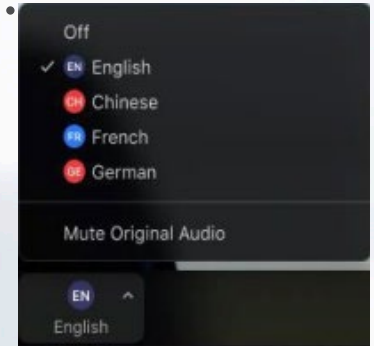




2022 State SIP Strategy
Public Workshop
August 23, 2022

Zoom Language Selection

- Click “Interpretation” found at the bottom of the screen
- Click the language you would like to hear: English or Spanish.
- To only hear interpreted language (Spanish), click “Mute Original Audio”



Zoom Webinar Details

- Call-in Number: (888) 363-4734
Conference Code: 350021
- Questions will be taken at the end of the presentation
 - In Zoom: Use "Raise Hand" feature, or type in "Q&A" box
 - On phone:
 - #2 to "Raise Hand"
 - *6 to Unmute/Mute

Today's Workshop

- 2022 State SIP Strategy updates
- Economic Analysis results
- Solicit feedback & input
- Questions



70 ppb Challenge Across the State

- EPA set the 8-hour ozone standard of 70 ppb in 2015
- 19 nonattainment areas in California
 - Attainment years 2020-2037
- 10 areas must submit SIPs
- San Joaquin Valley and South Coast most challenging, but other areas also need reductions



Public Process to Date

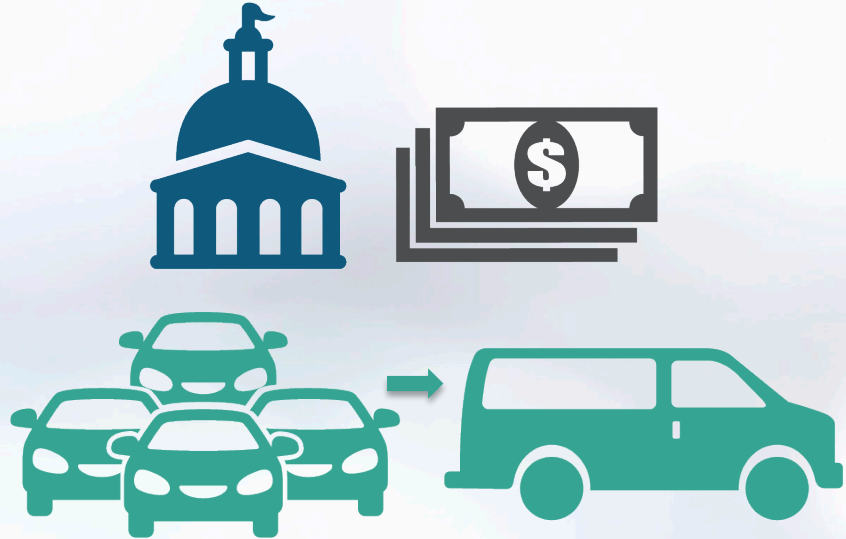


What's New Since January Draft

- Added Pesticide: 1,3-Dichloropropene Measure
- Expanded federal actions needed in airport sector
- Updated emissions reductions estimates including additional nonattainment areas
- Added on-road mobile source reduction commitments for transportation conformity budgets
- Incorporated most recent regulatory adoption & implementation schedules

Strategy Overview

- Reduce emissions to support attainment of the 70ppb ozone standard and transition away from combustion
- Drive to Zero through:
 - regulations,
 - incentives, and
 - voluntary programs



Proposed 2022 State SIP Strategy Measures

On-Road

- Advanced Clean Fleets Regulation
- Zero-Emission Trucks
- On-Road Motorcycle New Emissions Standards
- Clean Miles Standard*
- Enhanced Regional Emission Analysis in State Implementation Plans

Off-Road

- Tier 5 Off-Road Engine Standard
- Amendments to In-Use Diesel-Fueled Fleets Regulation
- Zero-Emission TRU Part II
- Commercial Harbor Craft*
- Cargo Handling Equipment
- Off-Road Zero-Emission Targeted Manufacturer Rule
- Clean Off-Road Fleet Recognition Program
- Spark-Ignition Marine Engine Standards

