

2022 Scoping Plan Update

*California's Proposed Strategy for Achieving
Carbon Neutrality*



BOARD HEARING

DECEMBER 15, 2022

Outline

- Background and process
- Proposed Scoping Plan
- Staff recommendation

AB 32 Climate Change Scoping Plan Statutory Requirements

- Scoping Plan(s) are action plans for CA to meet statewide GHG reduction targets
 - Scoping Plan(s) outline a suite of climate policies to address emissions across all sectors
 - Required to be updated at least every 5 years
 - 2017 SP (most recent) – cost-effective and technologically feasible path to achieve the 2030 target
- Provide direct GHG emissions reductions and air quality benefits
- Minimize emissions “leakage” – increase to non-CA GHG emissions
 - Ensure high-road jobs remain
- Facilitate sub-national and national collaboration
 - Develop exportable programs for partners to adopt
- Support cost-effective and flexible compliance

CARB Board and Governor Direction

- Board members directed staff to include the following:
 - Increase vehicle miles traveled (VMT) targets
 - Household economic impacts by income level, race if possible
 - Climate Vulnerability Metric
 - Accelerate action on agricultural lands
 - Text to consider need for safety for pipelines, injection sites, and capture of carbon dioxide
- July 2022 Governor Newsom letter directed CARB to include the following:
 - 20 GW of offshore wind by 2045
 - Avoid need for new gas power plants
 - 3 million climate-ready and climate-friendly homes by 2030 / 7 million by 2035, 6 million heat pumps statewide by 2030
 - 20% clean fuels target for aviation
 - Carbon dioxide removal and capture target of 20 MMT in 2030/ 100 MMT in 2045
 - Increase Low Carbon Fuel Standard stringency, accelerate refinery transitions to clean fuels

Key Legislation

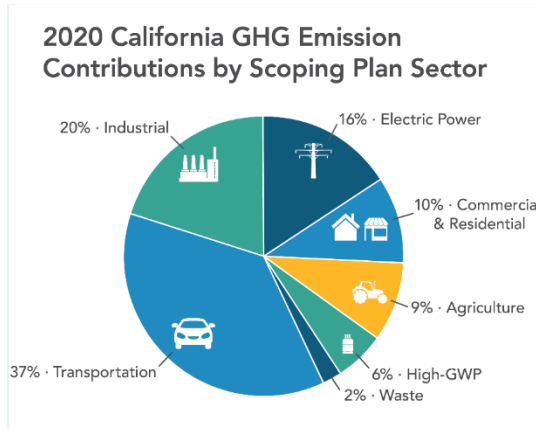
- AB 32 (2006): 2020 target and calls for a Scoping Plan and updates at least every 5 years
- SB 32 (2016): 2030 target
- SB 1383 (2016): Short-lived climate pollutant targets for 2030
- AB 197 (2016): Specific analyses for the Scoping Plan
- New 2022 legislation informing the Scoping Plan:
 - AB 1279: 2045 carbon neutrality target , anthropogenic emissions to be reduced by 85% by 2045
 - SB 905: Establishes a Carbon Capture, Removal, Utilization and Storage Program
 - SB 846: Extends the Diablo Canyon Power Plant's sunset date
 - SB 1020: Establishes interim clean electricity targets
 - SB 1137: Oil and gas setbacks of 3,200 feet
 - SB 1075: Requires CARB to prepare an evaluation of the role of hydrogen in California
 - AB 1757: Requires setting of natural and working lands targets and tracking progress
 - AB 2251: Sets a target for increasing urban tree cover by 10% by 2035

California's Climate Policy Framework



GHG Targets & Goals

Legislation & Executive Orders: Total GHGs (AB 32/SB 32/AB 1279) or sector targets (SB 1383/SB 100), etc.



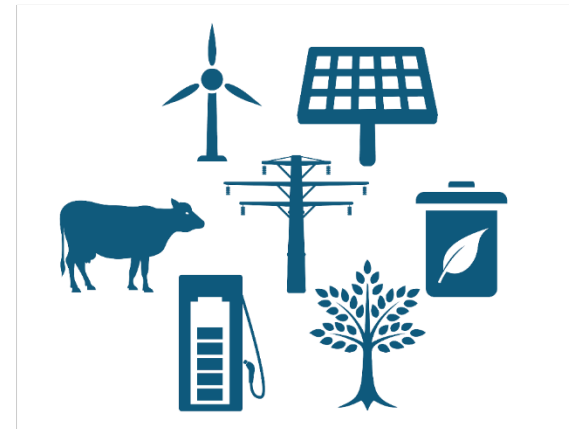
Scoping Plan

Actionable plan across all sectors



Action

Regulations & Incentives: Advanced Clean Cars, climate change investments, etc.



Projects

Examples: Zero-emission trucks, energy infrastructure and renewables, compost facilities, digesters, etc.

