

Fuels and Infrastructure for a Carbon Neutral Economy

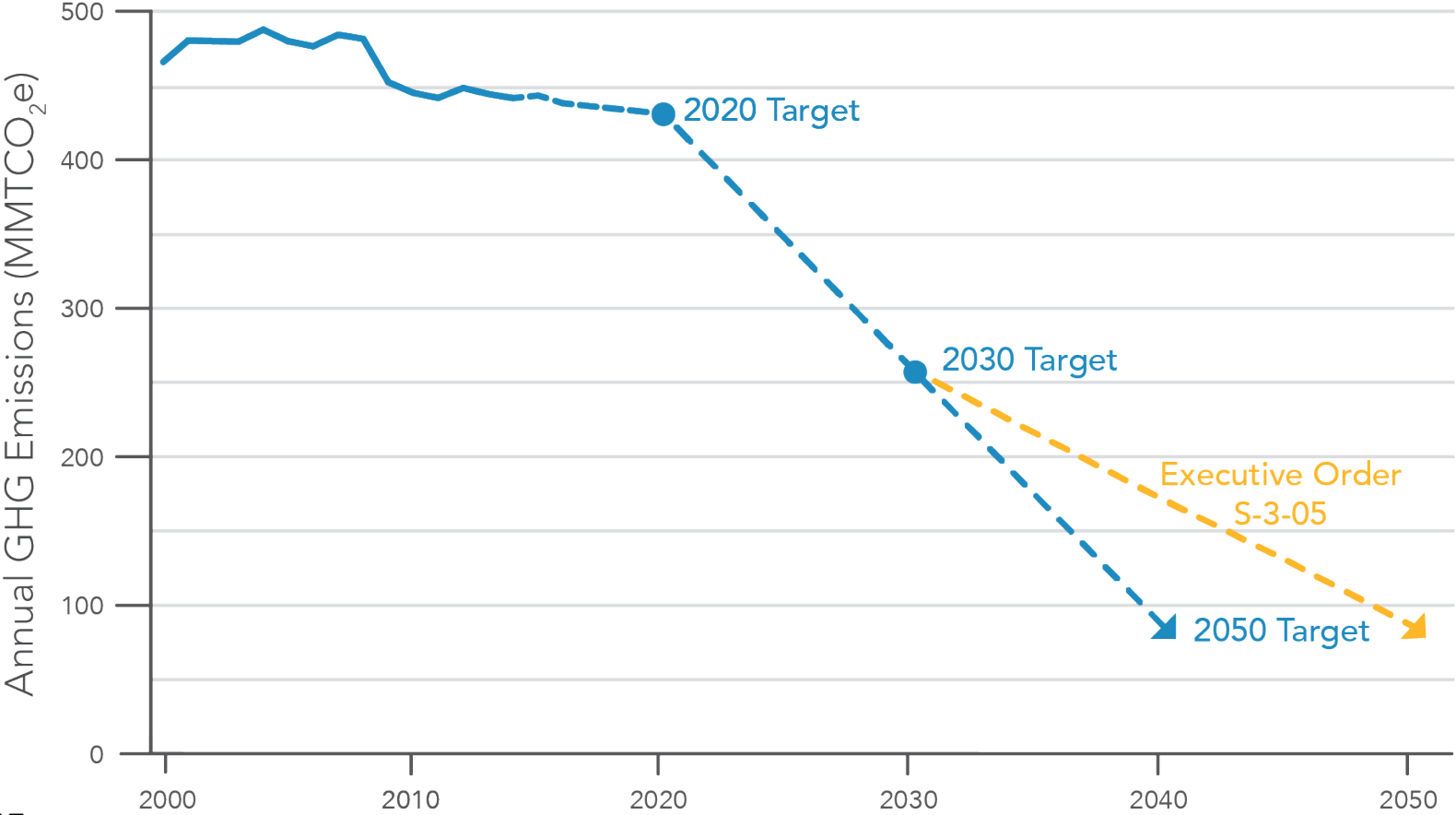
Panel 1: Fuels



Webinar Logistics

- Presentation and link to submit and view informal comments:
<https://ww2.arb.ca.gov/our-work/programs/carbon-neutrality/carbon-neutrality-meetings-workshops>
 - Comment docket open July 15-28
- Register to participate in workshop:
<https://attendee.gotowebinar.com/register/8003673200991275787>
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California GHG Emissions Reduction Targets