Primarily Federally-Regulated

- In-Use Loco Regulation
- Future Measures for Aviation Emissions Reductions
- Future Measures for OGV Emissions Reductions

Other

- Consumer Products Regulation Amendments
- Zero-Emission Standard for Space and Water Heaters
- Pesticides: 1,3-D

Zero-Emissions Truck Measure

- Accelerate the number of ZE trucks beyond ACT/ACF
- Hearing: 2028, Implementation: 2030-2045
- Measure consists of two options:
 - Flexible approach of differentiated registration fees, ZE zones, and/or ISR that would be less costly for fleets/owners but could require new authorities
 - If new authorities not granted, then would use ZE fleet/upgrade requirements



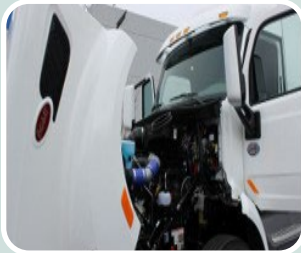
Pesticides: 1,3-Dichloropropene Health Risk Mitigation

Reduce health risks, which may also reduce VOC emissions to support ozone attainment

- 1,3-D fumigation method changes and other measures to reduce non-occupational exposures will also reduce VOC emissions
- DPR will analyze VOC emissions and explore ways to quantify those reductions after implementation



Federal Actions Needed



On-Road Heavy-Duty Vehicles

- Low-NOx Engine Standards
- Zero-Emission Engine Standards



Off-Road Equipment

- Tier V Standards
- Zero-Emission Standards Where Feasible



Locomotives

- More Stringent National Emission Standards
- Zero-Emissions Standards for Switcher
- Address Remanufacturing Loophole



Ocean-Going Vessels






- More Stringent NOx and PM Standards Requirements
- Cleaner Fuel and Visit Requirements



Aviation

- More Stringent Engine Standards
- Cleaner Fuel and Visit Requirements
- Zero-Emission Airport On Ground Support Requirements
- Airport Aviation Emissions Cap

Status of Public Measure Suggestions

On-Road Heavy-Duty Vehicle Useful Life Strategy	
Additional Incentive Programs Zero-Emission Trucks	
Enhanced Transportation Choices	
Indirect Source Rule - Suggested Control Measure or Regulation	
BACT/BARCT Determination	
Additional Building and Appliance Emission Standards	
Pesticides Regulation	
Enhanced Bureau of Automotive Repair Consumer Assistance Program	

Potential Emissions Reduction Commitments

Nonattainment Area	2026 NO _x (tpd)
Ventura County	0.3

Nonattainment Area	2032 NO _x (tpd)
Eastern Kern County	1.8
Sacramento Metro	6.1
West Mojave Desert	20.6

Nonattainment Area	2037 NO _x (tpd)
Coachella Valley	5.2
San Joaquin Valley	25.3
South Coast*	95.7