Multi-State Agency Effort



List is not exhaustive

Robust Stakeholder Engagement

- Nearly 2-year development process
- 6 Board meetings
- 16 Public workshops and 2 Tribal-focused workshops
- Over 30 Environmental Justice Advisory Committee (EJ Advisory Committee) meetings
- Public and Tribal listening sessions
- Formal government-to-government consultations with California Tribes
- ~1000 written comments and 141 oral comments during the June Board hearing
- EJ Advisory Committee Final Recommendations
- Various stakeholder engagements and meetings

The Scoping Plan Scenario

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

Ambitious Action Delivers Huge Benefits

Unprecedented Deployment of Clean Technology and Nature-Based Climate Solutions



37x total on-road ZEVs



6x electric appliances in residences



1700x hydrogen supply



4x installed wind/solar generation capacity



> 2.5 Million acres of NWL climate action per year

Significant GHG Reductions



94% decrease in liquid petroleum fuel demand



91% decrease in fossil gas used in buildings



66% decrease in methane emissions from agriculture

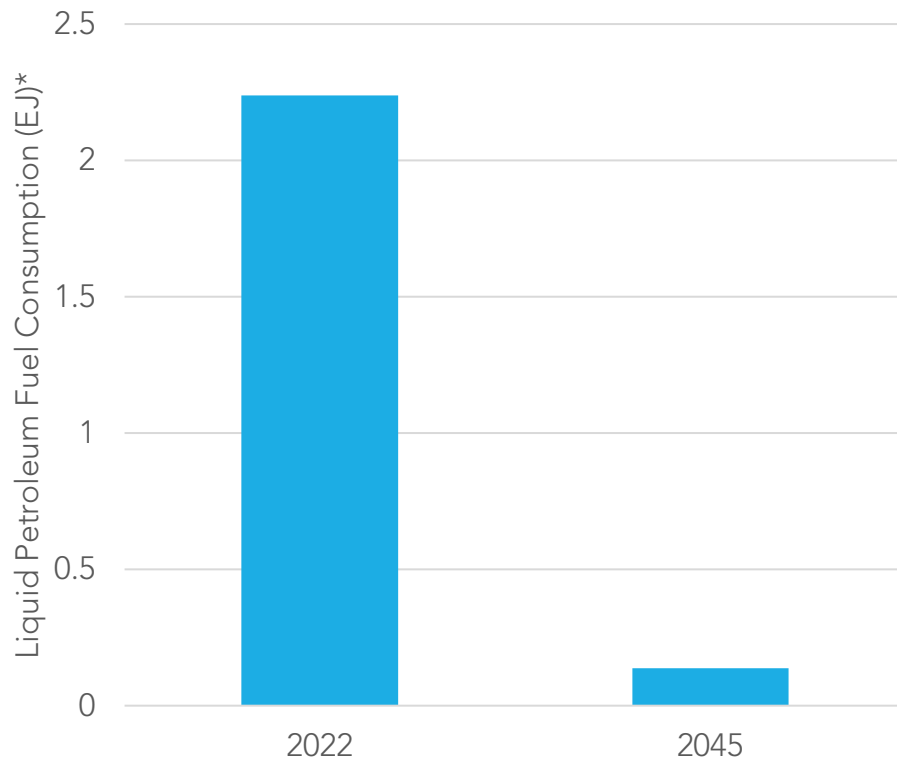


10% reduction in wildfire emissions

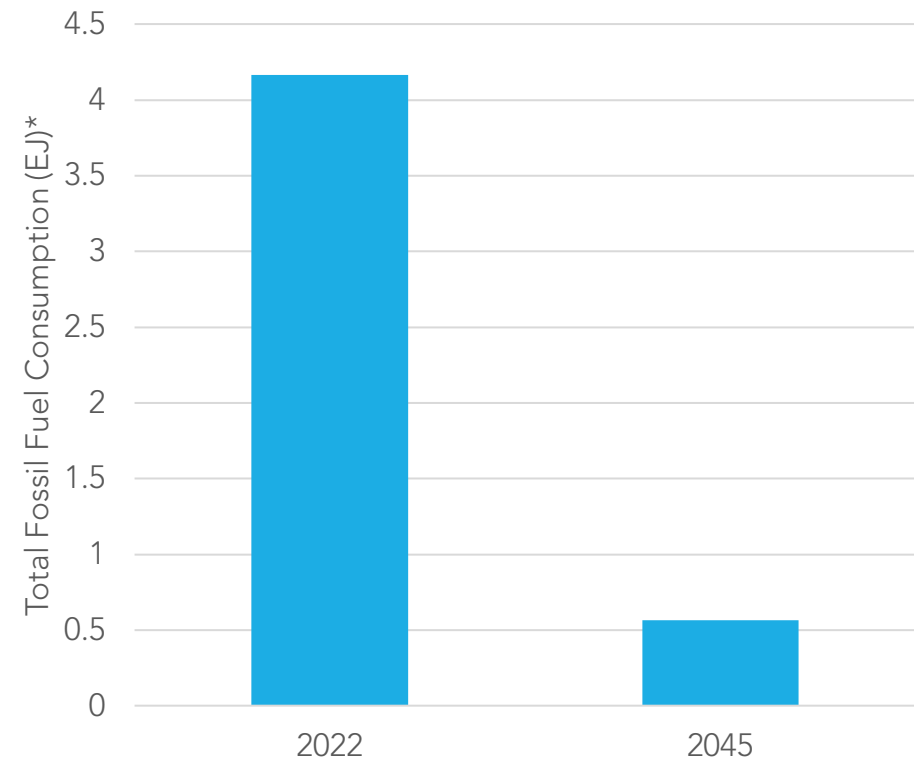
In 2045 relative to 2022

Dramatic Reductions in Fossil Fuel Demand

94% reduction in liquid petroleum



