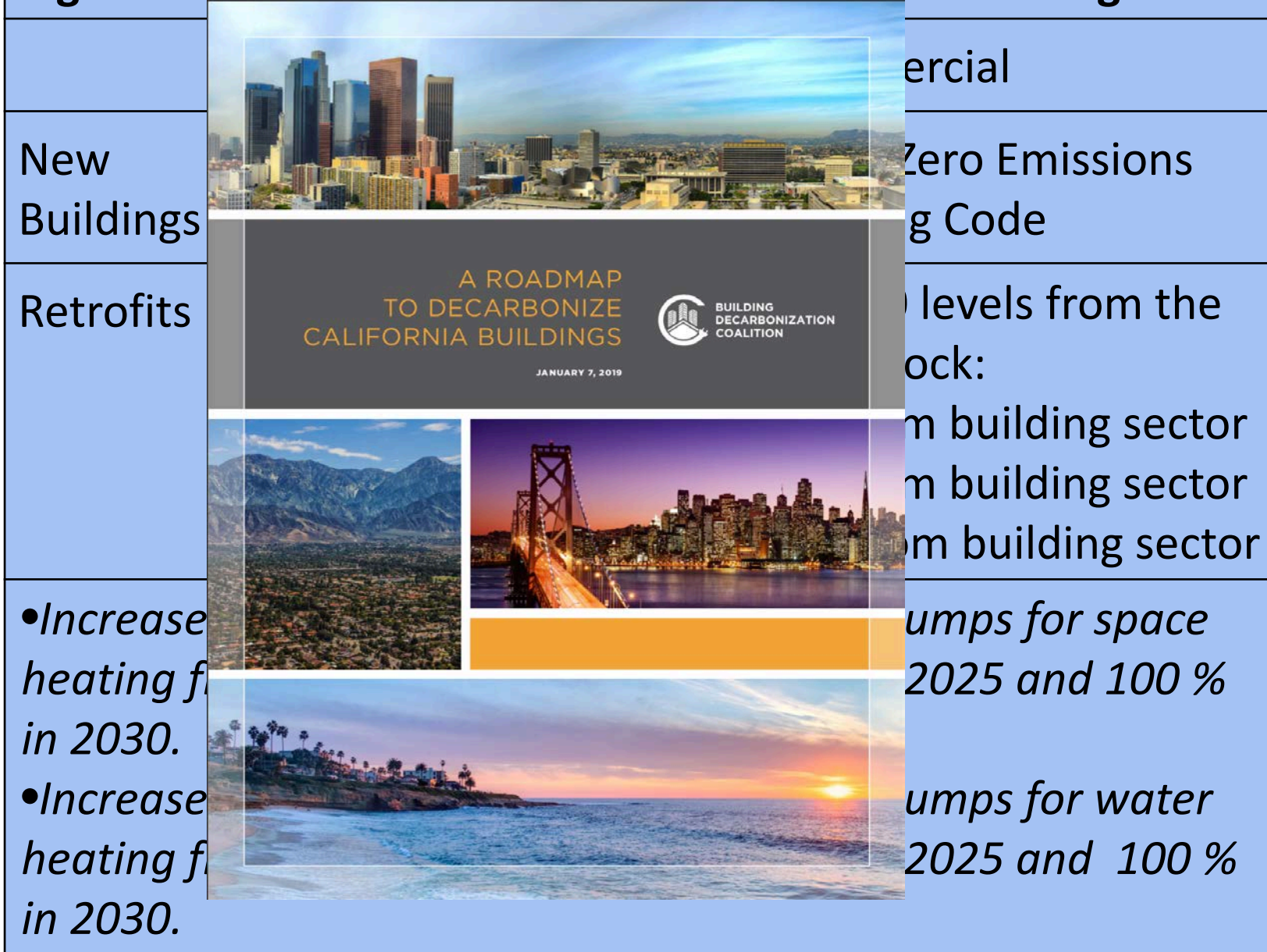


# Biogas supply & gas demand in 2050



2050 demand with high natural gas efficiency and no building electrification

# Figure 1: Decarbonization Targets Within the Building Sector



# 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.



# WH Retrofit Market Transformation from Gas and Propane to HPWHs

S

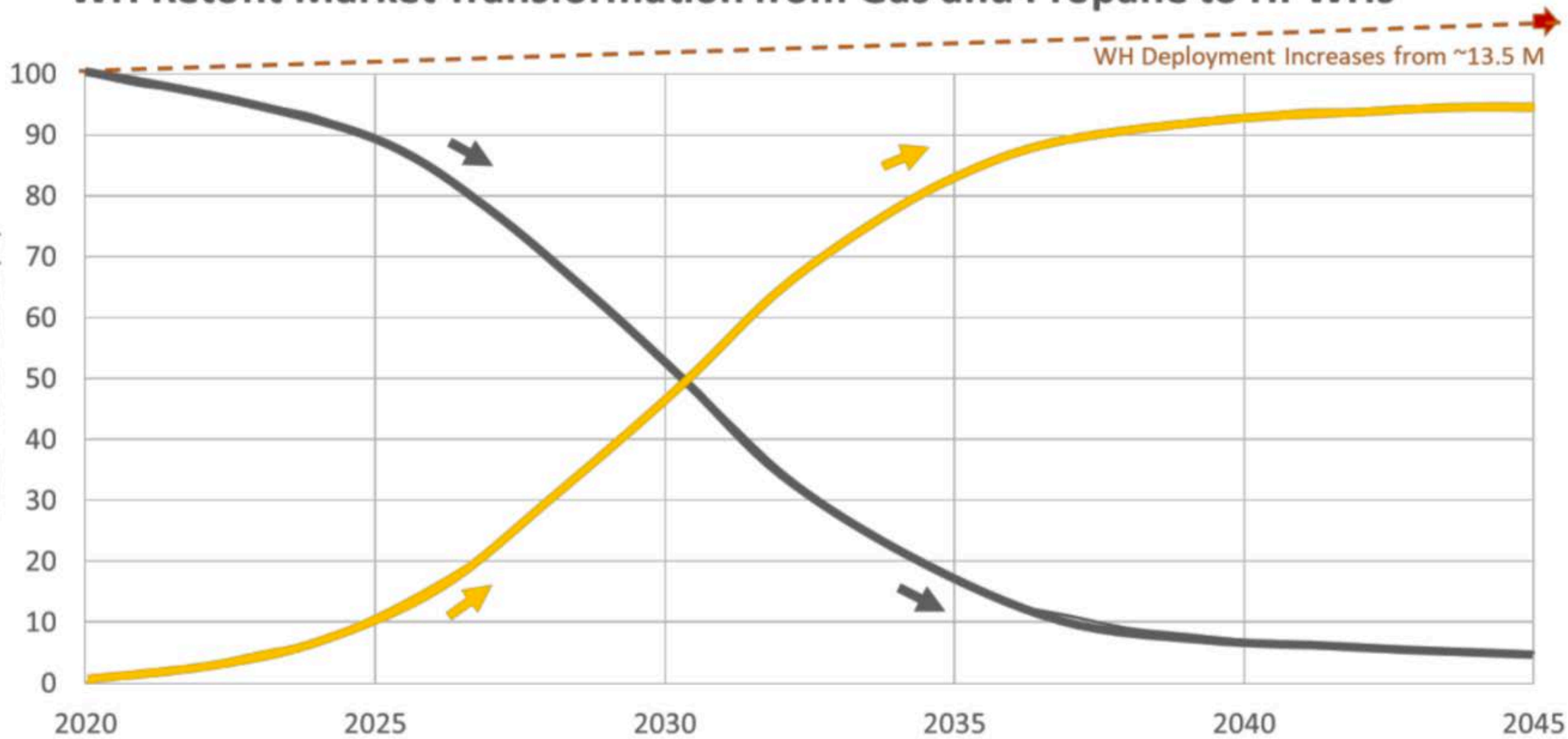
D

T

Ir

Ir

P



— Total Adoption of HPWHs — Gas and Propane Transition

Phase 4: Instantaneous to HPWH

Electric Buildings are ...

Cheaper

Healthier

More Climate Friendly

Safer

# New homes will no longer be heated by gas from 2025, government says

Fossil fuel heating systems banned in bid to tackle emissions

**Chiara Giordano** | Wednesday 13 March 2019 22:52 | 177 shares | 18 comments



 Like Click to follow Indy Politics

## THE HOLLAND TIMES

HOME / SUBSCRIPTION / ARCHIVE / FIND YOUR WAY / CONTACT

28 June 2018, National

# The Netherlands to go completely gas-free