

2022 Scoping Plan Update – Draft Scenario Inputs Technical Workshop



OCTOBER 29, 2021

Today's Workshop Objectives

- Present overview of feedback received on draft scenario inputs to date
- Draft scenarios are for evaluation purposes at this time and not meant to inform any current regulatory activities at CARB
- Iterative process to refine modeling scenario inputs
- Comments from Environmental Justice Advisory Committee (EJAC) forthcoming by November 24th

Transparency on Oral Comment Process

- Dedicated time for EJAC Members after the conclusion of presentation
- During general comment period:
 - CARB staff will periodically announce approximate number of hands raised
 - No ceding of time to others
 - Any EJAC Members should use the dedicated time after presentations to make any comments to ensure they are heard
 - Please do not email us directly to ask that we give you priority
- Goal to post agendas for workshops at least 48 hours in advance

Public Participation

- Staff Presentation
- Questions and Feedback
 - Use the “**Raise Hand**” function in the GoToWebinar toolbar, which should be located to the right of your screen as shown
 - When staff call your name, please “**Unmute**” yourself by clicking the red button, and proceed to introduce yourself

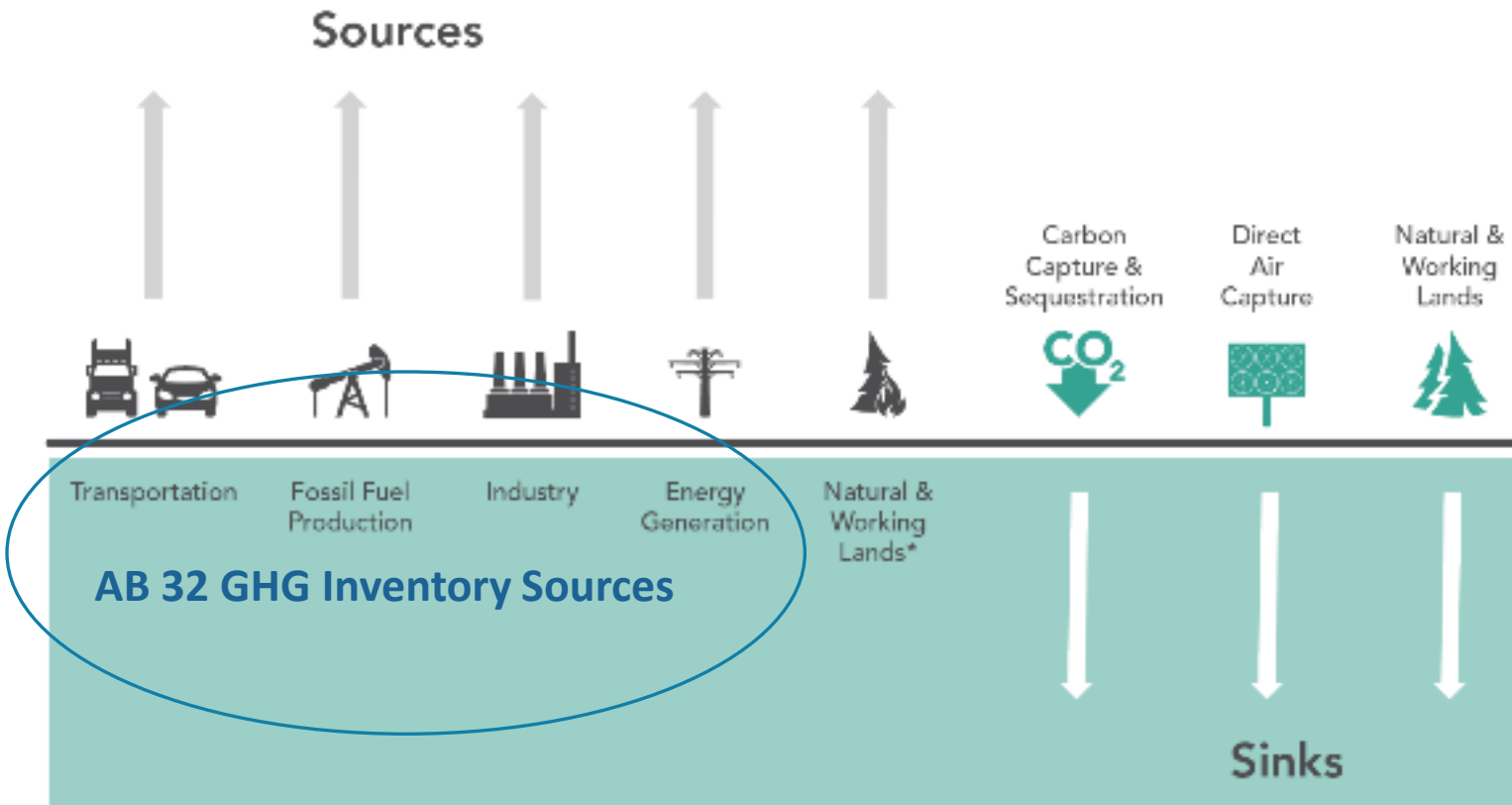


Draft Scenario Modeling Timeline

- First week December – CARB provides draft scenario inputs to contractor to model scenarios
 - Modeling emissions, health, and economics will take multiple months
- Preliminary PATHWAYS modeling results prior to release of draft Scoping Plan
- Draft Scoping Plan released in May 2022

Science-based Target: Achieve Carbon Neutrality (CO₂e) Mid-Century

Sources equal Sinks



*Natural and working land emissions come from wildfires, disease, land and ag management practices, and others

- Continue to reduce emissions from sources in AB 32 GHG Inventory
- Reduce emissions and increase sequestration in Natural and Working Lands
- Maximize all sinks with goal of achieving net negative

Draft Scenario Overview

- Alternative 1: Achieve carbon neutrality by 2035, with complete phaseout of combustion and no reliance on engineered carbon removal.