86% reduction in total fossil fuel

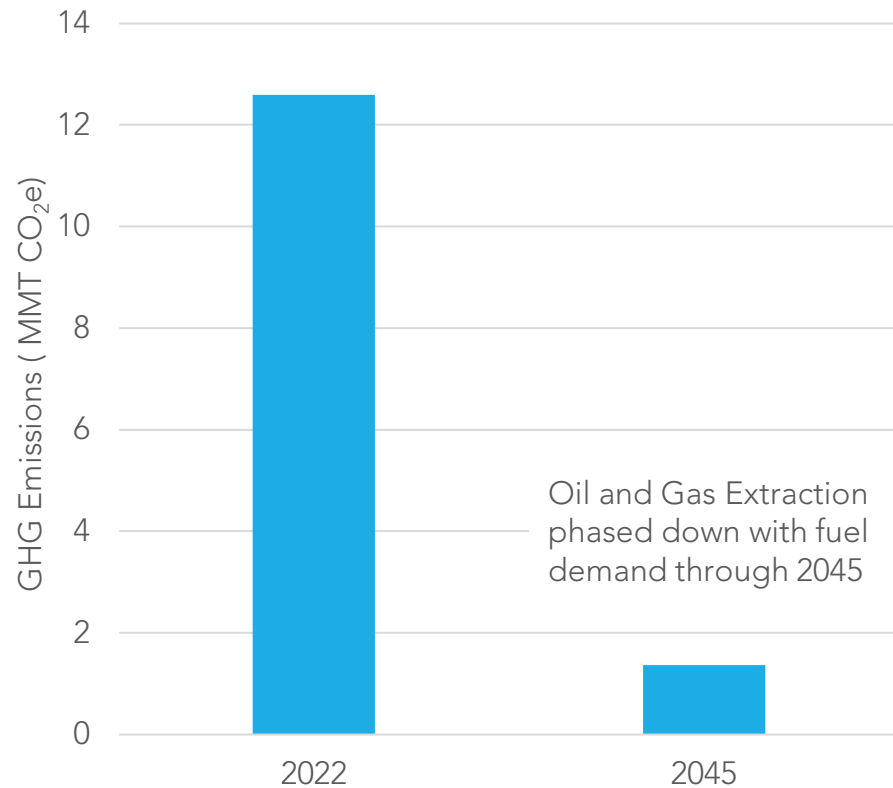


In 2045 relative to 2022

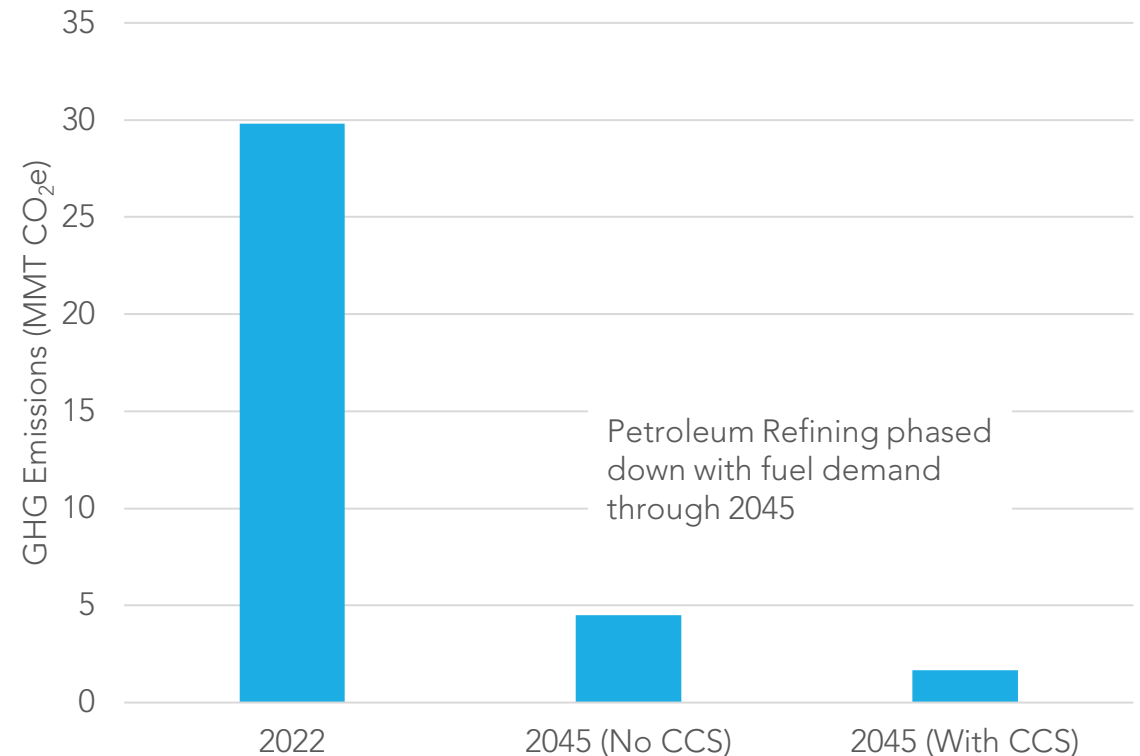
* exajoule

Significant GHG Emissions Reductions in Petroleum Sector

89% reduction in Oil & Gas Extraction GHGs

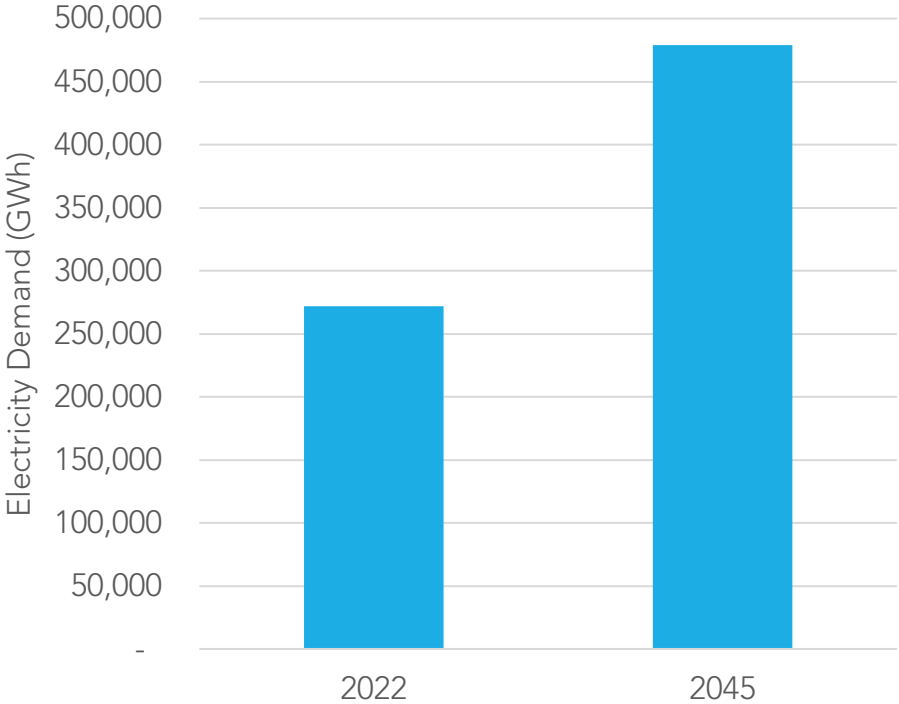


85% reduction in Petroleum Refining GHGs without CCS and 94% with CCS

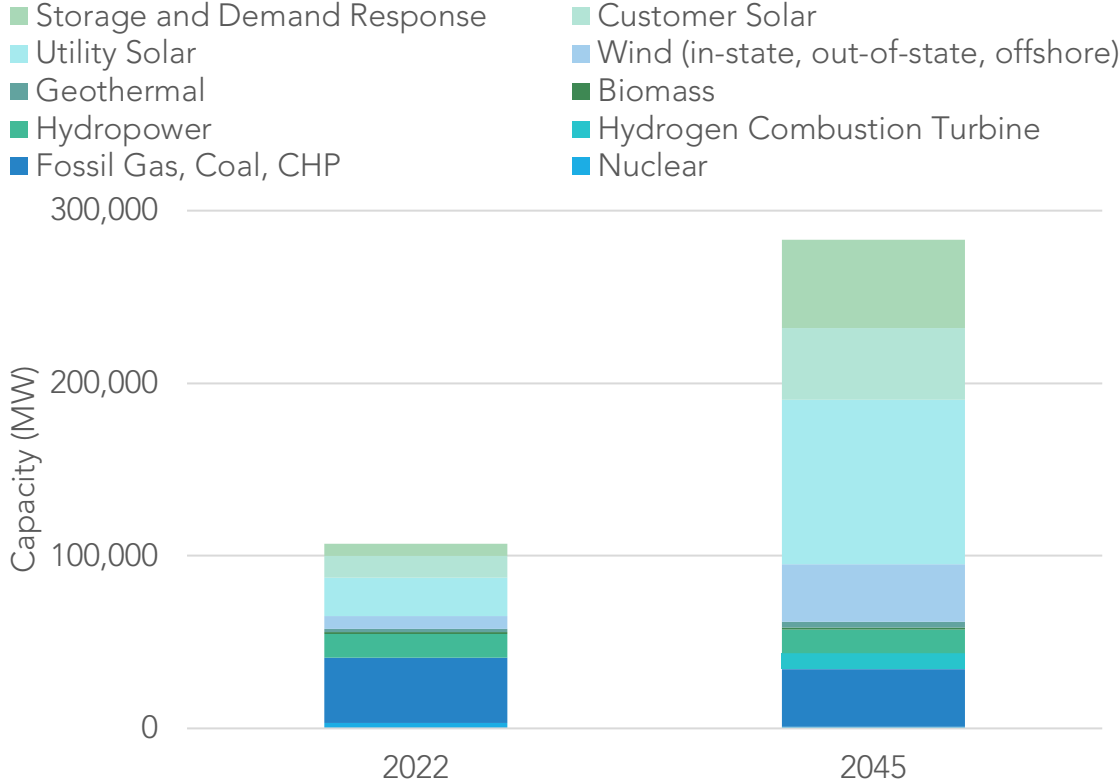


Building a Clean, Affordable, Reliable Grid

2x existing electricity generation

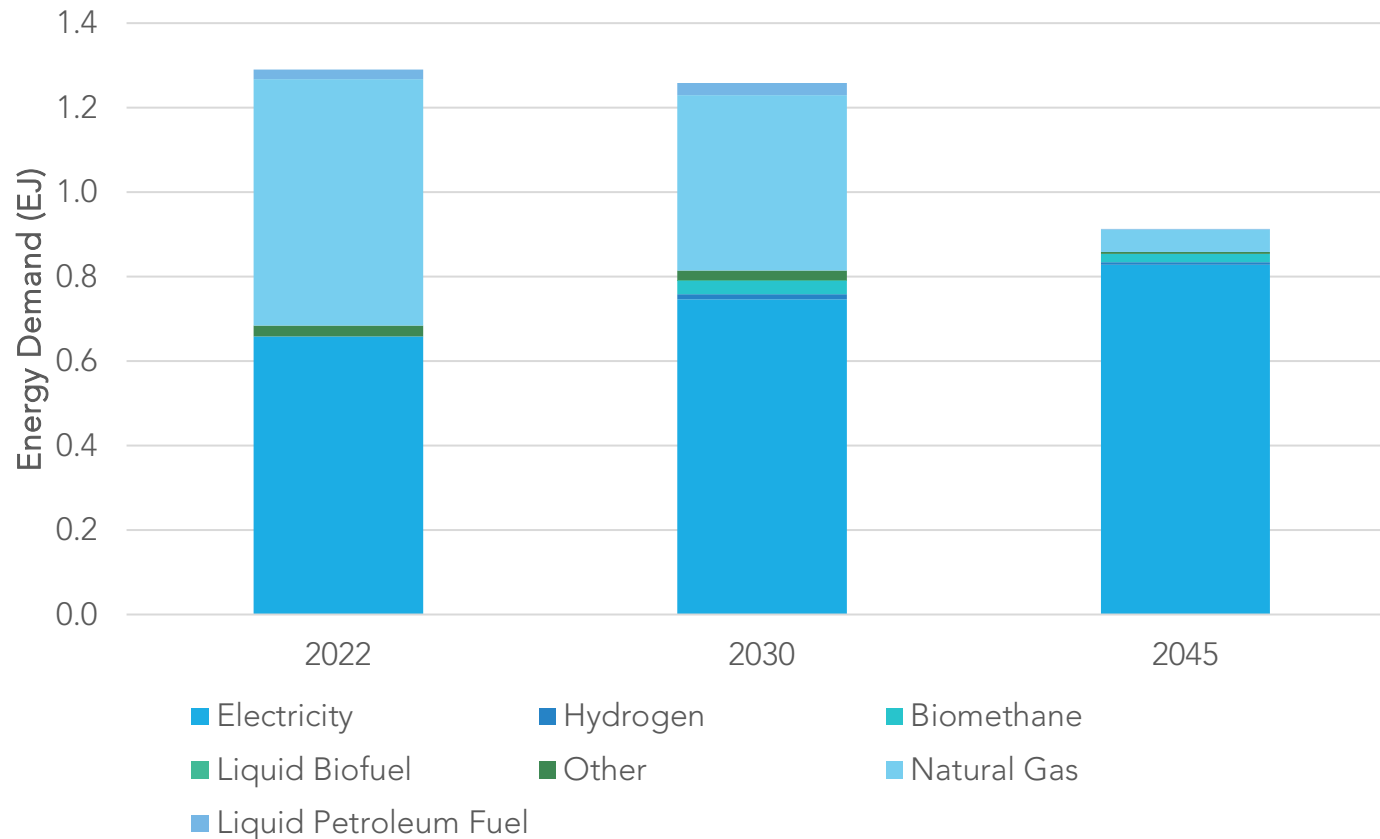


4x existing wind and solar capacity in 2045



Fossil gas use by electric sector decreases by 47% in 2045 compared to today

Decarbonizing Buildings



