

2022 Ozone Plan for Attainment of the 2015 Federal 8-Hour Ozone Standard

Technical Working Group:
Stationary and Area Source Control Measures, RACM
Analysis, and CARB State SIP Strategy

October 12, 2021

webcast@valleyair.org

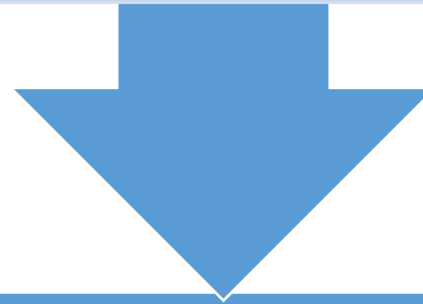
Purpose of Today's Workshop

Present information on the development of the upcoming attainment plan to address the 2015 8-hour ozone standard, including:

Review of District Stationary/Area Source Control Measures

Overview of Reasonable Available Control Measures (RACM) Analysis

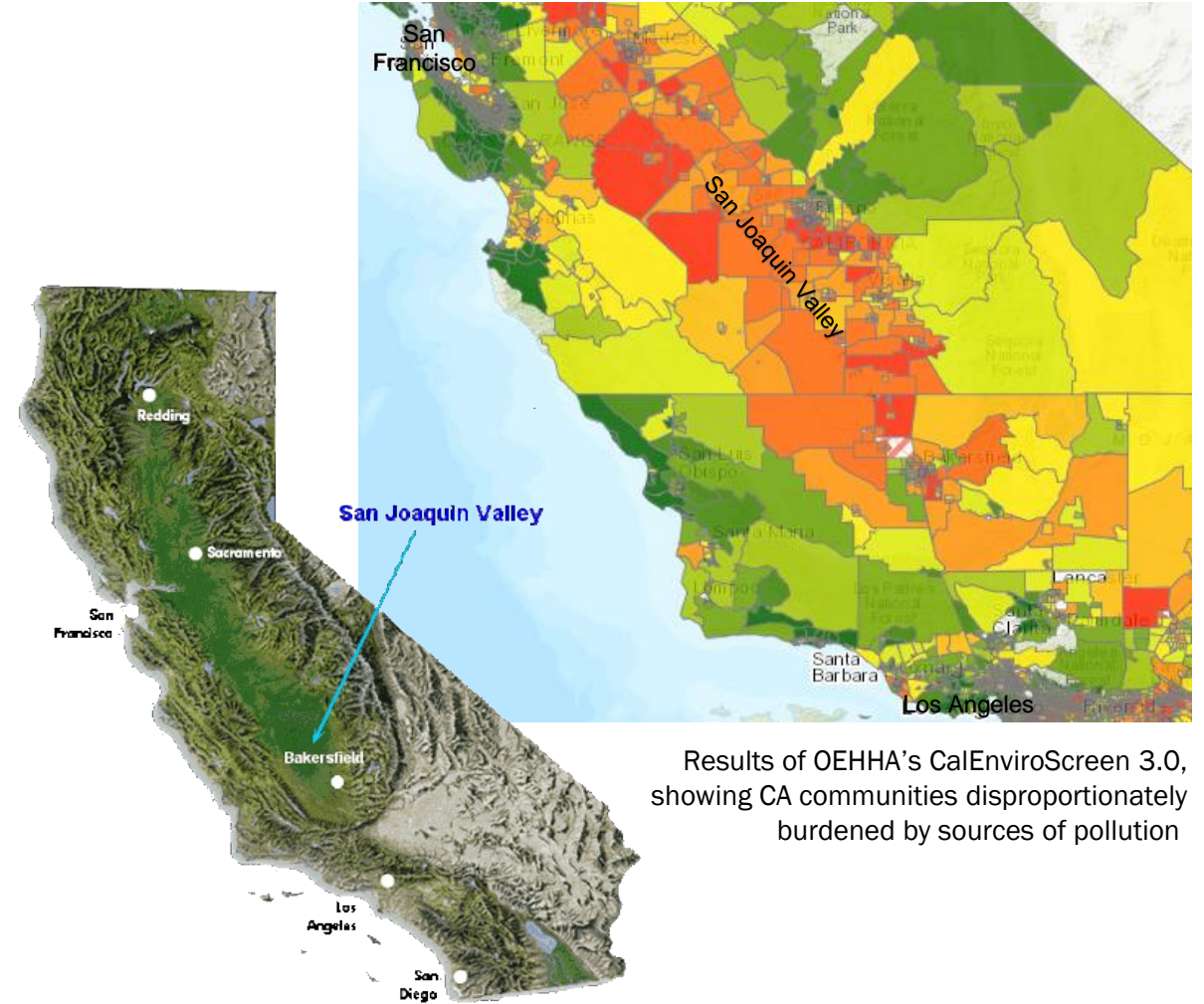
Review of California Air Resources Board's State SIP Strategy



Receive comments from the public

Valley's Air Quality Challenges

- Valley's challenges in meeting federal air quality standards unmatched due to unique combination of topography and meteorology
- Valley faced with variety of challenges including role as major goods movement corridor, high population growth, pollution transport from other areas and wildfires
- 20 of 30 most disadvantaged California communities located within the San Joaquin Valley

