



Supporting California local governments

Morning Plenary II:

The Future Decarbonization of California's Energy

June 27, 2019, 11:30am – 12:30pm

Presenters

Joshua Torres | Southern California
Edison

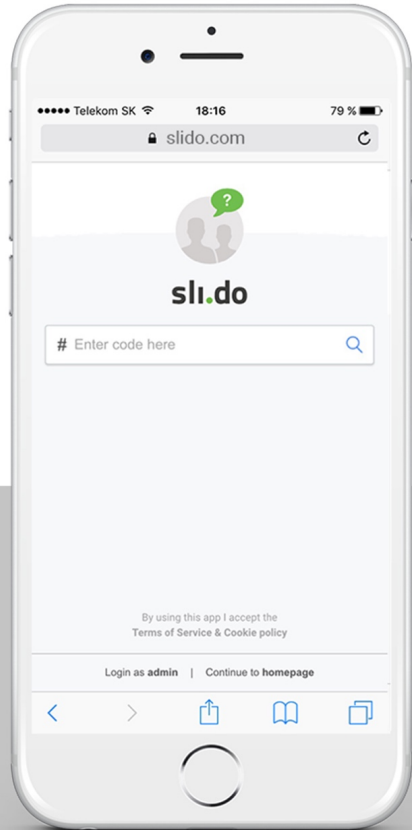
"Expanding Clean Energy Choices for Buildings"

Ken Chawkins | SoCalGas

"Balanced Energy Solutions that Can Work for
Everyone"



Join the Conversation



Go to **www.slido.com**
and enter the code:

#SEEC

Expanding Clean Energy Choices for Buildings

Helping customers reduce pollution from homes and workplaces



There Are Cleaner, Healthier Alternatives to Burning Fossil Fuels In Our Homes

SCE is working to make it easier and more affordable to choose clean energy options

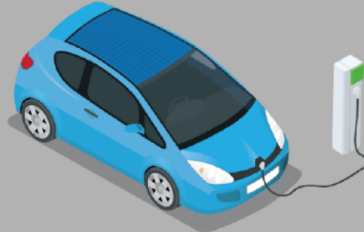


SCE's Integrated Solution

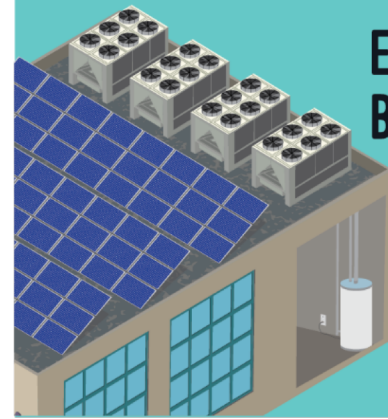
**DECARBONIZE THE
ELECTRIC SECTOR**



**ELECTRIFY THE
TRANSPORTATION
SECTOR**



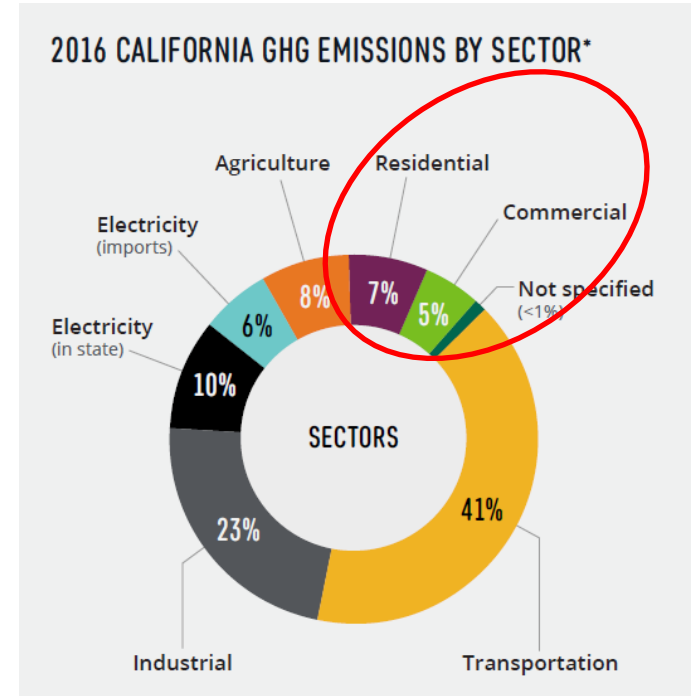
**ELECTRIFY
BUILDINGS**



Clean the power grid. And electrify.