Source: CARB, 2017

Mid-Century Carbon Neutrality (CO2e)

Step 1: Strive for zero emissions from all sources

- Fossil Energy
- Industrial Processes
- Natural and working lands



Step 2: Maximize Sequestration

- Carbon capture and sequestration
- Direct air capture
- Natural and working lands

Achieving Carbon Neutrality

Several multi-agency efforts focused on path to carbon neutrality in specific sectors

- SB 100 - Zero carbon electricity retail sales by 2045
- AB 74 - Transportation carbon neutrality
 - Studies will evaluate how to reduce demand for fossil fuels in the sector and how to manage the subsequent decline for supply

To achieve our climate and air quality goals, we must reduce and replace fossil fuel consumption across all sectors

Reduce and Replace Fossil Fuels

Reduce Efficiency improvements- reduce energy consumption through incremental process improvements

Replace Non-combustion technology

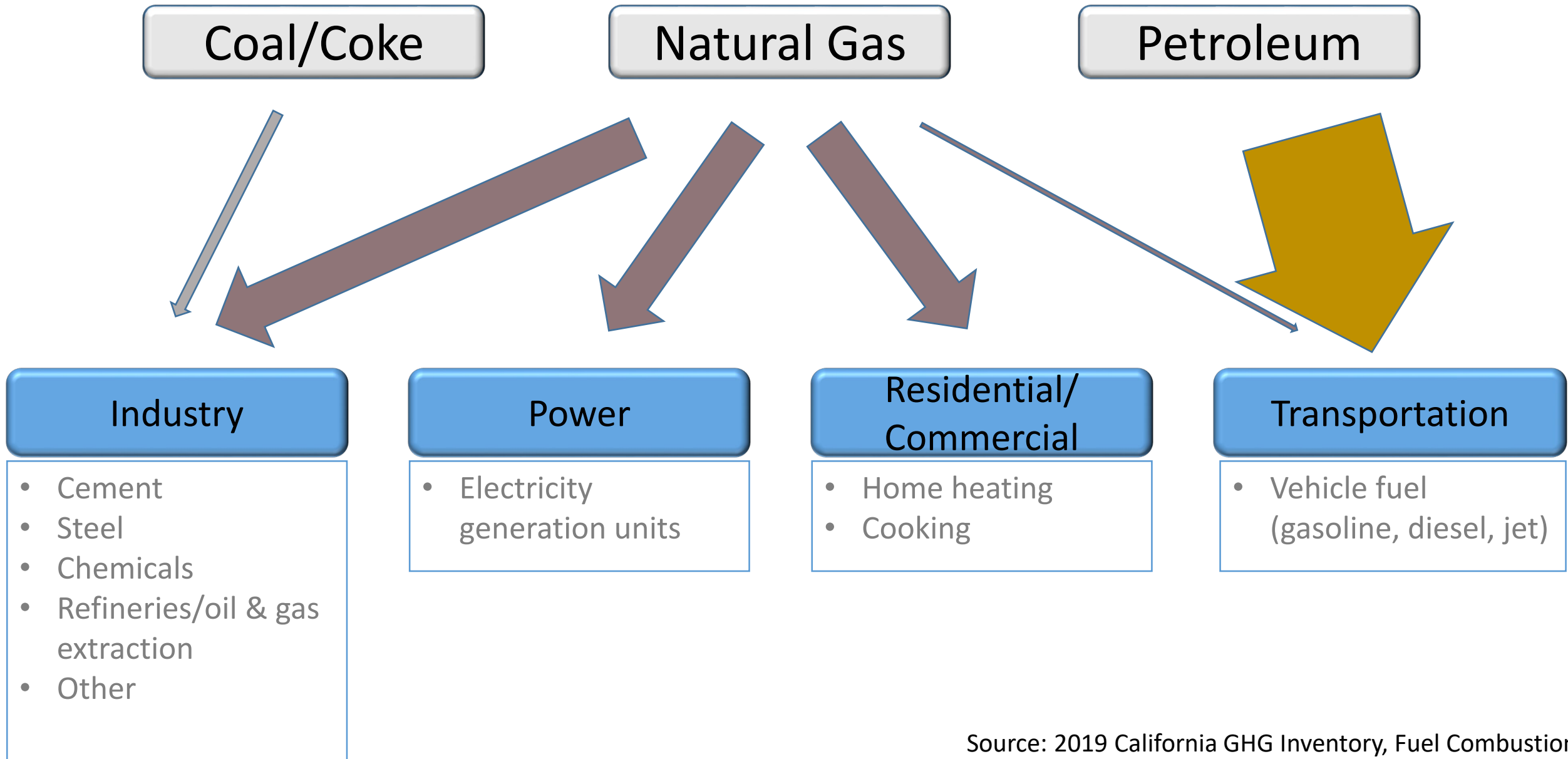
- Electrification suitable for many end-uses
- Other non-combustion technologies available, like solar steam