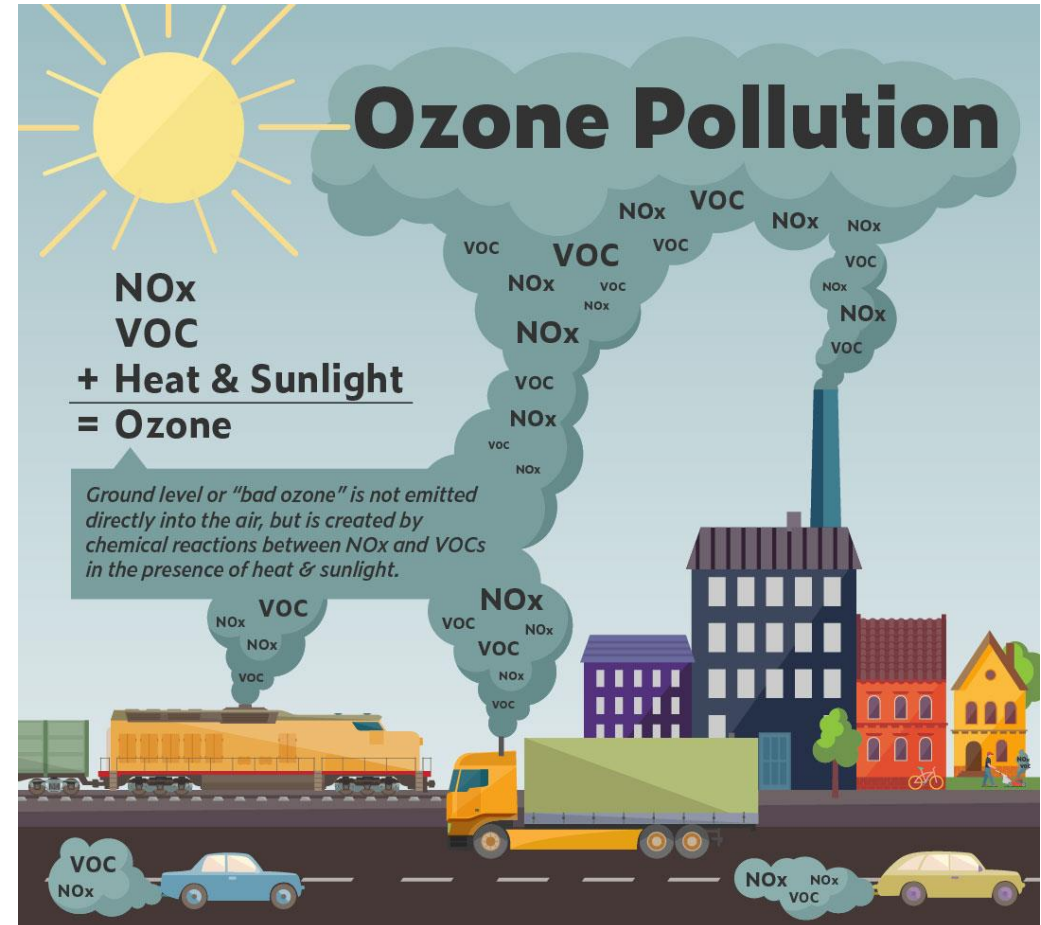


Results of OEHHA's CalEnviroScreen 3.0, showing CA communities disproportionately burdened by sources of pollution

Source: OEHHA, San Joaquin Valley Geology

Ozone Formation

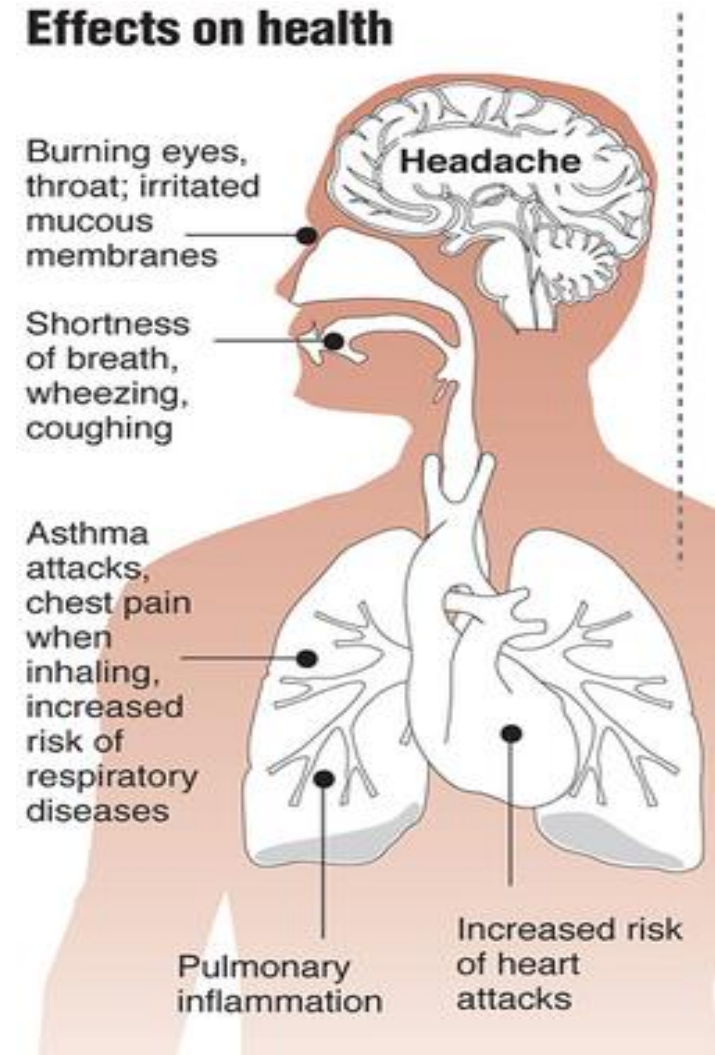
- Ozone is formed through reaction of NO_x and VOCs in presence of heat/sunlight
 - NO_x: combustion primarily from mobile sources
 - VOCs: biogenic, consumer, stationary, mobile sources
- Valley experiences high ozone in the summer, with peaks in the afternoon



Industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors and chemical solvents are major sources of oxides of nitrogen (NO_x) and volatile organic compounds (VOC).

Ozone Impacts on Public Health

- Ozone most significantly impacts people with asthma, children, older adults, and outdoor workers
- Exposure to ozone causes coughing, throat irritation, pain, burning, or discomfort in the chest, chest tightness or shortness of breath
 - Ozone impacts lung function and aggravates existing respiratory conditions, such as asthma and COPD
 - Leads to increased medication use, emergency visits and hospital admissions



Source: US EPA

Ongoing Valley Clean Air Efforts

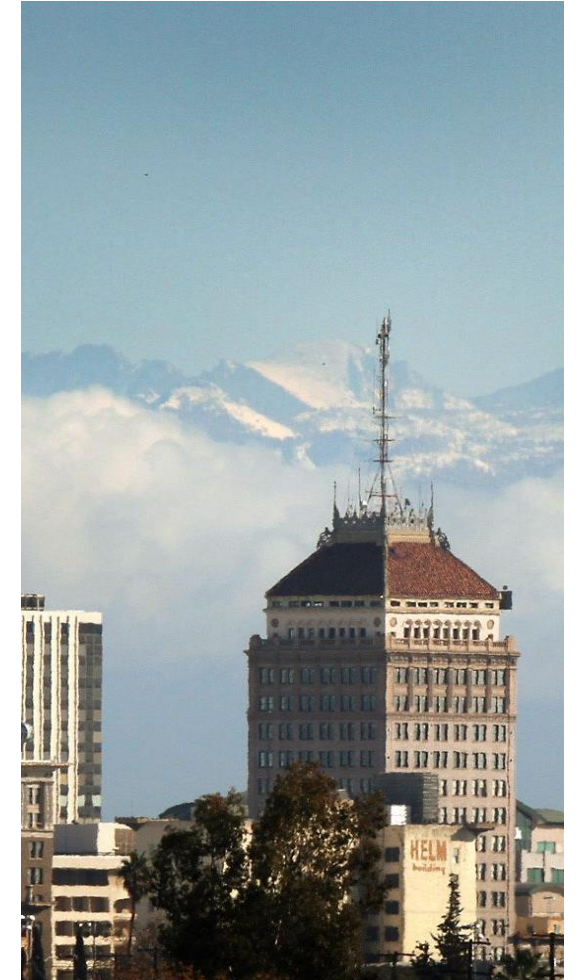
- District Governing Board has adopted numerous attainment plans and air quality control strategies to address federal standards
 - Adopted nearly 650 stringent rules and regulations
 - Stationary source emissions reduced by over 90%
- CARB has adopted numerous mobile source emissions control regulations and strategies
- District/CARB combined efforts represent nation's toughest emissions control program
- Strong incentive programs (over \$3.8 billion in public/private investment), reducing 199,000 tons of emissions
- Through significant clean air investments, Valley continues to make major improvements with respect to air quality