Our Buildings Can Be Cleaner

- Buildings are a significant source of **pollution**
- We **must reduce** building emissions in order to meet California's environmental goals
- Burning fossil fuels indoors contributes to **poor indoor air quality**



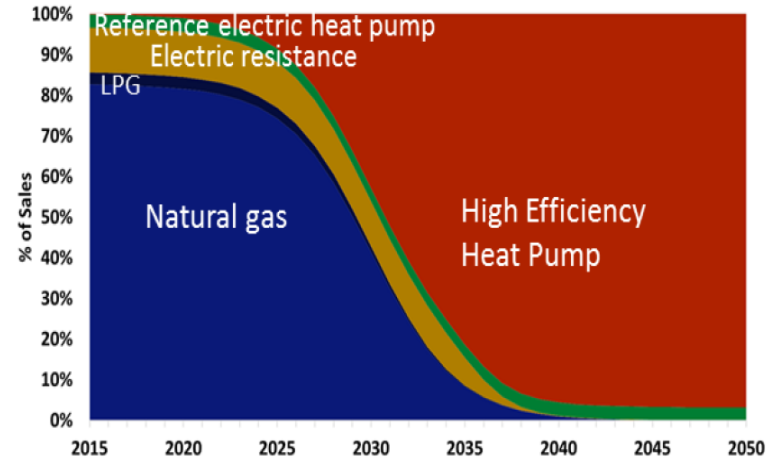
Electric Heat Pumps As A Solution



- SCE is focusing on making it **easier and more affordable** to adopt heat pumps
- Recent studies support heat pumps as a **cost-effective** way to **reduce emissions** in buildings
- Heat pumps allow water heaters to work like **batteries**

How Things Are Today

- The **customer experience** is less than ideal
- Gas & electric are **NOT on a level playing field**
- Barrier include
 - Customer awareness
 - Motivation for retailers/installers
 - Upfront costs of retrofits
 - Permitting/inspection

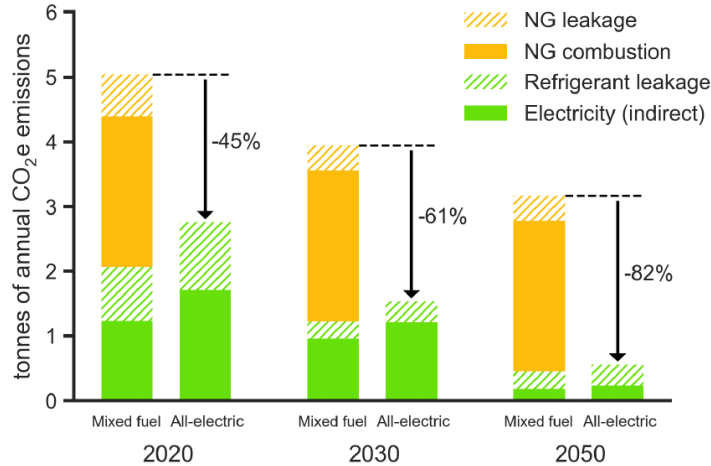


Space Heating (Residential, similar for Commercial)

Percent of New Sales in High Electrification Case

Deep Decarbonization in a High Renewables Future, California Energy Commission

How Things Should Be



Annual GHG emissions from a 1990s vintage single-family home for Sacramento

Figure 3-1 from Residential Building Electrification in California, Energy + Environmental Economics (E3)

- Improved **customer experience**
- Barriers to adoption are removed
- Increased **customer awareness**
- Knowledgeable retailers and installers
- Knowledgeable city and county officials

