

# Update on PATHWAYS Scenario Modeling Assumptions

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# All Four Energy and Industrial Alternatives:

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- Drastically reduce or eliminate fossil fuel combustion across sectors
- Ambitious deployment of efficient and non-combustion technologies
  - Zero emission transportation, building electrification, electrification where feasible technology options exist in other sectors
- Ambitious production and distribution of clean energy
  - Rapid decarbonization of the electricity grid, increasing production and distribution of hydrogen

*Detailed PATHWAYS modeling assumptions available at: [https://ww2.arb.ca.gov/sites/default/files/2021-12/Revised\\_2022SP\\_ScenarioAssumptions\\_15Dec.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-12/Revised_2022SP_ScenarioAssumptions_15Dec.pdf)*

# EJAC Recommendations Reflected in Scenarios (1 of 3)

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EJAC Recommendations	Scenario Modeling Assumptions
Achieve zero carbon electricity grid by 2035, adopt SB 100 no-combustion scenario	2035 sector GHG target reduced to 0 MMTCO <sub>2</sub> e (Alt 1) and 10 MMTCO <sub>2</sub> e (Alt 2) in 2035, exclude all combustion-based generation (Alt 1)
New buildings use electric appliances only by 2030, include existing buildings in targets; phase out sales of gas appliances by 2030	New res. & comm. buildings have all electric appliances by 2030 (Alts 1, 2, 3, & 4); existing buildings retrofitted to electric appliances by 2035 (Alt 1) or replace appliances with electric at end of life (Alts 2, 3, & 4); appliance sales 100% electric by 2030 (Alt 1) or 2035 (Alts 2, 3, & 4)

# EJAC Recommendations Reflected in Scenarios (2 of 3)

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EJAC Recommendations	Scenario Modeling Assumptions
Increase overall GHG ambition	State GHG emissions 55% below 1990 levels by 2030, carbon neutrality in 2035 (Alts 1 & 2)
Prioritize direct emission reductions, carbon capture & sequestration (CCS) only if no alternative, no direct air capture with seq.	Minimal CCS, limited direct air capture for remaining 2035 emissions (Alt 1)
No role for biomass, RNG, biofuel except limited applications where clean energy not practical	Biomass excluded completely, RNG directed to cement facilities by 2035, no biofuel use by 2035 except for aviation demand (Alt 1)

# EJAC Recommendations Reflected in Scenarios (3 of 3)

EJAC Recommendations	Scenario Modeling Assumptions
Support moving faster to advance zero-emission light-duty vehicle, truck sales goals	100% of light-duty vehicle sales zero-emission by 2030 (Alts 1 & 2); 100% of truck sales zero emission by 2030 (Alt 1) or 2035 (Alt 2)
Accelerate vehicle miles traveled (VMT) assumption of 15% VMT reduction by 2045, model 30% VMT reduction by 2035	VMT per capita reduced 30% by 2035 (Alt 1), 20% by 2035 (Alt 2), 22% by 2045 (Alt 3)
End oil drilling in CA by 2035; set aggressive, achievable refining phase-out target	All scenarios anticipate reduced oil & gas extraction and refining in line with demand decline; complete phase out of extraction by 2035 (Alt 1) or 2045 (Alt 3), phase out refining by 2035 (Alt 1)

# Non-modeling Input

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EJAC provided additional input that is outside of the modeling scope but can inform how to approach other aspects of developing the 2022 Scoping Plan Update or implementation of actions to achieve carbon neutrality. Examples include

- Prioritize just transition
- Conduct rigorous health analysis that includes workers and communities and their environments
- Ensure and target transition incentives that prioritize low income and environmental justice communities

# Next Steps

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- February Board Hearing: Overview of the 2022 Scoping Plan Update – no modeling results
- Late March/April: Workshop and follow-up informational Board hearing on emissions modeling, and air quality, health, and economic analyses
- May: Draft Scoping Plan released for 45-day public comment
- June: CARB Board meeting to discuss Draft Scoping Plan (1 of 2 hearings)
- Iterative modeling process
  - EJAC and other stakeholders may continue to consider and propose changes to the modeling inputs included in the first draft for the next iteration
  - All recommendations to modify modeling inputs will be considered for the next iteration of modeling after the June Board hearing