Valley Efforts to Improve Ozone Air Quality

- District has shown commitment in reducing ozone concentrations through multiple ozone plans
 - *2013 Ozone Plan* (Valley now meets the 1-hour ozone standard)
 - *2007 Ozone Plan* (included “black box” of unidentified measures, emissions reductions now identified per recent 2019 CARB progress report, Valley on track to meeting 2023 deadline)
 - *2016 Ozone Plan* (Valley on track to meeting 2031 deadline)
- NOx reductions achieved through implementation of PM2.5 attainment strategy, as detailed in District’s *2018 PM2.5 Plan*, further contributing to reduced ozone throughout Valley
- San Joaquin Valley first and only region in nation classified as “Extreme” nonattainment to reach attainment (1-hour ozone)

Progress Towards Valley Attainment of Ozone Standards

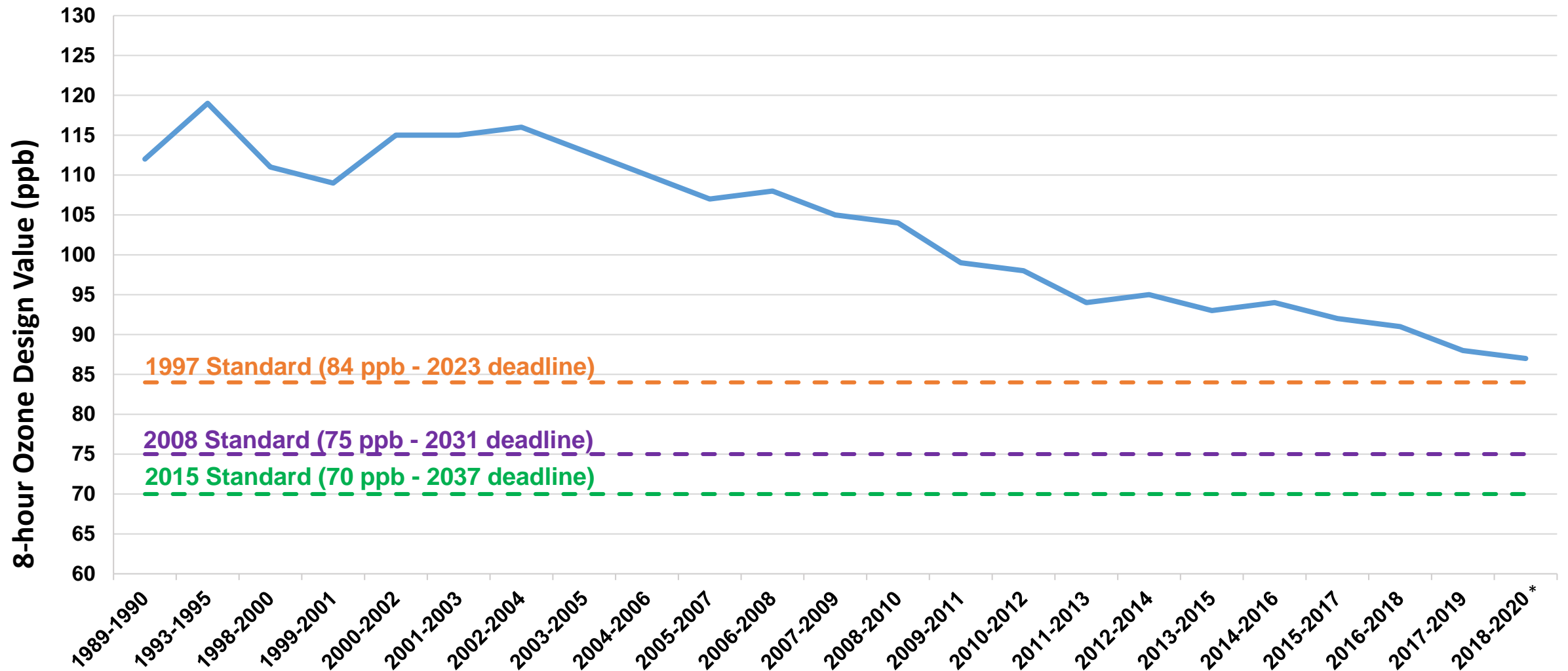
- Valley-wide significant reduction in days exceeding the federal ozone standards*:
 - Over 90% reduction in days over 84 ppb
 - Over 70% reduction in days over 75 ppb
 - Over 35% reduction in days over 70 ppb
- Over 90% reduction in population exposure to peak ozone values
- In 2020, Valley experienced lowest federal 8-hour ozone design value on record*
 - Demonstrates 91% progress towards meeting 84 ppb standard (2023 deadline)