Working to Make It Easier & More Affordable

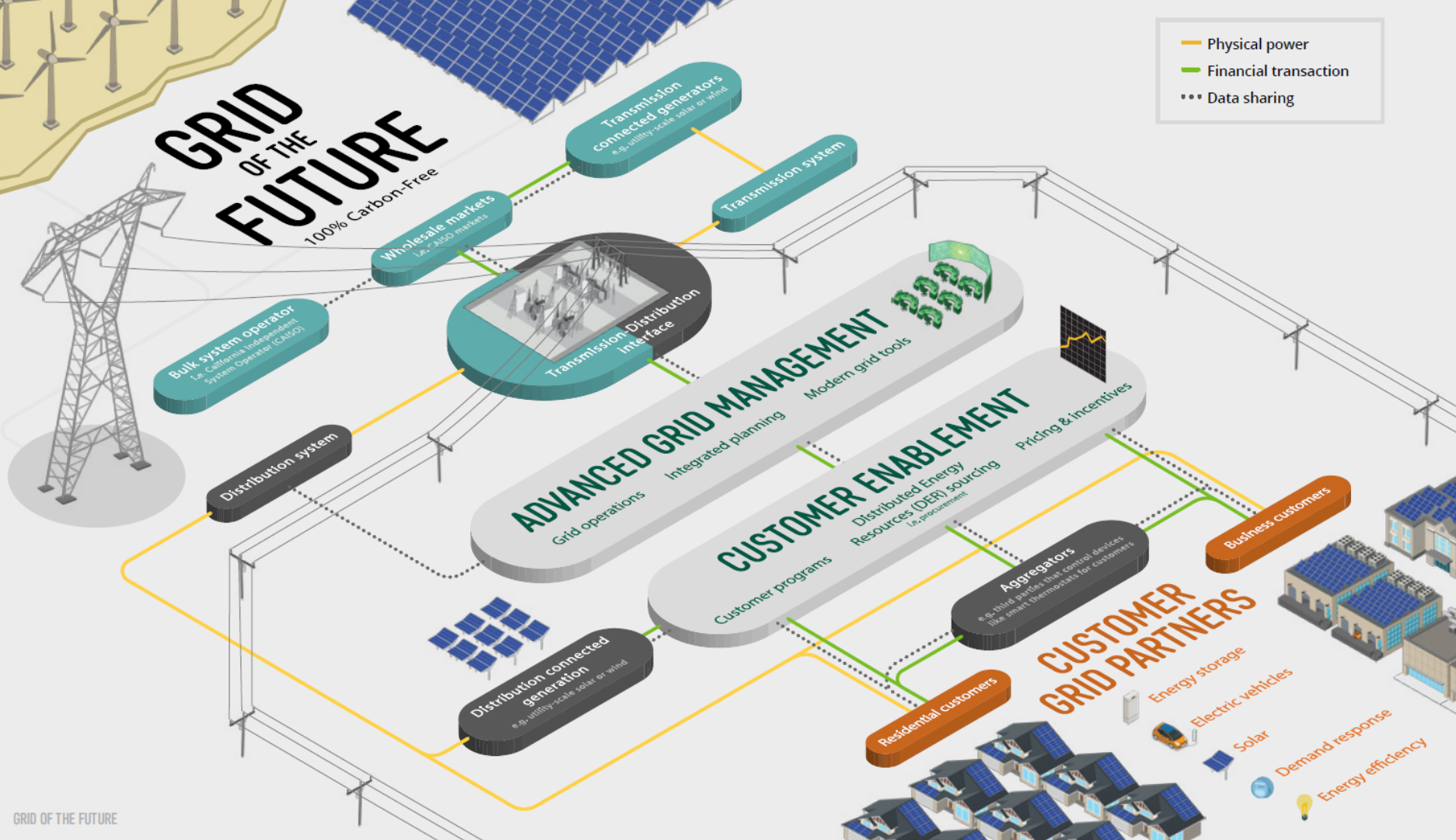
- We are developing **solutions** to the challenges customers currently face
- Committed to making it easier and more affordable for customers to **choose a clean, electric option**



GRID OF THE FUTURE


100% Carbon-Free

- Physical power
- Financial transaction
- Data sharing



Thank You!





Balanced Energy Solutions that Can Work for Everyone

SEEC Plenary Session
June 27, 2019

Ken Chawkins, Business Policy Manager
Southern California Gas Company

WHO WE ARE...

SoCalGas & SDG&E Territory



In service for over **135 years**

- » **Largest natural gas distribution** utility in the US
- » Serve **12 counties** (over 500 communities) and more than **21 million** people
- » Over **5.8 million** gas meters

SDG&E

- » Provides **electricity** and **natural gas** to **3.4 million** people from Orange County to the Mexican border.

California leads the nation in setting climate goals and policy

Governing Law – AB32

By 2020, stabilize GHG emissions at 1990 levels.

Obtain **33%** of electricity from renewable sources.

Governing Law – SB32

By 2030, reduce GHG emissions by **40%**.

Obtain **50%** of electricity from renewable sources.

Governing Law – SB100

By 2030, obtain **60%** of electricity from renewables.

Obtain **100%** Clean Energy by 2045.

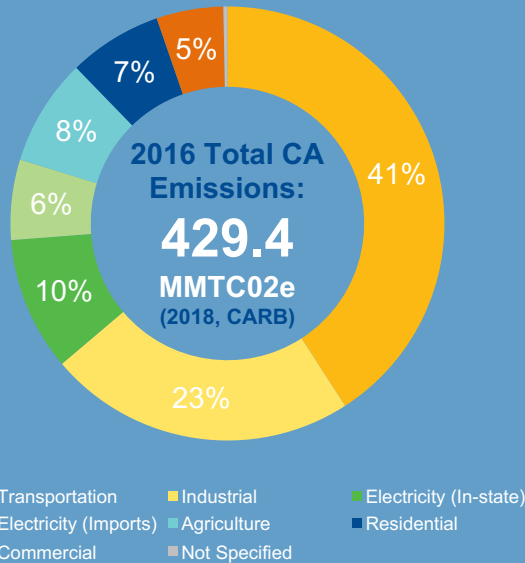
Diversification of Assets

**Electrification as
a one-track
solution sounds
simple**



CA Climate Change Policy

Role for “Net-Zero” end uses and low carbon gas



For some in California, the strategy is to “de-carbonize” electricity and then “electrify everything”:

- De-carbonize generation
- Electrify transportation
- Electrify energy end uses

SoCalGas is focused on “de-carbonizing” the pipeline, and “electric equivalent” end uses:

- De-carbonize gas supply
- Deploy electric equivalent NGV’s
- Deploy net zero gas technologies

It’s not
either/or,
**It’s
both**

To be adopted, we must create clean energy solutions
that people want to use

Affordability
Reliability
Choice

The real cost of living

is already too high
for too many people



California has the **highest** effective poverty rate in the nation



Nearly **40%** of CA households are rent burdened and pay **>30%** of their income on housing



1/3 of CA households can't pay for their basic needs



Low-income families pay **20%** of their income or more on energy costs

Sources: The United Way, *Real Cost of Living Report* (2018); Adam Chandler, "Where the Poor Spend More Than 10 Percent of Income on Energy," (2016)

Electrification

will further burden people

Costing the typical

California family:

\$7,200

to retrofit
your home

\$388/yr

more in
energy bills

Source: Navigant Consulting, "The Cost of Residential Appliance
Electrification: Phase 1 Report – Existing Single-Family Homes", 21

April 2018.

Consumers want choice

<10%

of voters would choose
an all-electric home

80%

of voters prefer home
with both, esp for cooking

80%

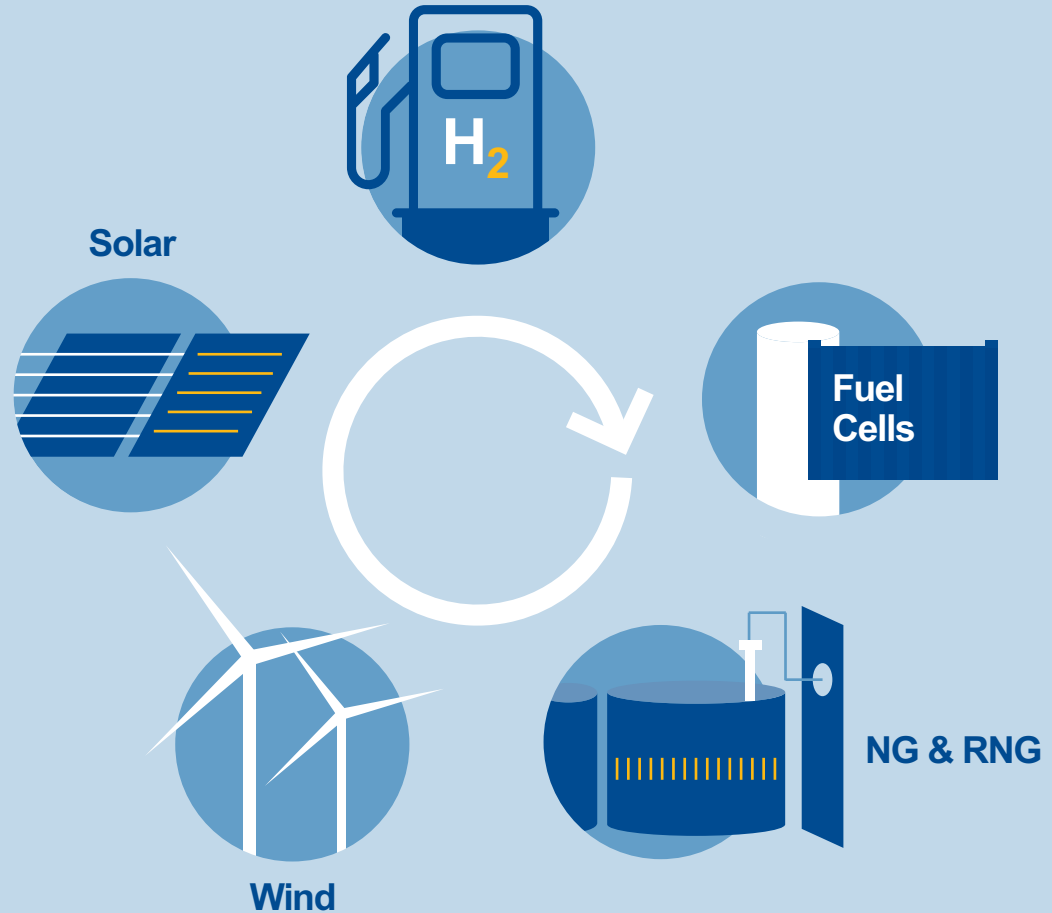
of voters oppose prohibiting
the use of gas appliances

2/3

of voters oppose
eliminating natural gas

With a balanced approach

we can achieve our goals and preserve choice, while minimizing disruption and cost



De-carbonizing end uses: Natural Gas Stationary Use Pathways

The move toward “net-zero”
emission technology
focuses also on:

- Distributed Generation
- Small-scale, Fast-ramping
Generation Matched with
Renewables
- Power Generation with
Carbon Capture