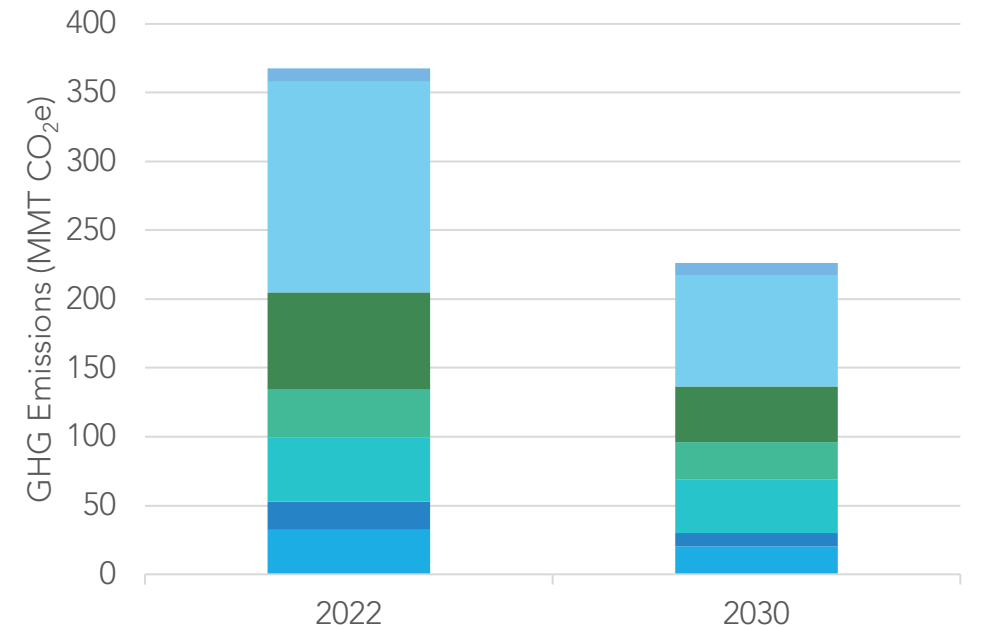
- 91% reduction in fossil gas demand by 2045
- Improve outdoor and indoor air quality
- 3 million all-electric buildings by 2030, 7 million by 2035
- 6 million heat pumps by 2030

In 2045 relative to 2022

The Decade of Action

Target 2030: 48% Reduction below 1990

- Accelerate pace of building clean energy infrastructure and clean technology deployment to achieve the 2030 target and be on track for carbon neutrality:
 - Permitting for new resources and transitioning of existing resources for clean energy production
 - Transmission infrastructure
 - Consumer adoption
 - Access to raw materials
 - Action across all sectors