Source: Craig Kohlruess Photography

*excluding 2020 wildfire impacts

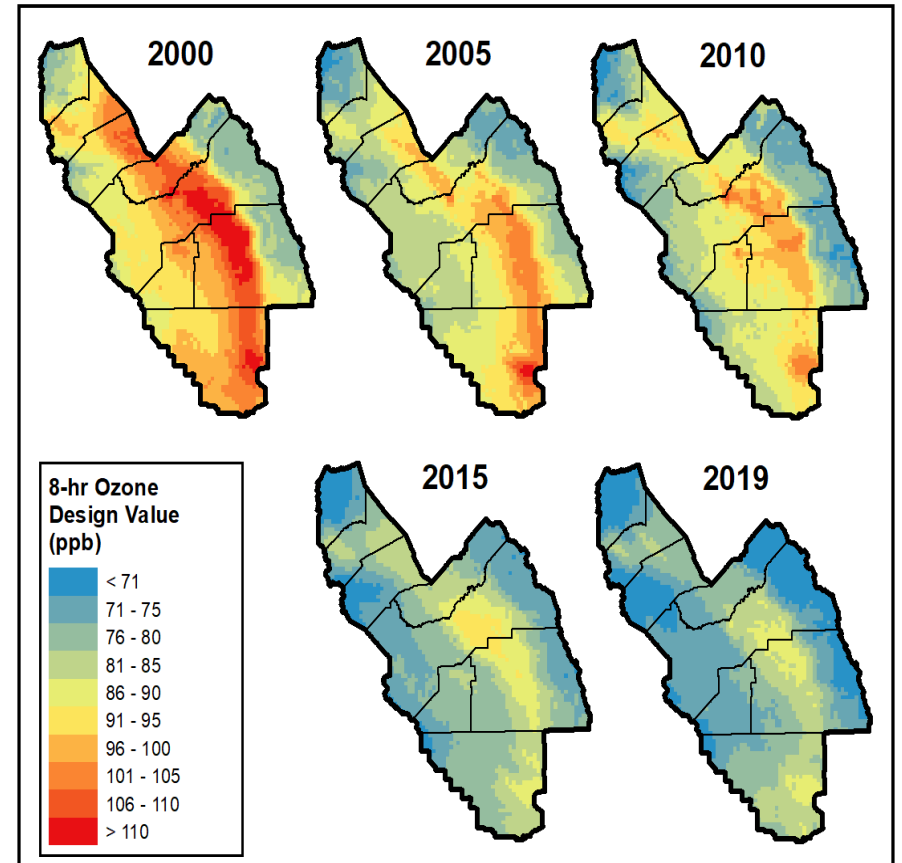
Valley 8-hour Ozone Design Value Trend



*Year 2020 excludes data impacted by wildfire emissions

New Plan Required for 2015 Ozone Standard

- National Ambient Air Quality Standards (NAAQS) reevaluated every 5 years by CASAC (Clean Air Scientific Advisory Committee) based on latest health science
 - 8-hour ozone standards: 1997, 2008, 2015
- October 2015 – EPA lowered 8-hr standard from 75 ppb to 70 ppb
- In 2018, EPA designated Valley as “Extreme” nonattainment for 2015 Ozone Standard
- District required to adopt new Ozone Plan by August 2022 with attainment deadline of 2037 (*2022 Ozone Plan*)



Agency Roles

Federal



US EPA

Regulates stationary, area, and mobile sources including interstate transportation



Trains



Ships



Planes

State



CARB

Regulates mobile and area sources of air pollution



Cars



Trucks



Buses

Local

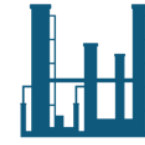


Local Air Districts

Regulates stationary and area sources of air pollution



Factories



Refineries

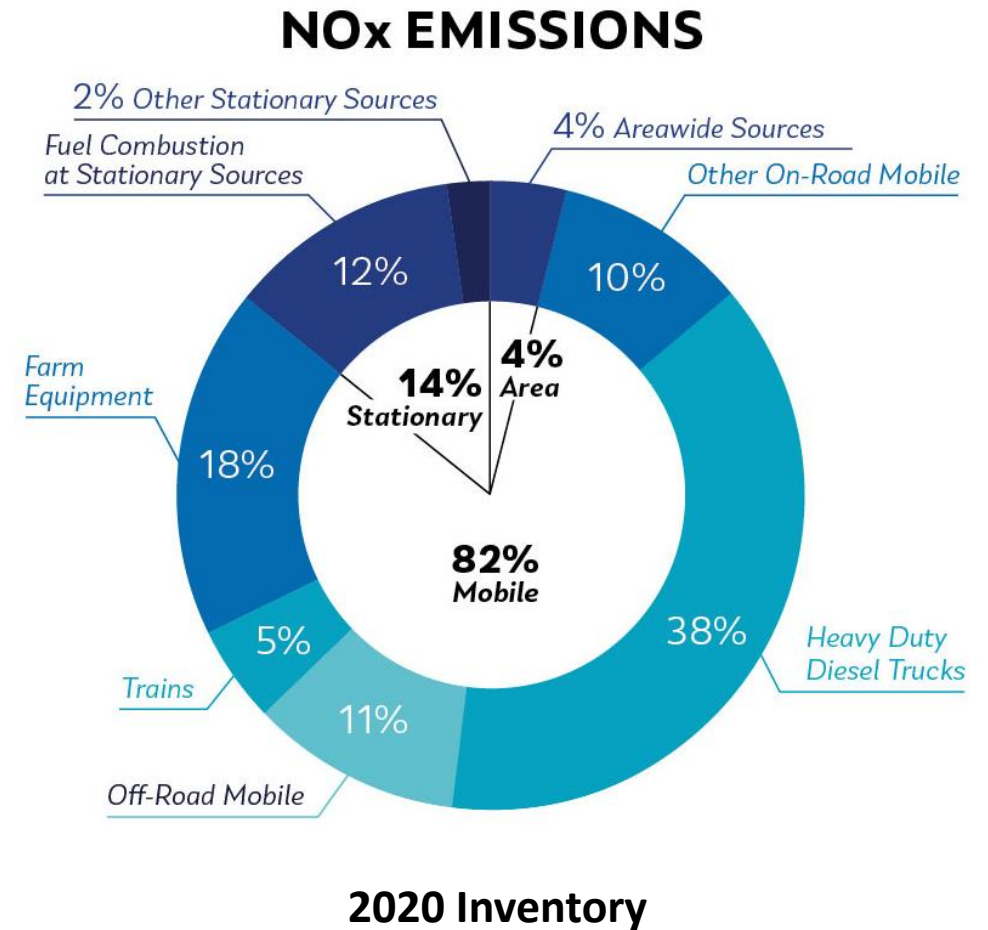


Residential woodstoves

Source: CARB

2022 Ozone Plan

- Despite significant progress, substantial further reductions in NOx emissions needed to attain new 2015 federal 8-hour ozone standard
- Over 80% of remaining NOx emissions in Valley come from mobile sources under state and federal jurisdiction
 - Important that continued efforts to reduce emissions from passenger vehicles, heavy duty trucks, locomotives, and other mobile sources be pursued
- *2022 Ozone Plan* will build on existing air quality strategies, and comprehensive NOx emissions reduction strategies in existing adopted ozone and PM2.5 plans will greatly contribute to meeting new ozone standard



Ongoing Mobile Source Emission Reductions Critical for Attainment

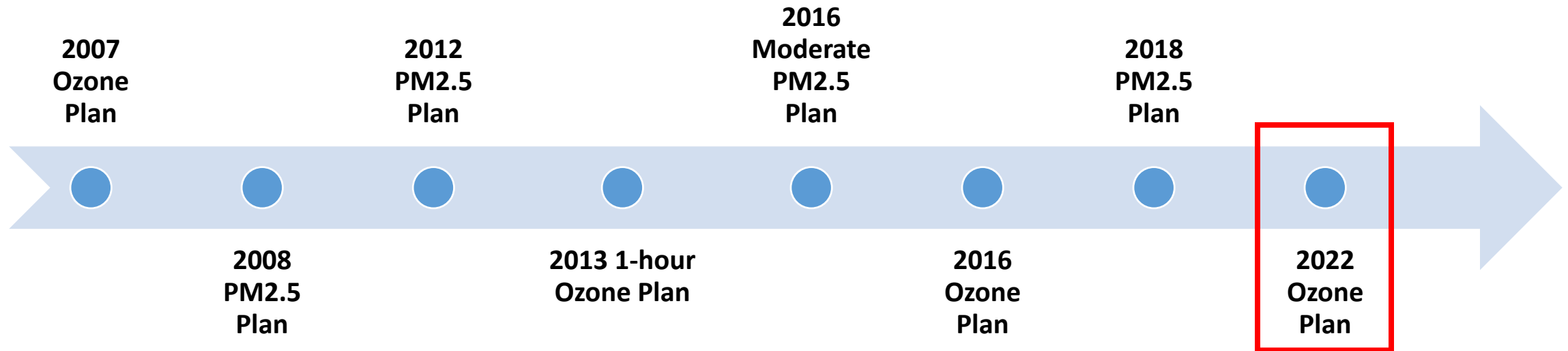
- CARB staff developed “2020 Mobile Source Strategy” – final presentation to the CARB Board in October 2021
- CARB State SIP Strategy will further define state measures – action expected Summer 2022
- Critical that State mobile source strategy address Valley’s near-term public health and attainment needs
 - Fulfilling existing near-term commitments essential to attainment and protection of public health
- Stronger federal action on mobile sources at national level also essential to attainment
 - District has advocated for stronger heavy duty truck, locomotive, and other national standards

Ongoing Analysis and Emissions Reductions

- District has demonstrated leadership in developing and implementing groundbreaking regulatory strategies to reduce emissions from stationary and area sources
 - Most stringent regulatory emissions control program in the nation
- *2022 Ozone Plan* will include robust and exhaustive effort from District to identify potential emission reduction opportunities
 - Evaluations to capture relevant background information, examine potential emission reduction opportunities for technological and economic feasibility, and make recommendations for appropriate District actions moving forward

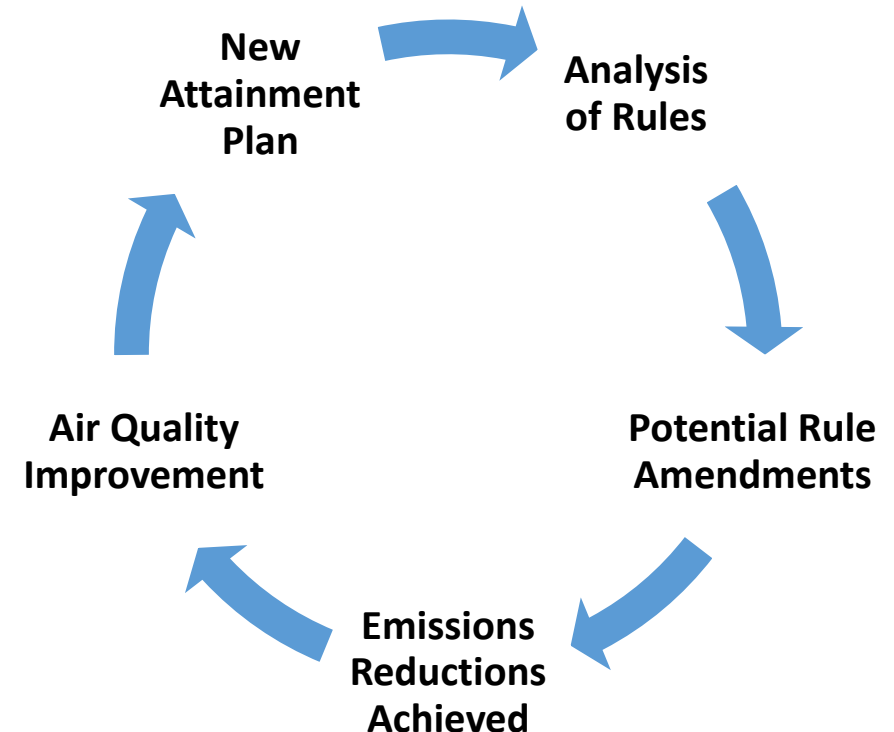
Valley Attainment Strategies

- Ozone and PM2.5 attainment plans built upon the foundation of previous strategies
 - Requiring updated rule stringency analysis, potential rule amendments, and ongoing emissions reductions
 - NOx emission reductions cornerstone of attainment strategies for both ozone and PM2.5



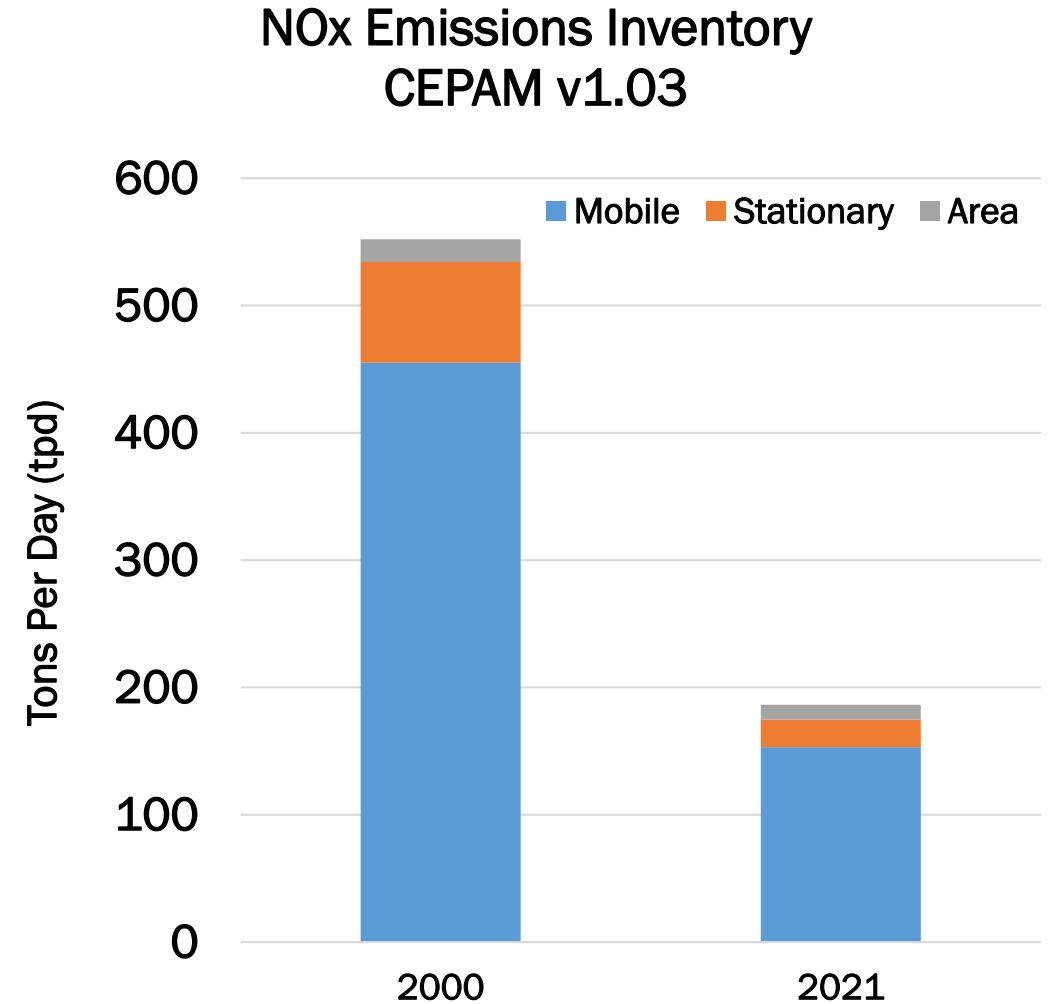
Ongoing Emissions Reduction Evaluation

- District reevaluates existing regulations and explores all potential measures for all source categories
 - District amends rules as emission reduction opportunities are identified
- District rules are developed and amended through robust public process, including:
 - Review of available control technology
 - Cost effectiveness analysis
 - Socioeconomic analysis
 - Emission reduction analysis
 - Rule consistency analysis
 - Evaluation of environmental impacts



Ongoing Emissions Reductions

- District continues to achieve emissions reductions from actions taken to address previous plan commitments and from other additional measures:
 - Launch of new incentive programs
 - Adoption of amendments to numerous existing rules
 - Other additional measures
- Emissions inventory shows significant decrease in NO_x emissions from 2000 to current year



Recent District Progress in Adopting Clean Air Measures: Enhanced Stationary Source Measures

- Rule 4311 – industrial flares across oil and gas production, refineries, landfills, wastewater treatment plants, and other sources
- Rules 4306/4320 – boilers, steam generators, and process heaters at wide range of industrial sources
- Rule 4702 – internal combustion engines at wide range of industrial and agricultural sources
- New underfired charbroiler strategy focused on engagement with restaurants, technology advancement, and future regulatory consideration



Upcoming District Measures

- District continuing to develop additional emission reduction measures for Board consideration, including:
 - Rule 4354 – Glass Melting Furnaces
 - Rule 4352 – Solid Fuel-Fired Boilers, Steam Generators, and Process Heaters
 - Rules concerning Leak Detection and Repair requirements
 - Rule 4550 – Conservation Management Practices
 - Emissions Reductions from Burn Cleaner and other SIP-creditable incentive programs
- On track to meet emission reduction commitments needed for attainment of standards addressed by *2018 PM2.5 Plan*

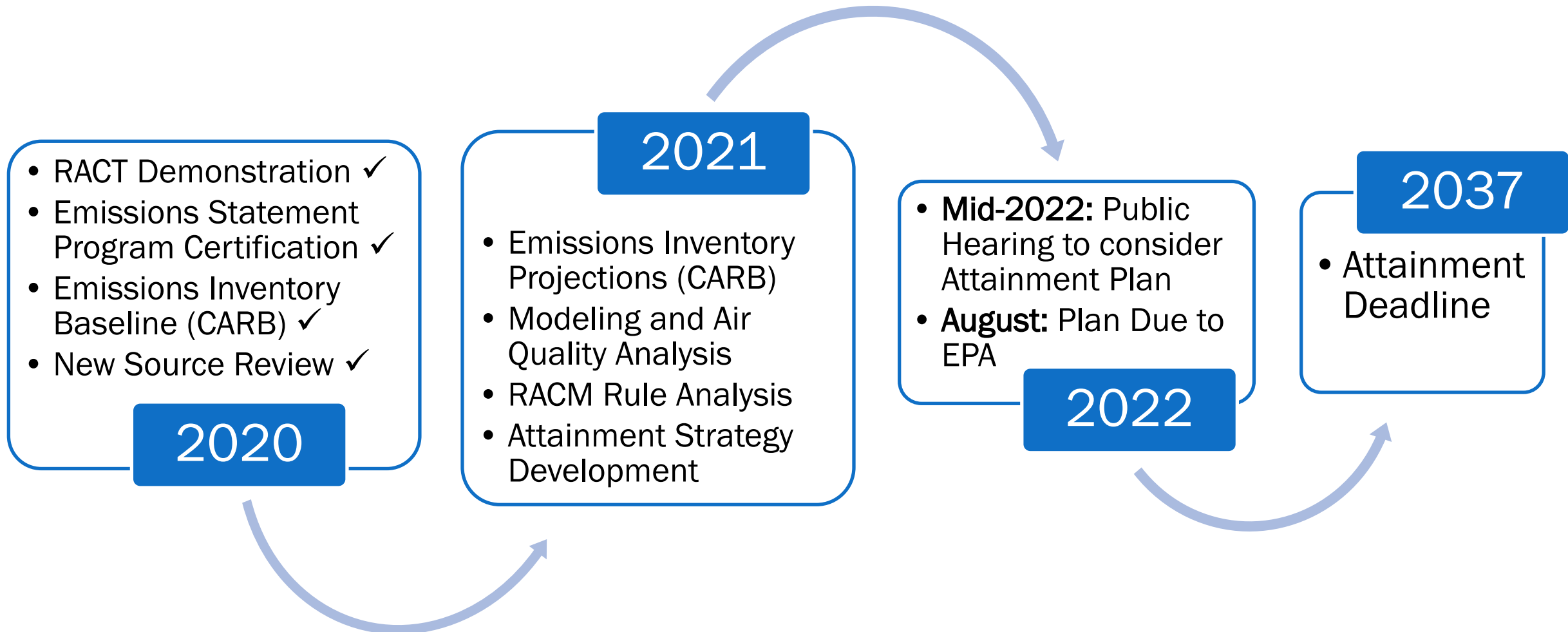
Reasonably Available Control Measures (RACM)

- CAA 172(c)(1) requires nonattainment plans for all NAAQS to provide for the implementation of all RACM as expeditiously as practicable, including, at a minimum, RACT, and to provide for the attainment of the NAAQS
 - RACM can be defined as those emission control measures that are technologically and economically feasible and when considered in aggregate, would advance attainment date by at least one year
- RACM requirements apply to areas required to submit an attainment demonstration
 - Required for areas classified Moderate and above for Ozone
- Required as needed for expeditious attainment and to meet any reasonable further progress (RFP) requirements

RACM Demonstration

- District, CARB, and Metropolitan Planning Organizations (MPOs) will complete required RACM demonstrations:
 - District: Stationary and area sources
 - CARB: Mobile sources
 - MPOs: Transportation control measures
- District RACM demonstration will build off analyses completed for District's *2020 RACT SIP*:
 - Identify rules and source categories (including non-CTG and non-major sources) that can be strengthened
 - Compare District rules to those adopted by other air districts with higher and/or comparable classifications
 - Evaluate potential emission reductions, technical feasibility, cost, and timing of potential implementation and reductions
- Potential RACM (stationary, area, mobile, etc.) must be adopted if NO_x and VOC reductions advance attainment date by at least one year

Planning Requirements for 2022 Ozone Plan





2022 State Strategy for the State Implementation Plan

San Joaquin Valley: 70 ppb Ozone Workshop
October 12, 2021

2022 State SIP Strategy

- Background and Purpose
- Potential Measures
- Federal Actions Needed
- Public Measure Suggestions
- Moving Forward

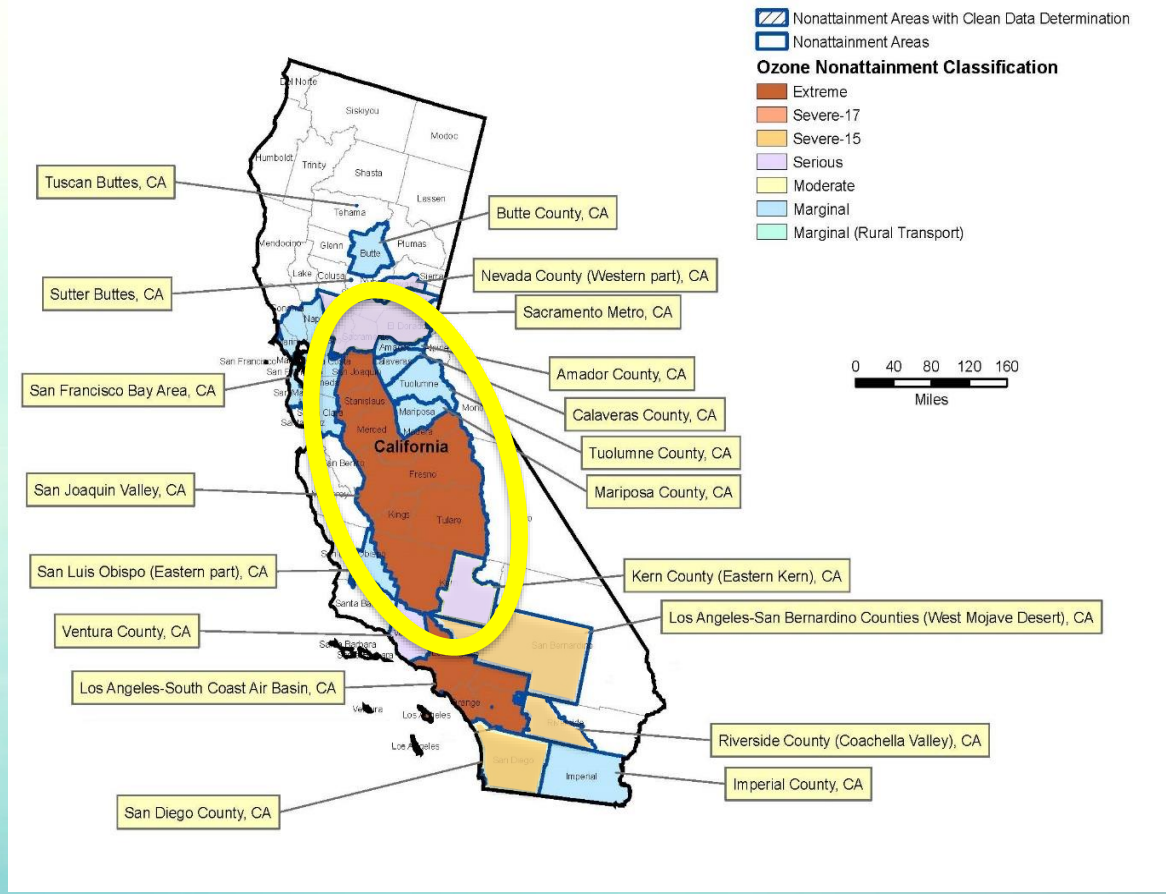
Background and Purpose

70 ppb 8-hour Ozone Standard

- U.S. EPA revised the 8-hour ozone standard to 70 ppb in 2015
- 19 areas in California are designated nonattainment
- San Joaquin Valley is an Extreme area, with most stringent SIP requirements

California 8-hour Ozone Nonattainment Areas (2015 Standard)