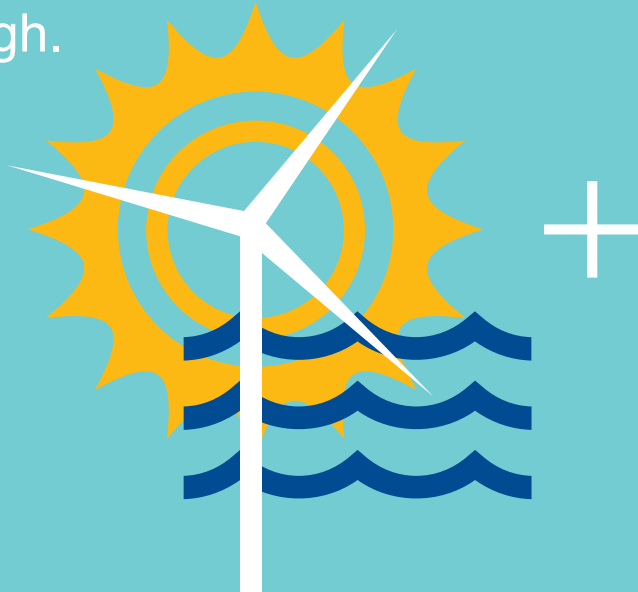
Not just solar
and wind:

- Fuel Cells
- Micro-turbines
- Combined Heat & Power

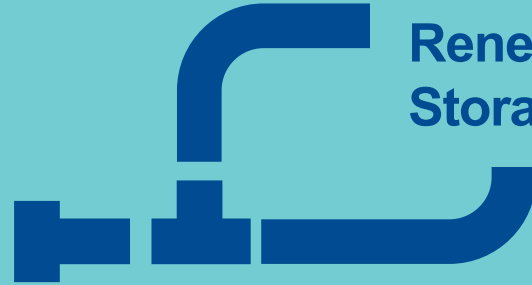


We need scalable, affordable solutions to solve these issues

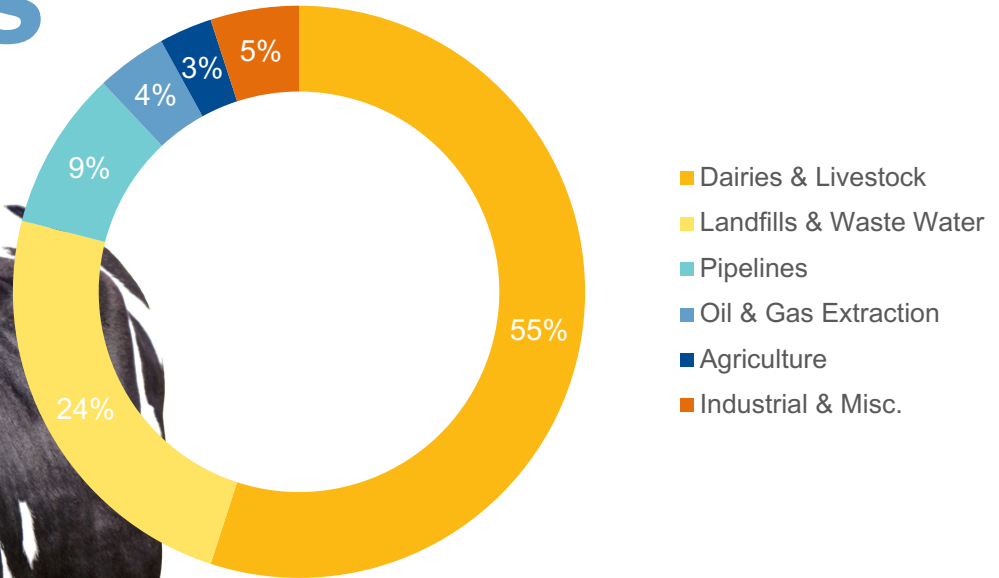
Solar, wind and
hydro alone are
not enough.



We need to use
ALL the tools in our
toolbox – including
**Renewable
Natural Gas and
Renewable Energy
Storage.**

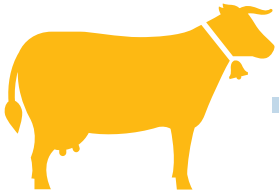


And RNG gives us a clear path to address CA's biggest methane emitters



Source: CARB 2015 Greenhouse Gases Emissions Inventory, 2013 Methane Emissions

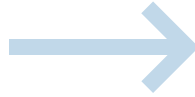
The basics of Renewable Natural Gas



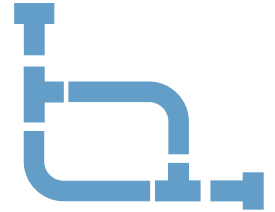
Capture waste from dairies, farms and landfills



Convert into biogas using anaerobic digestion



Process the biogas to make it pipeline-ready (biomethane)