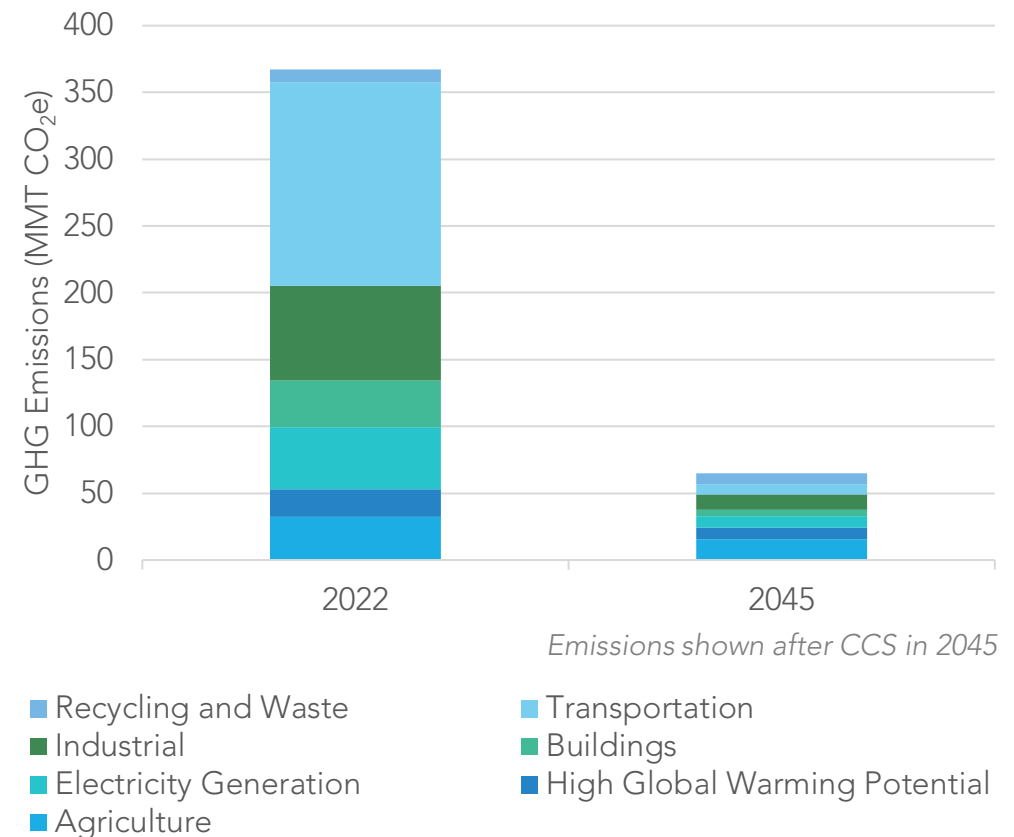
Emissions shown after CCS in 2030

- Recycling and Waste
- Industrial
- Electricity Generation
- Agriculture
- Transportation
- Buildings
- High Global Warming Potential

Anthropogenic GHGs

Target 2045: 85% Reduction below 1990

- Some emissions remain in the AB 32 Sectors
- Need carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality



Increased Ambition on Natural and Working Lands



10x increase in forest, shrubland, and grassland fuel reduction and restoration



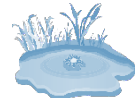
7.5x increase in climate smart agriculture; 20% organic agriculture by 2045



2x increase in current urban forest investment



Defensible space established on 46,000 properties per year



15% of delta acres restored to wetlands by 2045



50% reduction in desert land conversion

NWL Outcomes in the Scoping Plan



Meets the NWL Target in 2022 SP to keep carbon stock losses to 4% or less by 2045*



Reduces NWL emissions to an average emission rate of 7 MMT CO₂e/year across all lands**



Provides additional carbon dioxide removal from NWLs, including at least 1.5 MMT CO₂/year



Provides water/air quality benefits, reduced pesticide exposure, increased biodiversity, increased resiliency, and other benefits

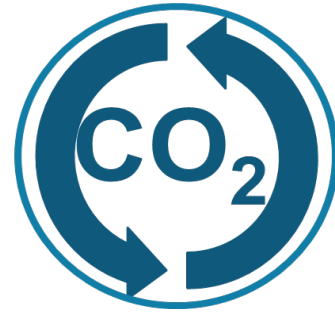
*From 2014 NWL total carbon stock levels identified in CARB's NWL Ecosystem Inventory

**Without implementation of the Scoping Plan, NWLs projected to have emissions of 8.5 MMT CO₂e/year

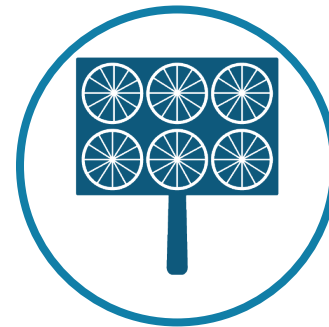
Role and Scaling of Carbon Dioxide Removal (CDR)