- Alternative 2: Achieve carbon neutrality by 2035, with full suite of technology options, including engineered carbon removal.
- Alternative 3: Achieve carbon neutrality by 2045, utilizing a broad portfolio of existing and emerging fossil fuel alternatives and achievement of Executive Order N-79-20.
- Alternative 4: Achieve carbon neutrality by 2045, utilizing existing and emerging technologies, in line with recent agency reports (AB 74 carbon neutrality in transportation, SB 100 zero-carbon electricity grid).

General Feedback Received

- Received 91 comments from industry, EJ organizations, individuals
- Urgency with which climate change needs to be addressed as well as practicality of transforming our energy system over the next decade
- Alternative 1 is viewed as most health-protective by some and unfeasible by others
- Alternatives 3 and 4 are very ambitious, but more feasible than carbon neutrality by 2035
- Support for scenarios with broad range of alternatives to reduce risk
- Alternatives are comprehensive and appropriate

Carbon Neutrality Timeframe- Public Feedback

- Accelerate the SB 32 2030 target
- SB 32 2030 target should not be accelerated
- Focus on achieving and accelerating 2030 GHG reduction target as a priority over carbon neutrality
- Achieve carbon neutrality as soon as possible
- Achieve carbon neutrality by varying target years: 2030, 2035, 2045
- Allow for possibility of achieving CN any year when able

Vehicle Miles Traveled- Public Feedback

- Support for range of VMT assumptions in scenarios
- Include more details on measures that factor into vehicle miles traveled (VMT) reduction targets
- Increase stringency of Alt 1 per capita VMT reductions to 20% by 2030
- Consider scenario with zero or 10% per capita VMT reductions
- Real-world VMT results have fallen short of SB 375 targets

Transition to Zero Emission Vehicles- Public Feedback

- Transition to 100% zero emission vehicle (ZEV) sales by varying target years: 2025, 2030, 2035, 2040 and 2045
- Phasing out combustion by 2035 is infeasible and unenforceable
- Support for inclusion of hydrogen fuel cell electric technology to decarbonize on-and-off-road transportation modes
- Zero emission options for heavy-duty and off-road vehicles are not commercially-available