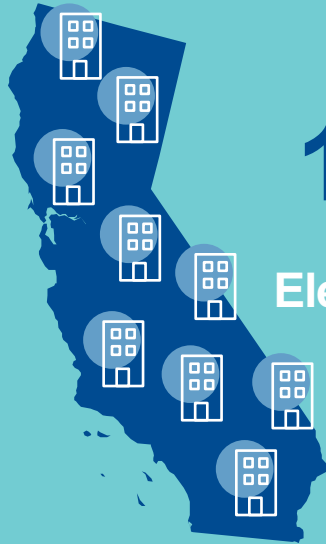


Inject the biomethane into the pipeline for future use

Decarbonizing energy is easier than switching appliances and equipment



=



100%
Building
Electrification



RNG is
2-3x
More cost
effective

The RNG supply is available (2030): in-state estimates



94 BCF

UC Davis/ARB Study:
based on current
federal and LCFS
incentives

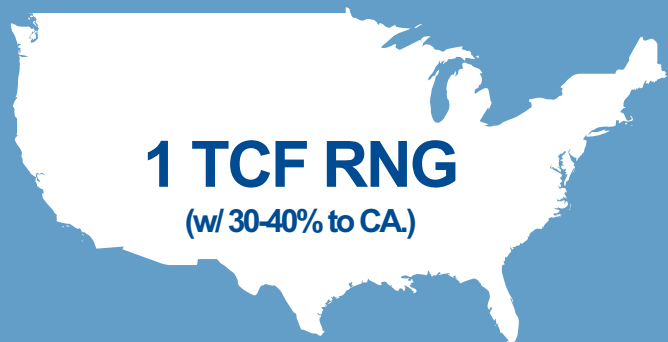
100-200 BCF

ICF Assessment:
CA with current
regulation / incentives;
100 BCF conservative
estimate

300 BCF

UC Davis/CEC Study

The RNG supply is available (2030): out-of-state resources

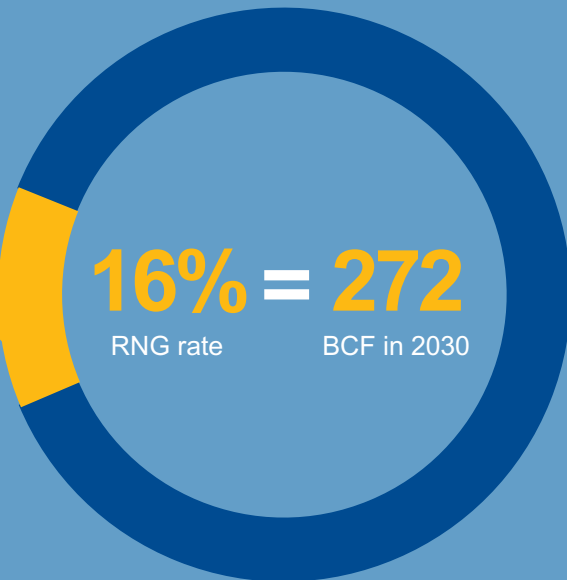


Available in the US today
(and growing to ~ 13 TCF
in 2030)



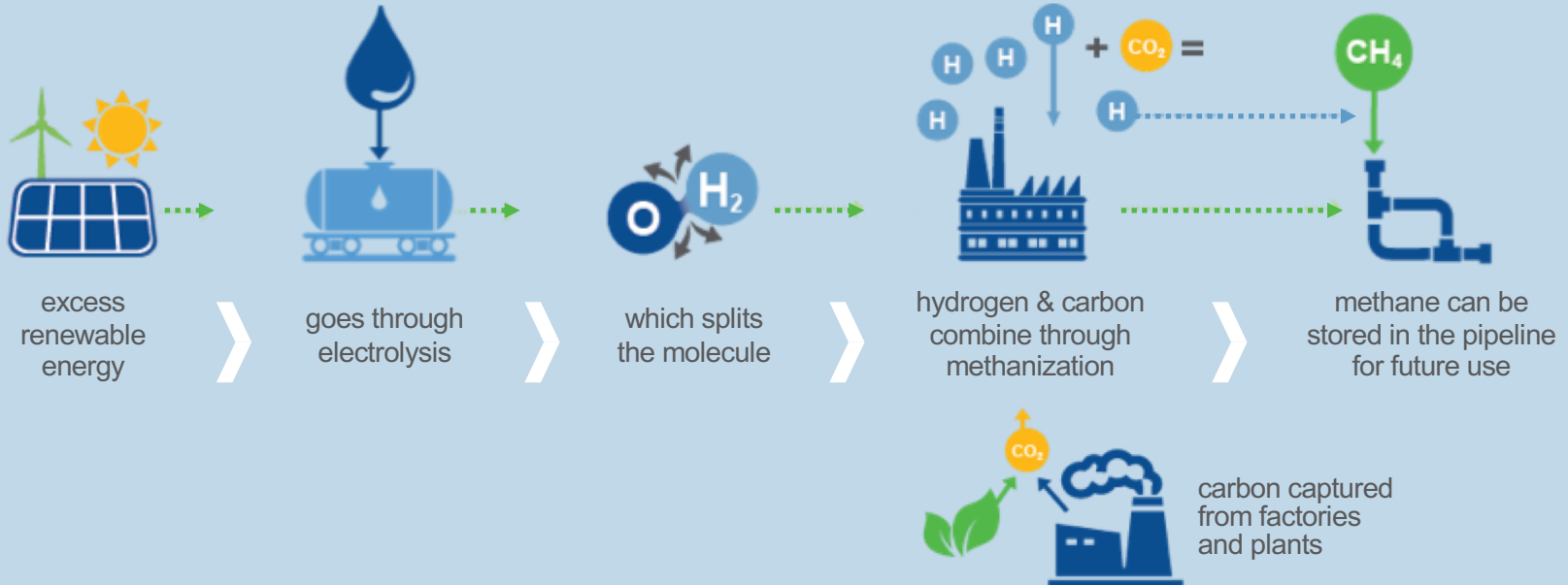
Projected CA natural
gas throughput by 2030