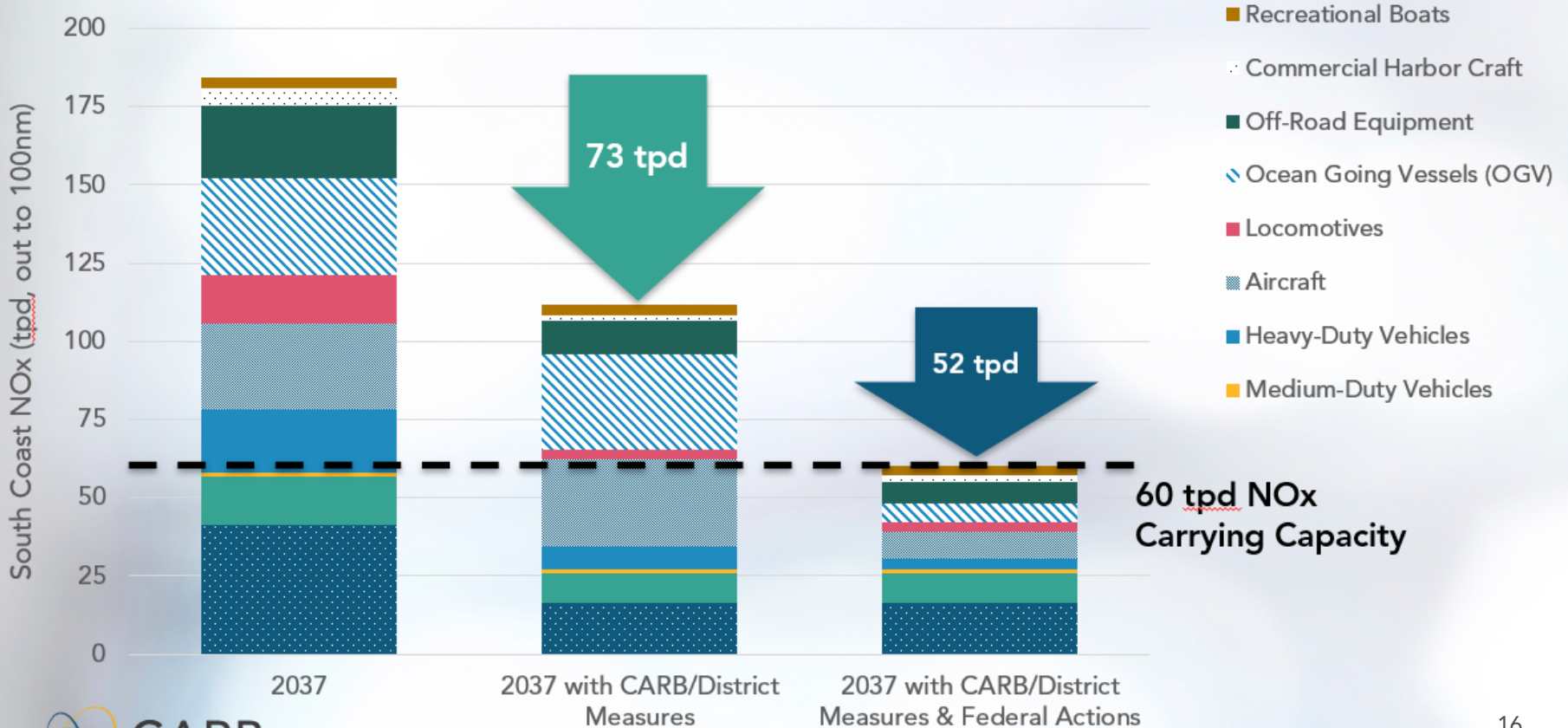
*Includes emissions reductions from Federal Actions Needed

On-Road Mobile Source Reductions

Includes potential commitments from on-road mobile sources for each area to lower transportation conformity budgets

- Based on estimated reductions from on-road mobile measures nearing completion
- Will be a subset of the total aggregate emissions reduction commitment for each area

Strategy Provides for South Coast Attainment



Economic Impact Analysis

State SIP Strategy Economic Analysis



PROPOSED
MEASURES



COST
ESTIMATES



ECONOMIC
IMPACT ANALYSIS



Determining Measure Costs

- Assumptions are informed by foundational technical work and ongoing technology assessments
- These assumptions are refined throughout measure implementation
- Depending on the current state of a measure, the source of cost data varies



Stages in Cost Development

Emissions Only

- Apply average cost per ton factors for similar measures that have preliminary, draft or final rulemaking data available

Preliminary Cost Analysis

- Initial analysis of incremental cost of technology

Draft Rulemaking Analysis

- Information shared in public workshops
- Published Standardized Regulatory Impact Assessment (SRIA) on Dept of Finance website

Final Rulemaking Analysis

- Published SRIA and numerous opportunities for public comment
- Analysis in review by Dept of Finance and Office of Administrative Law.