Replace Fuel switching- replace fossil fuels with low-carbon energy resources

- Alternative low-carbon fuels will be needed in targeted industries

How are fossil fuels used today?

CA Fossil Fuel Consumption, 2017



Fuels Panel Discussion

What alternative low-carbon fuels and technologies are commercially available today, or are on the horizon?

What is the optimal distribution of these fuels across all sectors?

How can alternative fuels become the fuels of choice to replace fossil fuels?

Fuels Panel

Chris Bataille, Professor,
Simon Fraser University



Janice Lin, Founder and CEO,
Green Hydrogen Coalition



Sam Wade,
Director of State Regulatory Affairs,
Coalition for Renewable Natural Gas



Mary Solecki,
Partner, AJW



Fuels and Infrastructure for a Carbon Neutral Economy

Panel 2: Infrastructure



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- Presentation and link to submit and view informal comments:
<https://ww2.arb.ca.gov/our-work/programs/carbon-neutrality/carbon-neutrality-meetings-workshops>
 - Comment docket open July 15 – August 5
- Register to participate in workshop:
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Transitioning Infrastructure Assets

Natural Gas Pipeline

Electricity Transmission
and Distribution

Natural Gas Storage

Industrial equipment
(e.g., boilers and turbines)

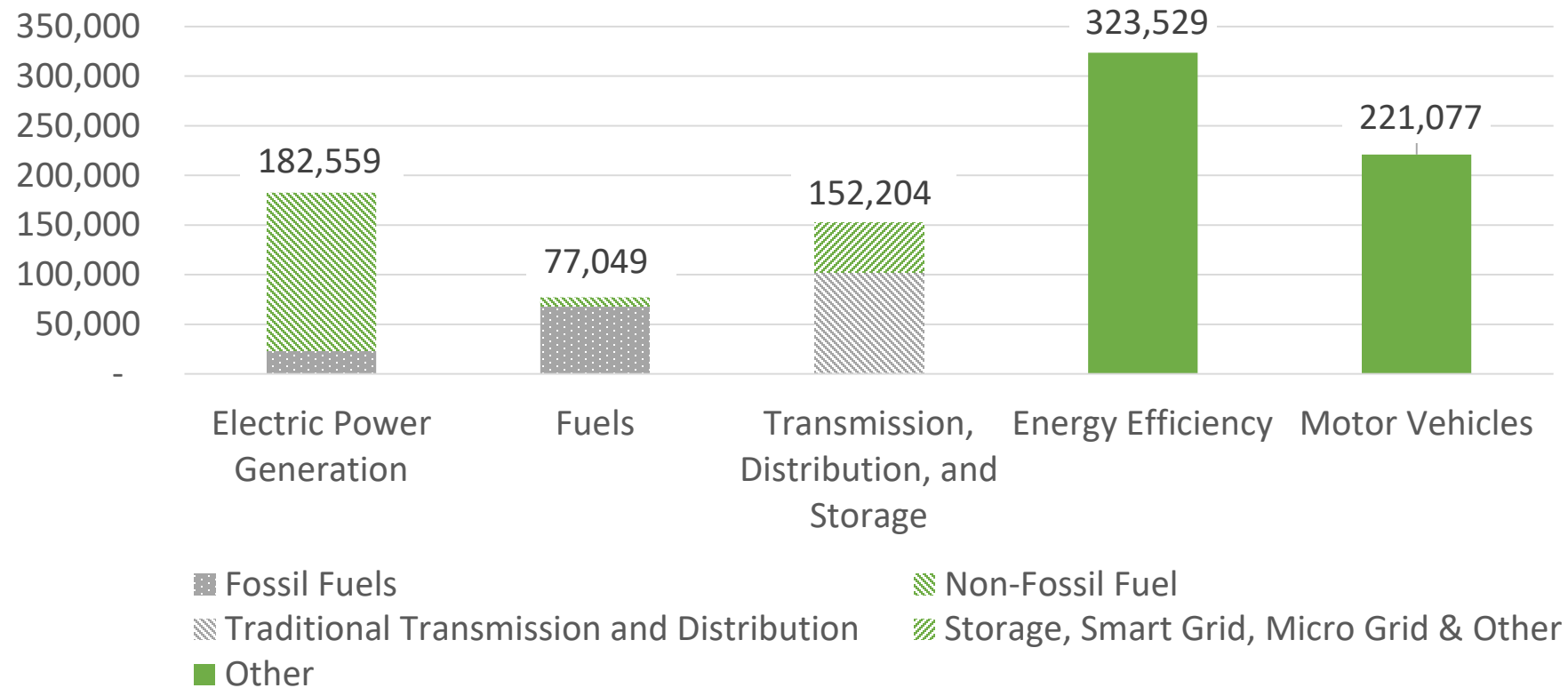
Oil and Gas Terminals

Oil Refineries

- How can we re-purpose our existing infrastructure for a carbon neutral future? What new infrastructure is needed?
- What steps can we take now to invest in a sustainable future?

Transitioning Employment

Employment by Major Energy Technology Application



How do we prepare our energy workforce for the transition to carbon neutrality?

Source: CARB, data from US Energy + Employment Report 2020 (NASEO and EFI, 2020)

Infrastructure Panel

Betony Jones,
Inclusive Economics



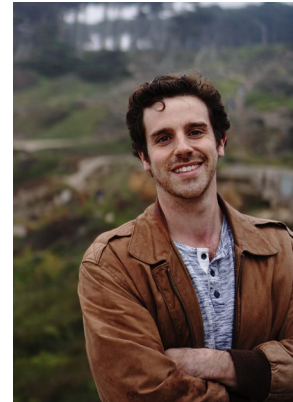
Jean Spencer and James McGarry,
California Public Utilities Commission



Melanie Kenderdine,
Energy Futures Initiative



Jack Brouwer,
National Fuel
Cell Research
Center



Greg Huynh,
Los Angeles
Department of
Water and Power



Additional Resources

CARB, 2017: [California's 2017 Climate Change Scoping Plan](#)

Data from 2019 California GHG Inventory, Fuel Combustion.

https://ww3.arb.ca.gov/cc/inventory/data/tables/fuel_activity_inventory_by_sector_all_00-17.xlsx

Data from [US Energy + Employment Report 2020](#) (NASEO and EFI, 2020)