

Agenda Item 3

Zero Emission Technology for Stationary and Mobile Sources

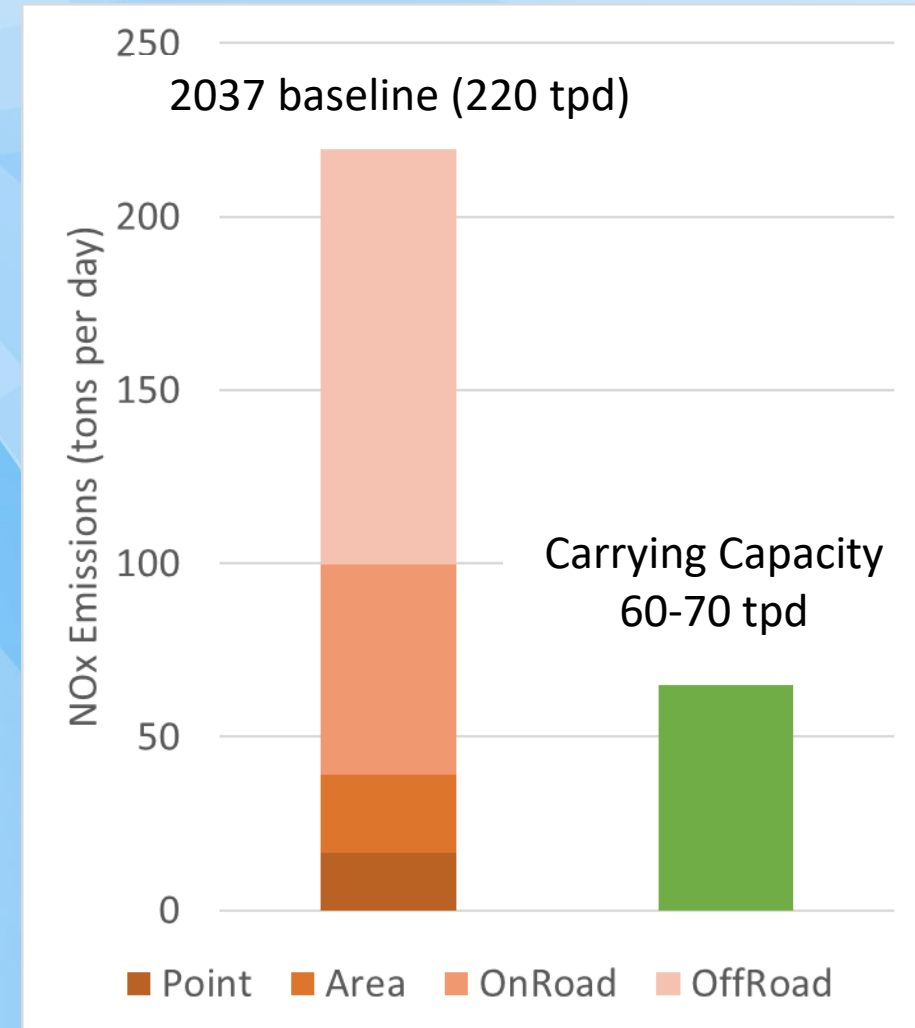
**2022 Air Quality Management Plan (AQMP)
Control Measures Workshop – Morning Session**

