Carbon Neutrality: The Role of Carbon Capture, Sequestration, and Options for Utilization

DECEMBER 11, 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

Sources = Sinks

Some regions are net emitters; others are sinks

Carbon Neutrality by 2045

Reduce fossil energy and NWL emissions; evaluate potential sinks
California Carbon Neutrality (CO$_2$e)

**Today**
- AB 32 GHG Inventory
- Conversion
  - Natural & Working Lands Inventory

Both categories emit GHGs

**Mid-century**
- Minimize emissions
- Increase sequestration

No net GHG emissions
Carbon Capture and Sequestration Protocol: Low Carbon Fuel Standard

- Protocol allows CCS credit generation for:
  - Low carbon fuel pathways (e.g. ethanol)
  - Direct air capture projects
  - Projects at crude oil extraction operations and refineries
- Rigorous accounting & permanence requirements
  - Includes 100-year post-injection monitoring
Today’s Workshop

- What are the biggest barriers to near-term deployment of capture technology, and what actions can industry and policy-makers undertake to overcome these barriers?
- How can existing infrastructure be transitioned to process, transport, store and monitor CO₂?
- What are the tradeoffs between reducing fossil fuel combustion versus relying on carbon capture and sequestration for achieving our deep decarbonization goals?
Panelists:

- Ben Haley, Co-Founder, Evolved Energy Research
- Lee Beck, Senior Advisor, Global CCS Institute
- Jeffrey Brown, Principal, Brown Brothers Energy and Environment, LLC
- Jennifer Wilcox, Professor, Worcester Polytechnic Institute
- Geoff Holmes, Business Development, Carbon Engineering
- Keith Pronske, President and CEO, Clean Energy Systems
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
Thank You

- Climate Change Scoping Plan
  - [https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm](https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm)

- Carbon Neutrality Workshops
  - [https://ww3.arb.ca.gov/cc/scopingplan/meetings/meetings.htm](https://ww3.arb.ca.gov/cc/scopingplan/meetings/meetings.htm)