Biofuels- Public Feedback

- No combustion after 2035, including biofuels
- Use biofuels in all scenarios and assume higher consumption
- Sustainable aviation fuel is primary mechanism to decarbonize aviation
- Utilize renewable natural gas in vehicles, particularly in near-term before ZEVs become more prevalent

Petroleum Fuels- Public Feedback

- Phase out in-state crude oil extraction and refining as soon as possible
- Pursue 90-100% phaseout of in-state extraction by 2045, with proportional reductions by 2030, to aid in worker transition
- Continue evaluating feasibility of ending extraction and refining by 2035 or earlier
- Avoid scenarios that assume CCS or conversion to biofuel refining at refineries
- Crude imports will increase if in-state crude extraction phaseout precedes decline in petroleum demand
- Recognize emissions reductions taking place at refineries

Role of Engineered Carbon Removal- Public Feedback

- Do not rely on any carbon capture and sequestration
- Allow carbon capture and sequestration only if absolutely needed
- Treat carbon capture and sequestration and direct air capture as a cost-effective mitigation strategy
- Do not allow any direct air capture
- Allow direct air capture only if absolutely needed

Industry (Manufacturing, Construction, and Agriculture)- Public Feedback

- Support for dedicated hydrogen pipelines to industrial clusters
- Transition to renewable hydrogen more quickly
- Use limited renewable (non fossil) hydrogen for high-energy industrial processes and hard to decarbonize sectors
- Support for blending RNG and hydrogen in pipeline
- Question feasibility of 100% electrification for some industrial sectors and preparedness of utilities to accommodate increased electricity demand
- Do not model industry departing California

Non-Combustion Methane Emissions— Public Feedback

- All scenarios should reflect achievement of SB1383 organics diversion target and methane emissions reduction target
- Do not capture biogas from dairy operations using digesters or utilize captured landfill gas for transportation
- Consider sustainable non-animal based farming practices
- Continue funding dairy digesters and alternative manure management projects
- Question feasibility of enteric strategy implementation by 2030

Carbon Free Electricity Grid- Public Feedback

- Reliability paramount in scenario selection and a key concern as other sectors electrify
- Timeline to 100% clean electricity
 - Accelerate and achieve by 2035
 - 2045 provides flexibility to adapt/study options for fossil transition, recognizes lead time to upgrade transmission, doesn't prohibit utilities from achieving target earlier
- Eligible resources
 - Constrain to exclude nuclear, combustion including biomass
 - Focused use of bioenergy applying environmental/socioeconomic factors
 - Continue to expand by adding emerging/yet-to-be developed clean energy resources
- 2030 GHG planning target – support/non-support for 23 and 30 MMT, align with IRP 38 MMT
- Affordability must be key consideration, including analysis of rate impacts

Residential and Commercial Building Decarbonization- Public Feedback

- Support Alt. 1 most aggressive scenario
- Question feasibility of Alt. 1 retrofit of all buildings by 2035; more reasonable to assume replace on burnout in all scenarios
- Alt. 4 is a reasonable time to decarbonize commercial buildings, allowing for end-of-life replacement
- Apply principles that may not coincide with most aggressive pathway
 - Affordability, removing barriers to access to clean appliances, promoting high road jobs, workforce development, protecting lower income households
- Alternative fuels
 - Don't direct RNG/hydrogen blends to buildings
 - Consider option for RNG/hydrogen if point-of-sale electric rollout unsuccessful
- New buildings – consider additional code cycle for all electric appliances for commercial buildings in Alts. 2 and 3

Public Participation

- Today:
 - Environmental Justice Advisory Committee Members (up to 15 minutes)
 - Public (up to 90 minutes)
- Questions and Feedback
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Closing – Staying Engaged

- Additional resources
 - Workshops, EJ Advisory Committee Meetings, supporting materials, Board Meetings:
 - www.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan

THANK YOU