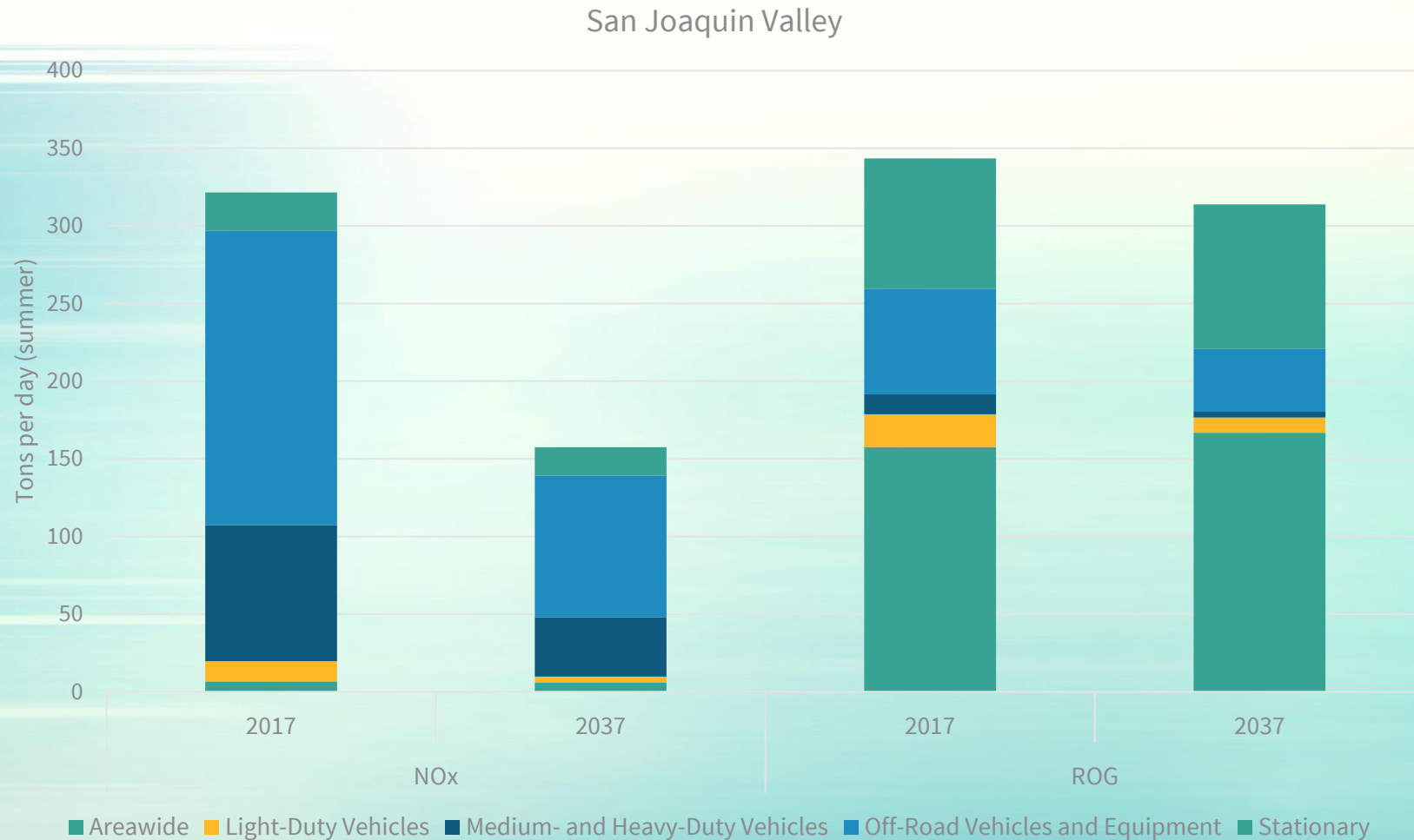
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Attainment Plans and 2022 State SIP Strategy



Progress Under Existing Adopted Programs



CARB regulations reduce on-road mobile NOx emissions in the Valley by more than 55 percent between 2017 and 2037

CARB Actions on Previous SIP Commitments

2020

Heavy-Duty Omnibus Regulation

Advanced Clean Trucks Regulation

2021 and 2022

Advanced Clean Cars II

Heavy-Duty Inspection and Maintenance Program

Small Off-Road Equipment Regulation

Zero-Emission TRU (Part I)

Ongoing

Incentivized Agricultural Equipment Turnover

Incentivized Heavy-Duty Truck Turnover

Incentivized Off-Road Equipment Turnover



2022 State SIP Strategy: Potential Measures & Actions

On-Road Mobile Source Control Measures

- Advanced Clean Fleets Regulation
- Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles (Phase 3)
- On-Road Motorcycles New Emissions Standards
- Clean Miles Standard Regulation



Off-Road Vehicle and Equipment Control Measures

- Tier 5 Off-Road New Compression-Ignition Engine Standards
- Amendments to the In-Use Off-Road Diesel Fuel Fleets Regulation
- Transport Refrigeration Unit Regulation
- Commercial Harbor Craft Amendments
- Cargo Handling Equipment Amendments



Off-Road Vehicle and Equipment Control Measures

- Off-Road Zero-Emission Targeted Manufacturer Rule
- Clean Off-Road Fleet Recognition Program
- Clean Off-Road Equipment Voucher Incentive Program – Construction (CORE-CON)
- Spark-Ignition Marine Engine Standards



Control Measures for Other Sources

- Amendments to the Consumer Products Regulation
- Zero-Emission Standards for Space and Water Heaters



Primarily Federally-Regulated Sources: Potential CARB Control Measures

In-Use Locomotive Regulation – concepts include:

- Spending Account
- In-use Operational Requirements
- Idling Limit
- District Level Reporting



Federal Actions Needed

On-Road Heavy-Duty Vehicles	Off-Road Equipment	Ocean-Going Vessels
On-Road Heavy-Duty Low-NOx Engine Standards	Off-Road Equipment Tier V Standard for Preempted Engines	More Stringent NOx and PM Standards for Ocean-Going Vessel Requirements
On-Road Heavy-Duty Vehicle Zero-Emission Engine Standards	Off-Road Zero-Emission Standards Where Feasible	Cleaner Fuel and Visit Requirements for Ocean-Going Vessels
Locomotives	Aviation	
More Stringent National Locomotive Emission Standards	More Stringent Aviation Engine Standards	
Zero-Emission Standards for Switch Locomotives	Cleaner Fuel and Visit Requirements for Aviation	
Address Locomotive Remanufacturing Loophole	Zero-Emission Airport On Ground Operation Requirements	

Public Measure Suggestions

On-Road Heavy-Duty Vehicle Useful Life Regulation

Additional Incentive Programs – Zero-Emission Trucks

Enhanced Transportation Choices

Suggested Control Measure – Indirect Source Rule

BACT/BARCT Determinations

Additional Building and Appliance Emission Standards

Pesticides Regulation

Enhanced Bureau of Automotive Repair Consumer Assistance Program

Moving Forward

Timing and Next Steps of CARB State SIP Strategy

2022 State SIP Strategy: 2 nd Public Workshop	October 19, 2021
Release Draft 2022 State SIP Strategy	Winter 2022
Informational Update to the Board	Early Spring 2022
2022 State SIP Strategy: 3 rd Public Workshop	Spring 2022
Release Proposed 2022 State SIP Strategy	Early Summer 2022
Board Consideration	Summer 2022

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>

2022 Ozone Plan Development Schedule

Tentative Date	Upcoming Topics	
April 2021	Public Workshop: General background of Plan requirements and development process	✓
July 2021	Technical Working Group Public Meeting: Emissions inventory and modeling	✓
October 2021	Technical Working Group Public Meeting(s): Stationary and Area source measures, RACM, State SIP Strategy	✓
1 st Q 2022	Technical Working Group Public Meeting: Updates on strategy development; modeling analysis; RACM demonstration	
1 st Q 2022	Publish initial chapters and appendices of Plan for public review	
1 st Q 2022	Public Workshop: Review of proposed attainment plan	
May 2022	Publish proposed plan for 30-day public review/comment	
June 2022	Public Hearing: for Governing Board to consider adoption of proposed plan	

Contact

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Comments/Questions

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