1.7 TCF



Power-to-gas

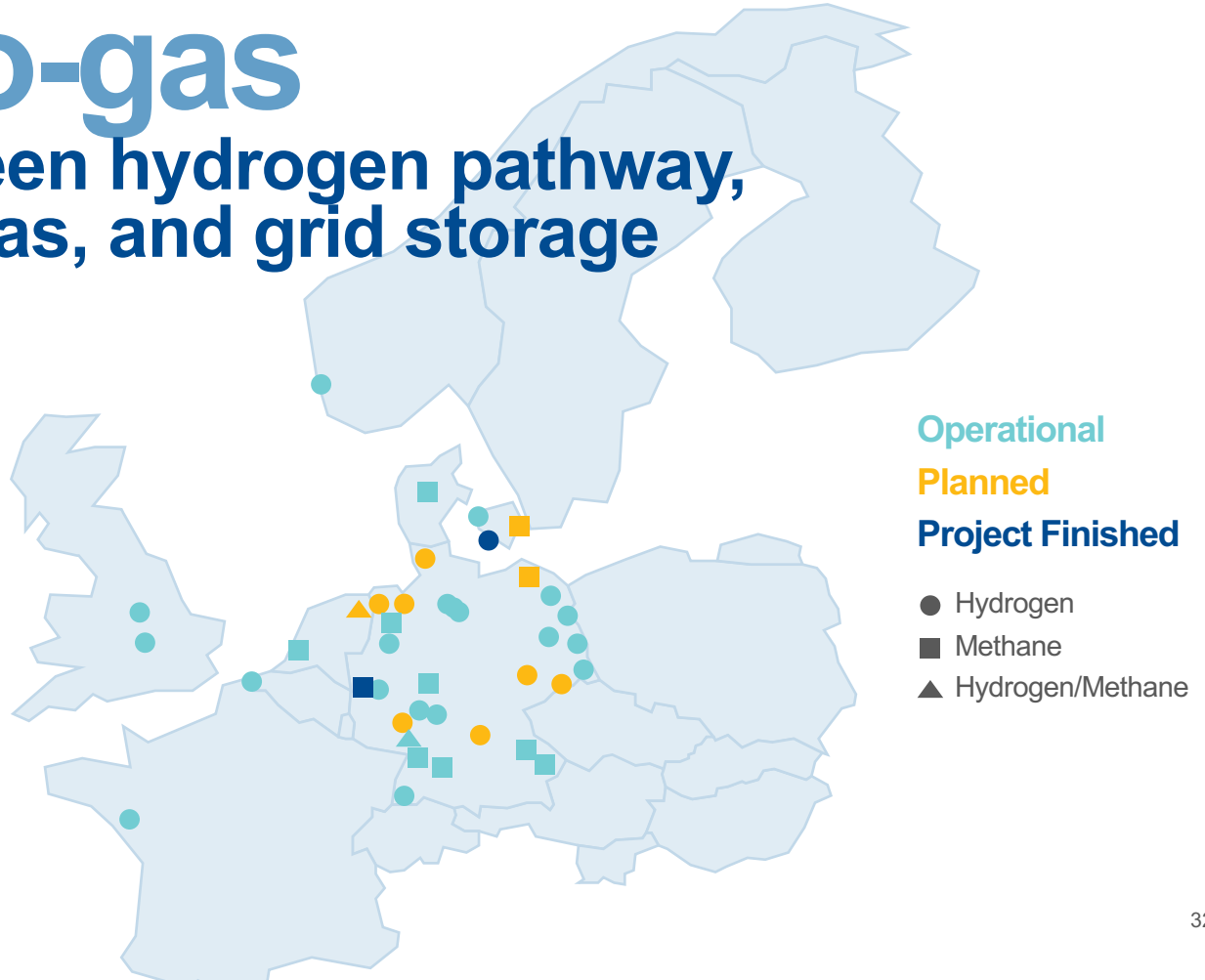
converts excess renewable electricity
into renewable gas