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Carbon Neutral

AB 32 GHG Inventory Sectors: Significantly reduced, but some emissions remain

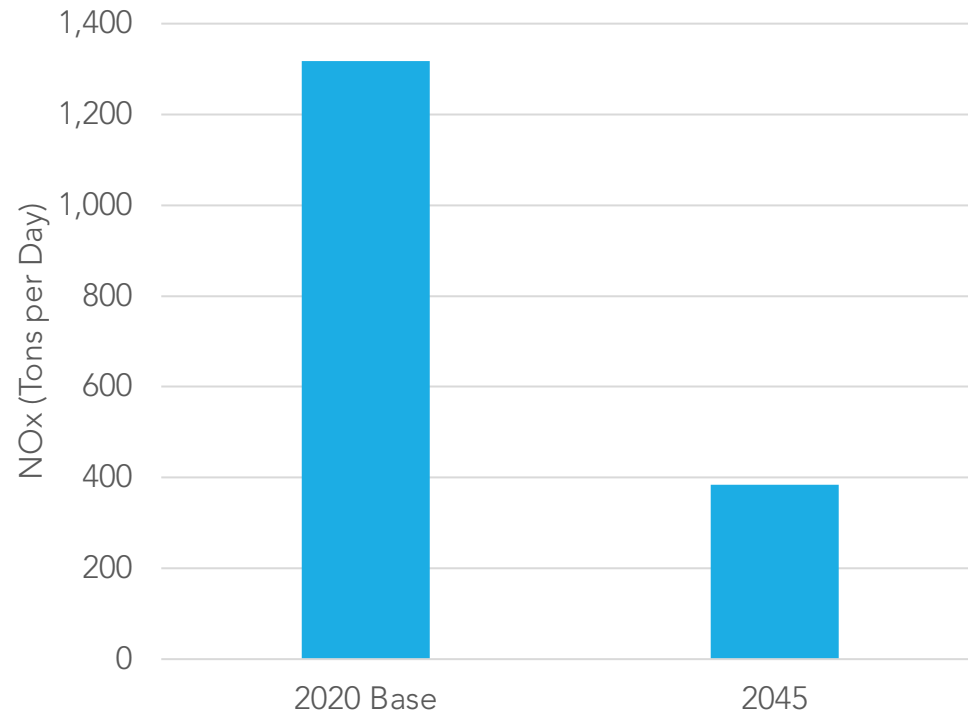
NWL a modest source

Need carbon dioxide removal to compensate for AB 32 GHG Inventory and NWL sectors

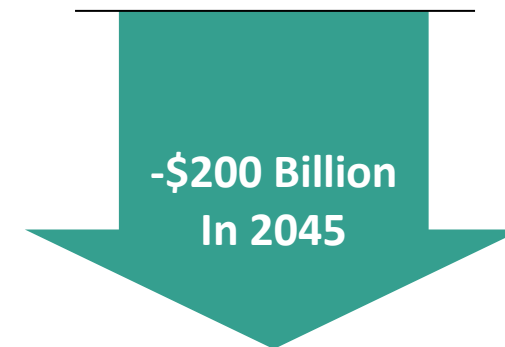
- **Role of CDR is reduced if:**
 - We reduce the emissions from the AB 32 GHG Inventory Sectors faster
 - NWL are able to become a sink

Fossil Fuel Combustion Reduction Air Quality Benefits

71% reduction in air pollution

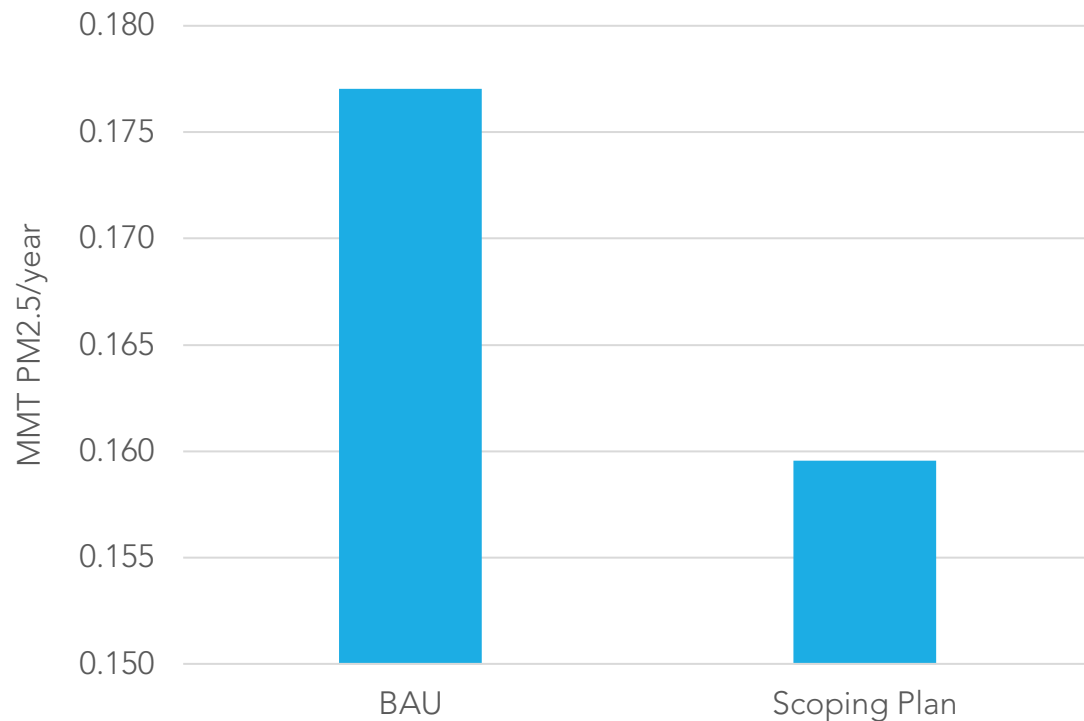


\$200 Billion in health cost savings from decreased fuel combustion

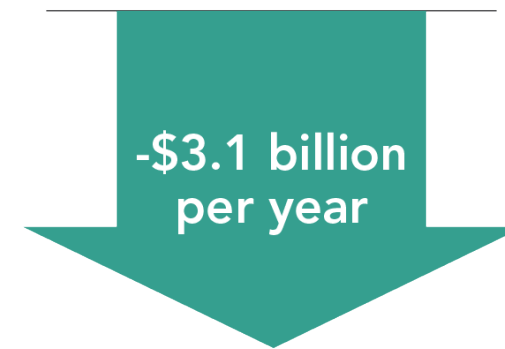


Wildfire Reduction Air Quality Benefits

*10% reductions in wildfire related PM2.5
each year*



**\$3.1 Billion in Health Cost Savings
from Drop in Wildfire Smoke Pollution**



Economic Metrics



Social cost of carbon (avoided economic damages) of \$6.5 to 23.9 billion in 2045