Stages of Costs by Measure

Emissions Only

- Zero-Emission Trucks
- Zero-Emission TRU Part II
- Federal Low-NOx Engine Standards*
- Off-Road Zero-Emission Standards Where Feasible*
- More Stringent NOx and PM Standards for OGV*
- Aviation Measures*

Preliminary Cost Analysis

- Tier 5 Off-Road Engine Standard
- Spark-Ignition Marine Engine Standards
- Consumer Products
- Zero-Emission Standard for Space and Water Heaters
- Cargo Handling Equipment
- Clean Fuel and Visit Requirements for OGV*

Draft Rulemaking Analysis

- Advanced Clean Fleets
- On-Road Motorcycle New Emission Standards
- Amendments to In-Use Diesel-Fueled Fleets Regulation
- In-Use Locomotive Regulation

Final Rulemaking Analysis

- Clean Miles Standard
- Commercial Harbor Craft

*measures that require federal action



Statewide Costs by Measure: On-Road & Other

Measure	Initial Year for Costs	Total Amortized Cost Through 2037 (Millions)	Avg. Annual Amortized Cost (Millions)
Clean Miles Standard	2023	(\$756)	(\$50)
Advanced Clean Fleets Regulation	2024	\$9,089	\$649
On-Road Motorcycle New Emission Standards	2025	\$304	\$23
Building Electrification/Decarb.	2026	\$10,048	\$837
Consumer Products	2029	\$121	\$13
Zero-Emissions Truck Measure	2030	\$5,392	\$674



Statewide Costs by Measure: Off-Road

Measure	Initial Year for Costs	Total Amortized Cost Through 2037 (Millions)	Avg. Annual Amortized Cost (Millions)
Amendments to the In-Use Diesel-Fueled Fleets Regulation	2023	\$2,029	\$135
Commercial Harbor Craft	2023	\$1,914	\$128
In-Use Locomotive Regulation	2023	\$8,887	\$592
Zero-Emission TRU Part II	2026	\$2,918	\$243
Off-Road Zero-Emission Targeted Manufacturing Rule	TBD		\$0
Cargo Handling Equipment	2026	\$2,100	\$175
Tier 5 Off-Road Engine Standards	2028	\$650	\$65
Spark-Ignition Marine Engine Standards	2029	\$45	\$5



Statewide Costs by Measure: Federal Action Needed

Measure	Initial Year for Costs	Total Amortized Cost Through 2037 (Millions)	Avg. Annual Amortized Cost (Millions)
Clean Fuel and Visit Requirements for Ocean-Going Vessels	2028	\$33,689	\$3,369
On-Road Heavy-Duty Vehicle Low-NOx Engine Standards	2027	\$220	\$20
Off-Road Equipment Tier V Standards for Preempted Engines	2028	\$488	\$49
More Stringent NOx and PM Standards for Ocean-Going Vessel Requirements	2030	\$428	\$54
Off-Road Engine Standards Where Feasible	2028	\$3,311	\$331
Clean Fuel and Visit Requirement for Aviation	2028	\$5,874	\$587
Airport Aviation Emissions Cap	2028	\$9,431	\$943



Summary of Statewide Costs

Category	Total Amortized Cost Through 2037 (Millions\$)	Average Annual Amortized Cost (Millions\$)
CARB: On-Road	\$14,030	\$324
CARB: Off-Road	\$18,541	\$192
CARB: Other	\$10,168	\$425
Federal Actions Needed	\$53,441	\$595
Total	\$96,181	\$442



Economic Impact Analysis Approach

- Utilize Regional Economic Models, Inc (REMI) economic forecasting and policy analysis model
 - REMI Policy Insight Version 2.5.0, single region, 160 sector model
- REMI includes detailed inter-industry relationships and supply/demand responses, to answer “what if...?” questions about the economy
- Utilized by CARB for analysis of all major regulations and approved by CA Department of Finance for evaluating economic impacts



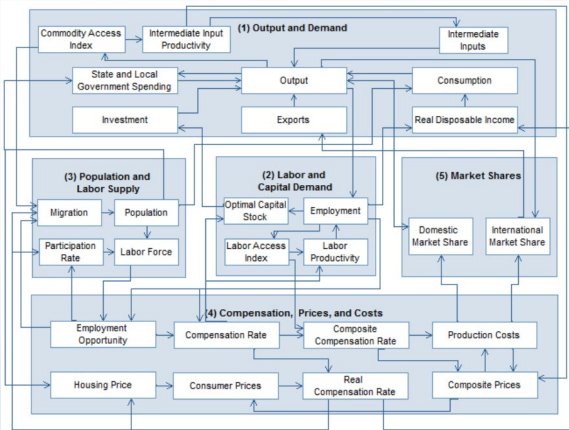
REMI Modeling Steps

1 Convert direct costs to REMI policy variables, including:

- Production costs for CA businesses
- Final demand for industries supplying goods and services
- Prices and spending on consumer goods

