

Carbon Neutrality: Scenarios for Deep Decarbonization

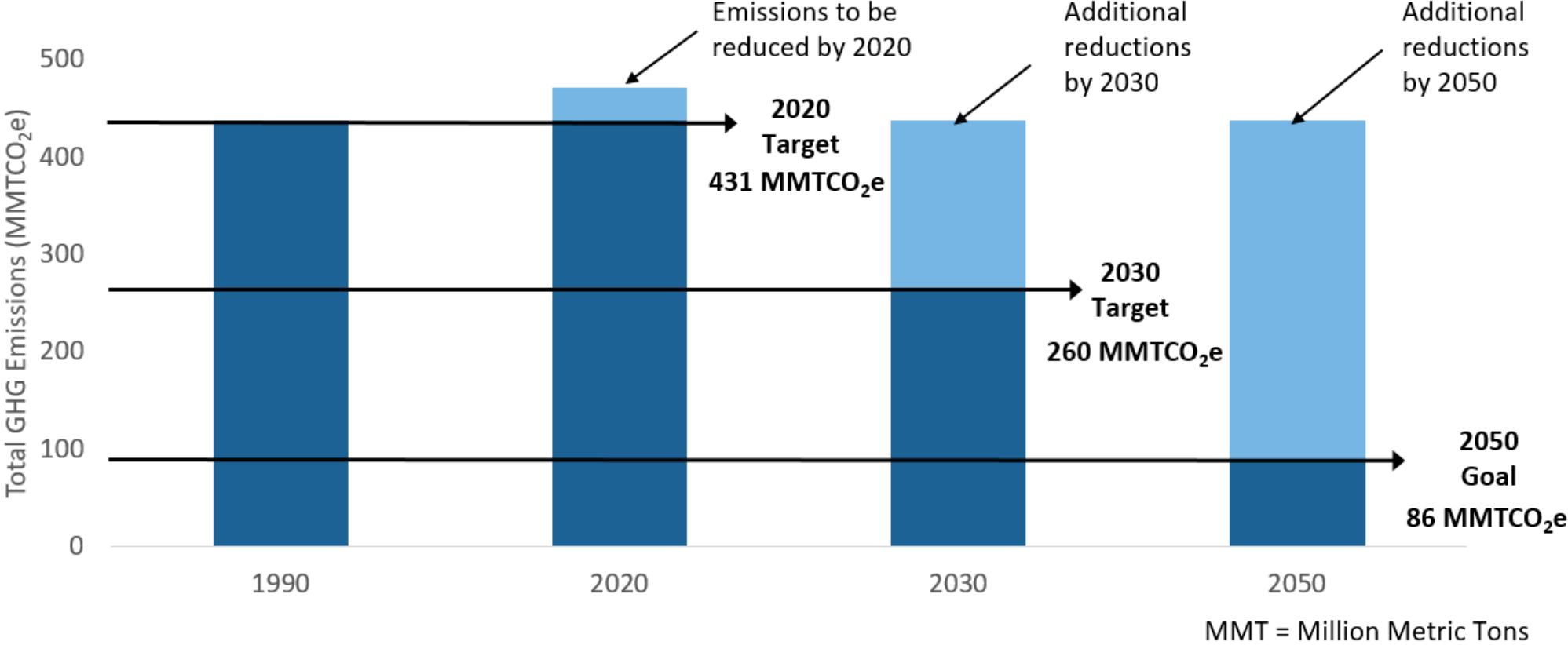
AUGUST 15, 2019



Webinar Logistics

- Presentation and link to submit and view informal comments:
<https://ww3.arb.ca.gov/cc/scopingplan/meetings/meetings.htm>
- Webcast available: <https://video.calepa.ca.gov/>

California's GHG Emissions Reduction Targets



Source: CARB, 2018

Framing the Path Forward

IPCC Report – Carbon neutrality by 2045 may hold global warming to 1.5°C



Some regions are net emitters; others are sinks



Carbon Neutrality by 2045



Reduce fossil energy and NWL emissions; evaluate potential sinks

International Carbon Neutrality Efforts

- European Union
 - strategic long-term vision climate-neutral economy by 2050
 - aggregate goal over a region of 28 member states
- Sweden
 - goal of net zero emissions of greenhouse gases by 2045, negative thereafter
 - 85 percent reductions achieved in-jurisdiction, balance remaining 15 percent with investments abroad
- Costa Rica
 - aims to achieve carbon neutrality by 2021

California Carbon Neutrality (CO₂e)

Today



AB 32 GHG Inventory



Conversion

Natural & Working
Lands Inventory

Minimize emissions

Transition from source to sink

Mid-century



Both categories emit GHGs

No net GHG emissions

2019 Engagement

- Technical workshops to explore topic areas on achieving carbon neutrality
 - Energy demand and supply
 - Transformation across economic sectors (i.e., transportation, industrial)
 - Options and support for sequestration activities
- Continued collaboration
 - State and local agencies
 - Academics and researchers
 - International partners

Today's Workshop

- What are the pathways to deep decarbonization, and what are the tradeoffs inherent in each?
- How can we maximize synergy between currently distinct sectors and industries?
- How do we bridge the gap between existing mid-century deep decarbonization goals and achievement of statewide carbon neutrality by 2045?

Panelists:

- Amber Mahone, Energy + Environmental Economics (E3). *Deep Decarbonization in a High Renewable Future*
- Melanie Kenderdine, Energy Futures Initiative. *Optionality, Flexibility and Innovation: Pathways for Deep Decarbonization in California*
- Nate Lewis, California Institute of Technology. *Net-zero Emission Energy Systems*
- Brad Townsend, Center for Climate and Energy Solutions. *Pathways to 2050: Alternative Scenarios for Decarbonizing the U.S. Economy*

Resources

- CARB, 2017: [California's 2017 Climate Change Scoping Plan](#)
- IPCC, 2018: [Global Warming of 1.5°C](#). An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty
- USGCRP, 2018: [Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II](#)
- Panelist studies:
 - [Deep Decarbonization in a High Renewable Future \(CEC 2018\)](#)
 - [Optionality, Flexibility and Innovation: Pathways for Deep Decarbonization in California](#)
 - [Net-zero emission energy systems](#)
 - [Pathways to 2050: Alternative Scenarios for Decarbonizing the U.S. Economy](#)

Thank You