Power-to-gas

provides green hydrogen pathway,
renewable gas, and grid storage

- 70 Projects Now Launched In Europe
- 40 Projects Launched in Germany, with more in development
- 30 MW of installed capacity



We need to decarbonize natural gas not just electrify end-uses



Develop the market
for renewable
natural gas

**Natural
Gas**
CH₄

(Methane)



Decarbonize the
pipeline with
renewable natural
gas supplies



Harness Power-to-
Gas technology to
integrate electric and
natural gas grids for
long-term energy
supply and storage

Here's what

you can do



Pay attention
to the issue
and learn more



Help spread the
word with your
friends, family
and neighbors

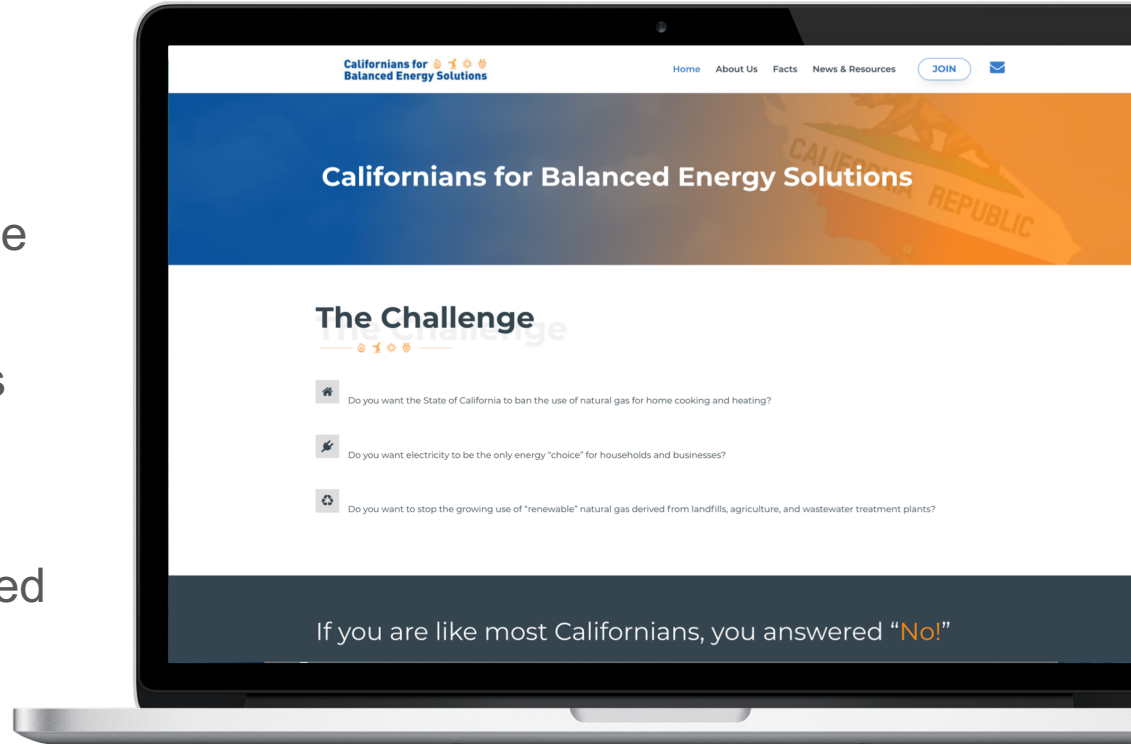


Get involved
and let your
voice be heard

Join Californians for balanced energy solutions

<https://c4bes.org>

- Coalition to promote balanced energy and battle all-electric mandates
- Information and resources
- Alerts on important proceedings and opportunities to get involved



Critical proceeding: Building Decarbonization OIR



**California Public
Utilities Commission
(CPUC)**

What is it?

The OIR will establish programs and protocols to implement SB 1477. The law is meant to advance low-emissions space and water heating into buildings.

What's at stake?

The CPUC can set up a program that mandates electrification/ switching out gas appliances and stop natural gas hookups. Opening comments suggest that is exactly the path the Commission intends to follow.

What can we do?

- Join the coalition
- Write letters when the time comes
- Provide comments and intervene in the proceeding

Stepping up our commitment to **reduce emissions**

Our **Vision**

To become the
cleanest natural
gas utility in
North America

Our **Commitments**

2022

5% RNG being delivered
on our system.

2030

20% RNG being delivered
on our system.



Thank You

Ken Chawkins
kchawkins@semprautilities.com

Facilitated Discussion