\$22 Billion in direct costs in 2045 for AB 32 climate action



\$6.5 Billion per year in direct costs for NWL climate action

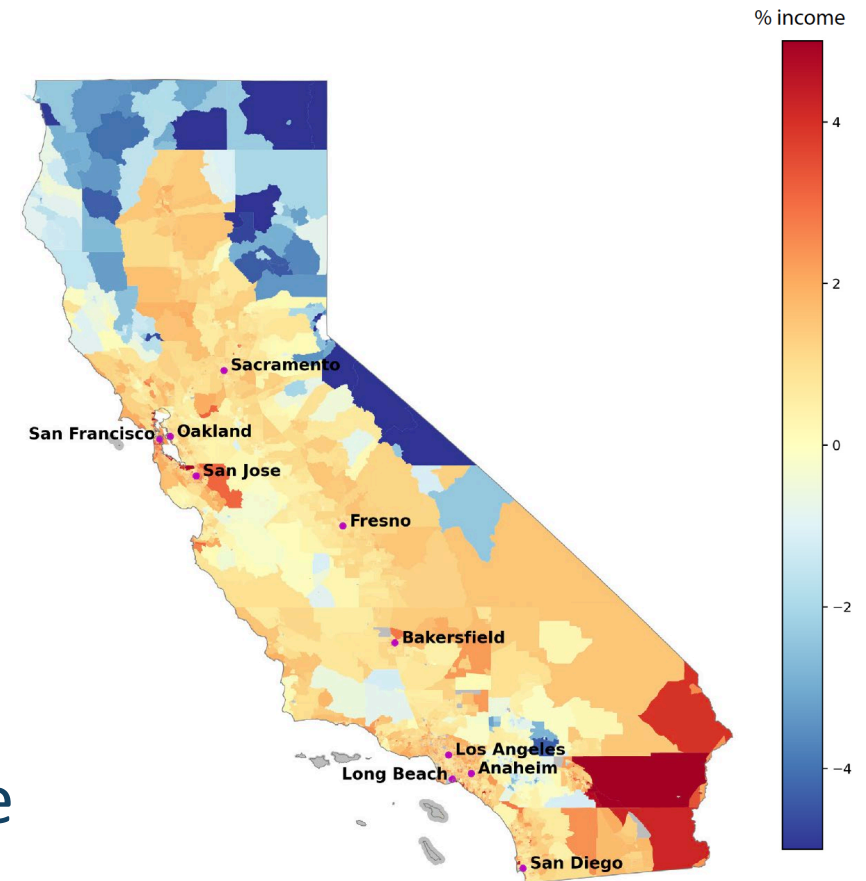
California economy and jobs grow through 2045



Scoping Plan Scenario has negligible impact on both jobs and economy

Closing the Gaps on the Social Cost of Carbon: Climate Vulnerability Metric (CVM)

- Not all communities face same impacts from climate change
- Not all communities are equal in resiliency
- CVM identifies additional economic costs at census tract level experienced due to climate impacts (heat, drought, etc.)
- Assists in identifying where and how to avoid disparate economic impacts of climate change



Uplifting Equity

- Climate Vulnerability Metric and economic evaluation show low income and communities of color will face both disparate climate impacts and disparate costs of climate mitigation
- Over 5 dozen EJ Advisory Committee Recommendations included in the Plan
- Plan identifies initiation of multi-agency discussion to systematically evaluate and plan for a transition for the demand and supply reduction of petroleum fuels that is equitable
- Ensure accessibility to clean technology and transition to clean energy does not further exacerbate existing health and opportunity gaps

Success Depends on Local Action to Support State Goals

- Local action should align to support state and federal air quality and climate goals
- Unique decision authority over land use and VMT reduction strategies
- Permitting to support implementation of actions in the Scoping Plan
- Building codes to support building decarbonization
- Supporting vehicle charging infrastructure

8,000 avoided deaths
from increasing Active
Transportation*



*Calculated by the Healthy Mobility Options Tool, active transportation (including walking, rolling, cycling, and taking public transit) from the California Transportation Plan 2050 compared to business as usual for 2050.

Environmental Analysis

- Draft Environmental Analysis (EA) completed
 - Released for public comment May 10-June 24, 2022
- Recirculated Draft EA completed
 - Released for public comment September 9-October 24, 2022
- Potentially significant impacts found for some resource areas
- CARB prepared the Final EA and written responses to comments received on the Draft EA and Recirculated Draft EA
 - Released December 2022

Staff Recommendation

- Approve the proposed Resolution, which includes:
 - Certification of the Final EA, including the written responses to comments on the EA, and making the required CEQA findings and statement of overriding considerations
 - Approval of the 2022 Scoping Plan for Achieving Carbon Neutrality

CALIFORNIA'S CLIMATE PLAN LAYS THE ROADMAP TO 2045



CUT AIR POLLUTION **71%**



SLASH GREENHOUSE GAS EMISSIONS **85%**



DROP GAS CONSUMPTION **94%**



CREATE **4 MILLION** NEW JOBS



SAVE CALIFORNIANS **\$200 BILLION** IN HEALTH COSTS DUE TO POLLUTION