2

Run the REMI model:



3

Model outputs:

- Employment
 - Industry revenues
 - Personal income
 - Gross state product
- Impacts on major sectors evaluated for 2024 to 2037



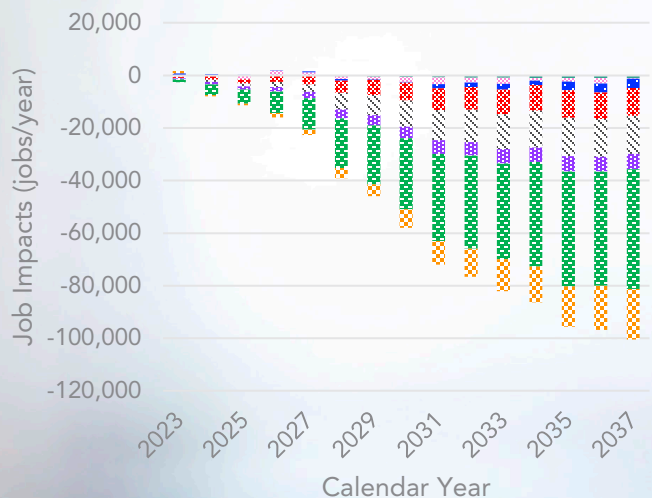
Statewide Macroeconomic Impact

Macroeconomic Indicator (Units)	Impact in 2037	Average Annual Impact from 2023-2037	Maximum annual percentage change relative to baseline from 2023-2037
Employment (Jobs)	-99,077	-52,986	-0.38%
Output (Million 2021\$)	-25,516	-12,935	-0.37%
Per Capita Personal Income (2021\$)	-239	-113	-0.26%
Gross State Product (Million 2021\$)	-13,878	-7,258	-0.33%

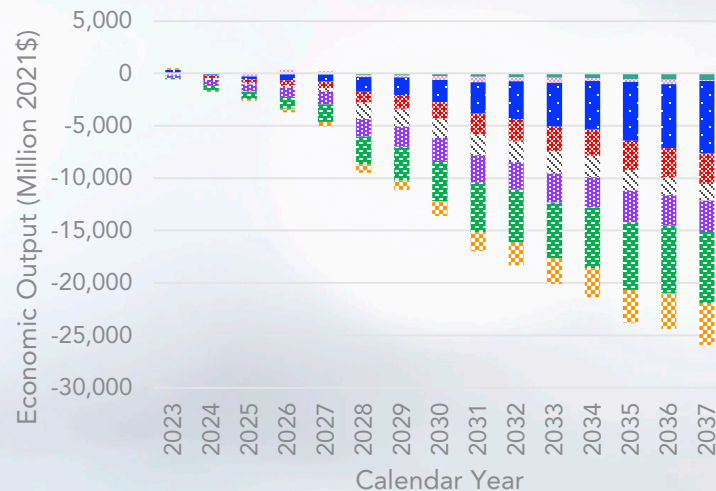


Employment and Output

Job Impact by Major Sectors



Output Impact by Major Sectors





Summary

- Total economic impacts of SIP are less than 0.4 percent decline relative to the baseline in any given year from 2023 to 2037
- The health benefits and associated cost savings are not included in the analysis
- Cost estimates for most of the measures will be refined through the rulemaking process

2022 State SIP Strategy

Next Steps



Ongoing: Receive Public Comments & Feedback

September 2022:
Board Consideration of Proposed 2022 State SIP Strategy
& Final Environmental Analysis

Fall-Winter 2022:
Board Consideration of District SIPs

Thank you!

Questions\Comments?

Contact Us!

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- General SIP Questions: SIPplanning@arb.ca.gov

<https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy>