Carbon Sequestration: Carbon Capture, Removal, Utilization, and Storage Program (SB 905, Caballero, 2022)

CARB Workshop
February 27, 2025

This meeting is being recorded

Climate Change:
Real and costly impacts to Californians

- A 2024 national report ranked California the worst state for natural disasters fueled by a changing climate, with expected annual losses totaling more than $16 billion statewide

- Home insurance is harder and more expensive to get. Seven of California's largest property insurers, State Farm, Allstate, Farmers, USAA, Travelers, Nationwide and Chubb recently limited new homeowners policies in the Golden State – raising questions about the stability of the California home insurance market.

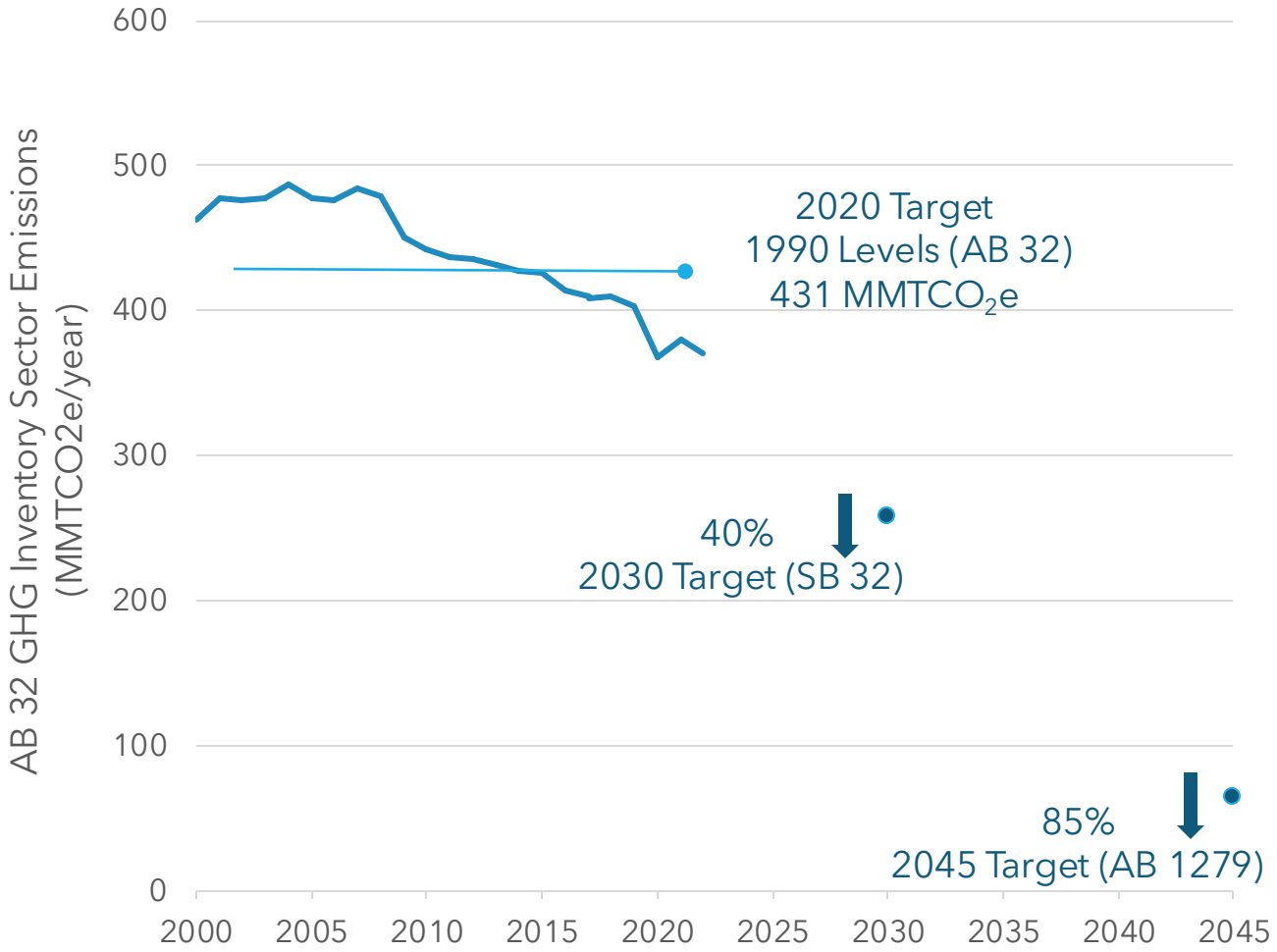
- During an 11-year period, exposure to wildfire smoke caused more than 50,000 deaths in California and more than $400 billion in economic impacts.

- During seven extreme heat events over the past decade, California experienced $7.7 billion in losses.

Dec 2024: Growing costs of climate emergency demand ambitious policy — not business as usual - Climate 411

GHG Emissions Reduction Targets

Achieved AB 32 target in 2014 – Portfolio of Policies



ACHIEVING

CARBON

NEUTRALITY

BY **2045**

GHGs included in statute: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3).

Achieving Carbon Neutrality in California

The path to build our way out of over a 100 years of existing fossil energy and the built environment landscapes

AB 32 GHG Inventory Sectors

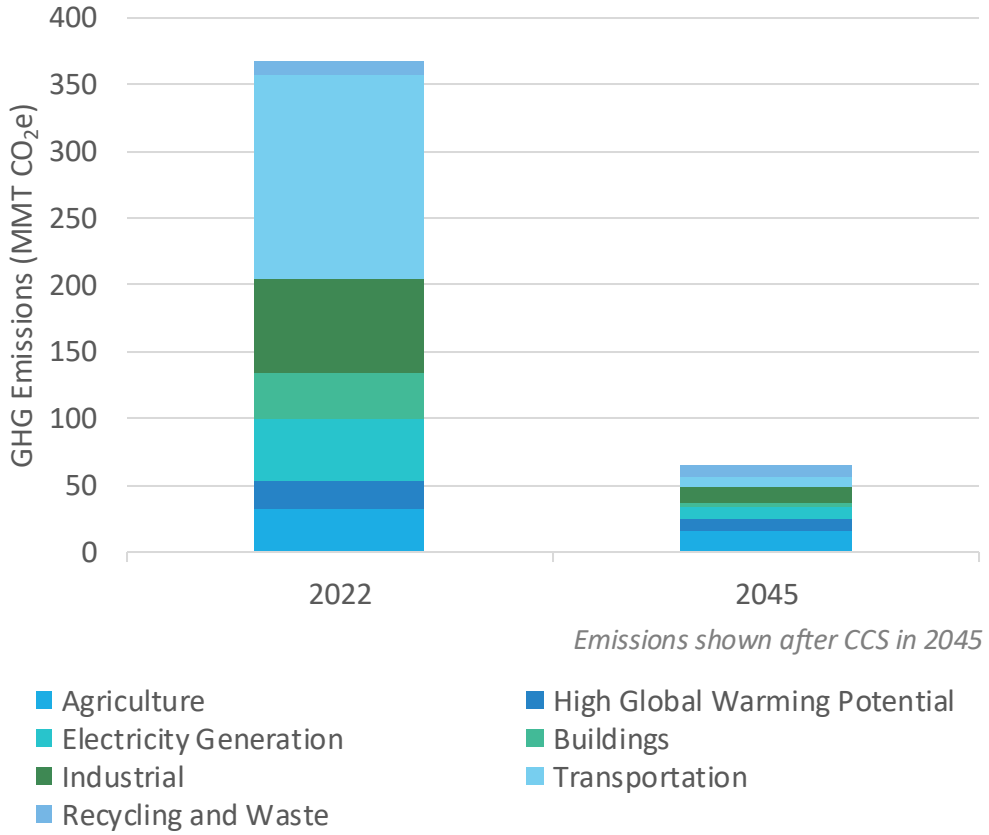
Carbon neutrality by 2045, deploy a broad portfolio of existing and emerging fossil fuel alternatives and clean technologies, and align with statutes and Executive Orders

Natural and Working Lands (NWL)

Land management activities that prioritize restoration and enhancement of ecosystem functions to improve resilience to climate change impacts, including more stable carbon stocks

Anthropogenic GHGs Target 2045: 85% Reduction below 1990

- Some emissions remain in the AB 32 sectors even after application of Carbon capture and storage
- Need carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality
- Governor's letter to include carbon removal targets for 2030 and 2045
- This decade requires unprecedented deployment and scaling of clean technology and energy
  - Leverage federal and state funds



Science-based Role of Carbon Dioxide Removal & Carbon Capture Technologies

- Some emissions sources have limited or no GHG abatement options
- Carbon Capture and Storage (CCS) technology demonstrated and in-use across US and Europe, proven technology to support low-carbon energy supplies
- Carbon dioxide removal (CDR) can help address legacy emissions in atmosphere
- CDR called for by hundreds of scientists, in addition to reducing emissions---need both

Overview of CARB SB 905 Responsibilities

- Establish a Carbon Capture, Removal, Utilization, and Storage (CCUS) Program
- Adopt protocols to support additional CCUS and CDR approaches
- Adopt CCUS/CDR regulations, including for a voluntary-use unified permit application, financial risk management, and monitoring requirements for project operators
- Support transparency, via a public database of projects and public reporting

2025 Update on SB 905 Implementation

- In FY23-24 budget, CARB received contract funding and minimal limited-term positions.
  - Governor's Fiscal Year '25-'26 budget proposal includes request for full permanent staffing for SB 905 positions.

- Existing staff prioritizing implementation of:
  - Conduct CCUS/CDR technology assessment (contract)
  - Collect CCUS/CDR permit data requirements and create library (contract)
  - Best practices for community action plan development (contract)
  - State of California control-agency approvals for the permit portal IT project
  - Information collection to support regulatory development

Next Steps on CARB's 905 Work

- Continue to pursue full SB 905 staffing via legislative budget process
  - If resources are approved, hiring begins in early-Summer 2025
- Evaluate feedback received on workshop and staff's questions
  - Comments due by March 28 11:59PM PDT
- Conduct additional future workshops on
  - CCUS/CDR technology assessments
  - Informal regulatory structure and regulatory concepts/timing
- Sign-up for the CCUS listserv to stay up-to-date https://public.govdelivery.com/accounts/CARB/subscriber/new?topic_id=ccs

Questions to Support Regulatory Development

CARB STAFF ARE SOLICITING FEEDBACK VIA PUBLIC COMMENT ON THE QUESTIONS ON THE FOLLOWING SLIDES.

FOLLOW INSTRUCTIONS AND SUBMIT COMMENTS HERE: PUBLIC FEEDBACK FOR CARBON CAPTURE, REMOVAL, UTILIZATION, AND STORAGE PROGRAM (SB 905) | CALIFORNIA AIR RESOURCES BOARD

Permit and Project Portal Questions to Support Reg Development

NOTE: SB 905 does not call for CARB to issue permits for the construction or operation of CCUS projects

1. Considering it's voluntary to use, what features of the permit portal would increase the likelihood the portal is used by both project developers and permitting agencies?
2. Are there examples of existing similar systems (e.g. CEQAnet) that CARB should look to when developing the permit portal?
3. Are there other considerations that CARB should address when developing the unified permit application?
4. Are there examples of existing public CCUS project databases that we should look to and/or emulate for public reporting on project deployment?

Feedback can be submitted into the comment docket at:
https://ww2.arb.ca.gov/our-work/programs/carbon-sequestration-carbon-capture-removal-utilization-and-storage

Financial Responsibility - Questions to Support Reg Development

SB 905 requires CARB to develop financial responsibility requirements that are "no less stringent than Section 146.85 of Title 40 of the Code of Federal Regulations, as that section read on January 1, 2022"

1. In addition to the instruments listed in §146.85 of Title 40, are there other existing financial responsibility instruments CARB staff should consider?
2. In addition to the costs listed in §146.85 of Title 40, are there other costs that CARB should consider be covered by the instruments?
3. What other additions or changes to the existing CFR requirements for financial responsibly should CARB consider and why?
4. How should the requirements account for scenarios such as ownership transfer, bankruptcy, change of ownership structure, change in insurance carrier, etc.?

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Criteria and Toxics Monitoring - Questions to Support Reg Development

SB 905 requires that all projects include monitoring of "criteria pollutants and potential toxic air contaminants at the one or more sites within the geologic storage complex and at mobile or fixed sites within the facility, and monitoring of ambient carbon dioxide concentrations over the geologic storage complex to facilitate leak detection."

1. What project-specific air monitoring are CCUS/CDR developers currently conducting or intending to conduct, if any?
2. What specific criteria pollutants or toxics emissions should be prioritized for monitoring and where along CCUS/CDR project (i.e. capture, transport, injection/utilization)?
3. How long should criteria or toxics monitoring be conducted for?
4. Are there examples of existing regulatory monitoring efforts being conducted in other sectors/sources that may be instructive for SB 905?

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