November 10, 2021

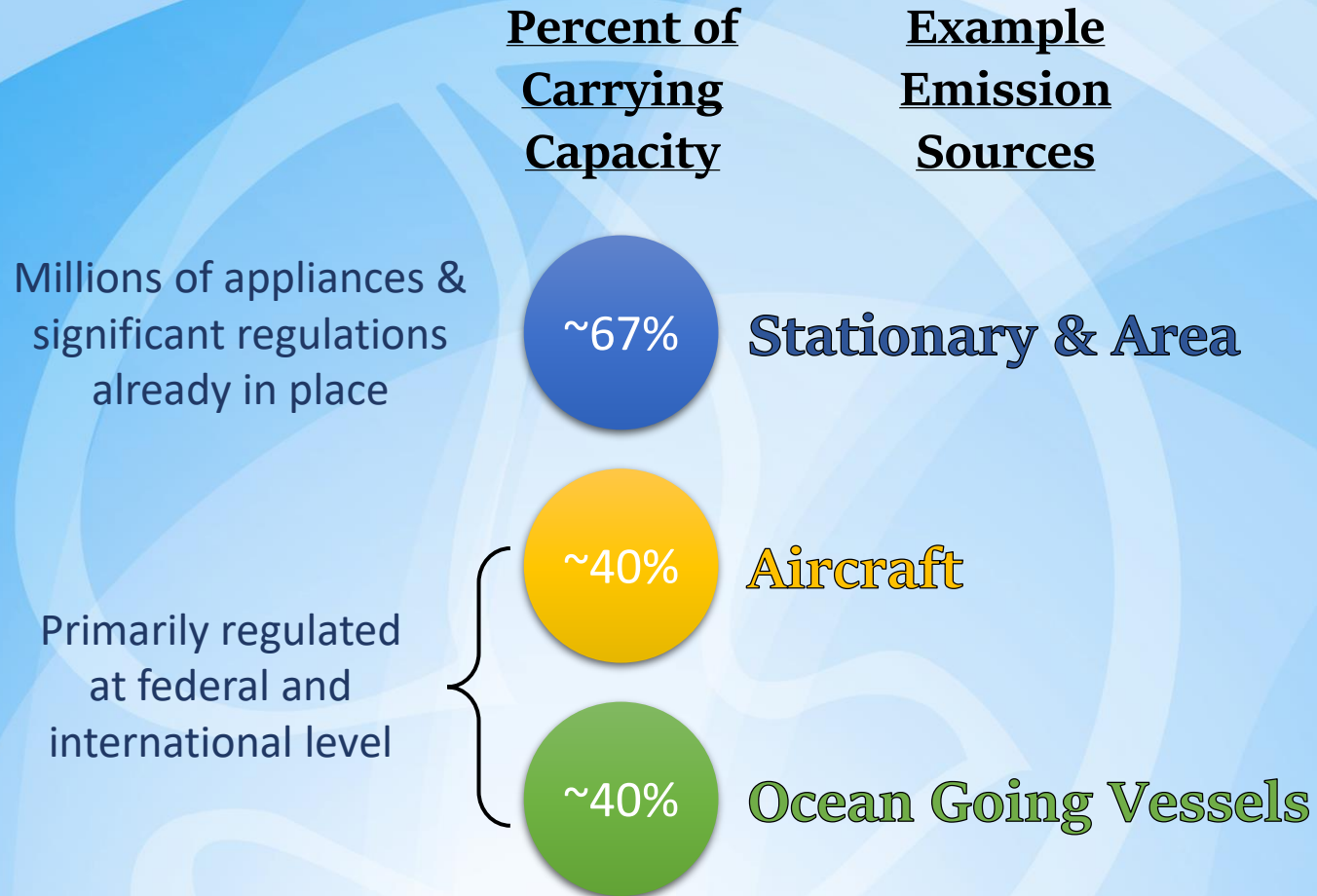


Background and Purpose

- 2022 AQMP focuses on attaining the 70 ppb 8-hour ozone National Ambient Air Quality Standard (NAAQS)
 - South Coast Air Basin's (SCAB) attainment due – 2037
 - Coachella Valley's attainment due – 2032
- To attain the 70 ppb standard in 2037, ~70% reductions are needed beyond the baseline



Hurdles to Developing Controls

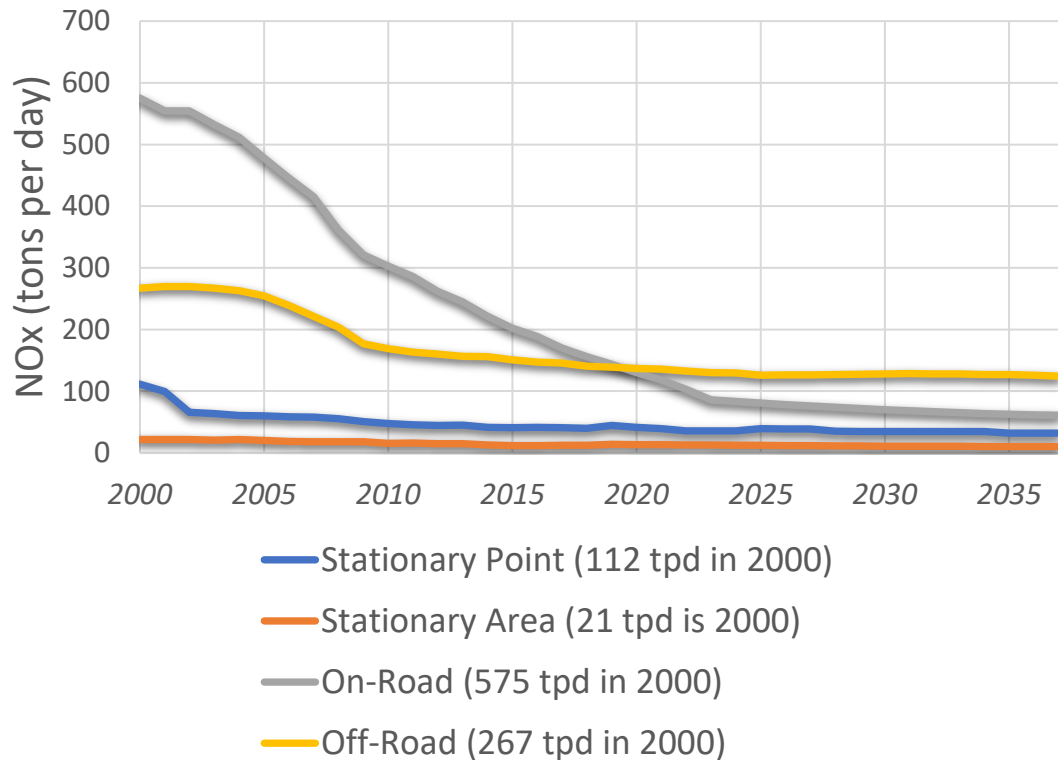


Some emission sources are difficult to identify new control measures using traditional approaches, yet they make up a substantial part of the inventory

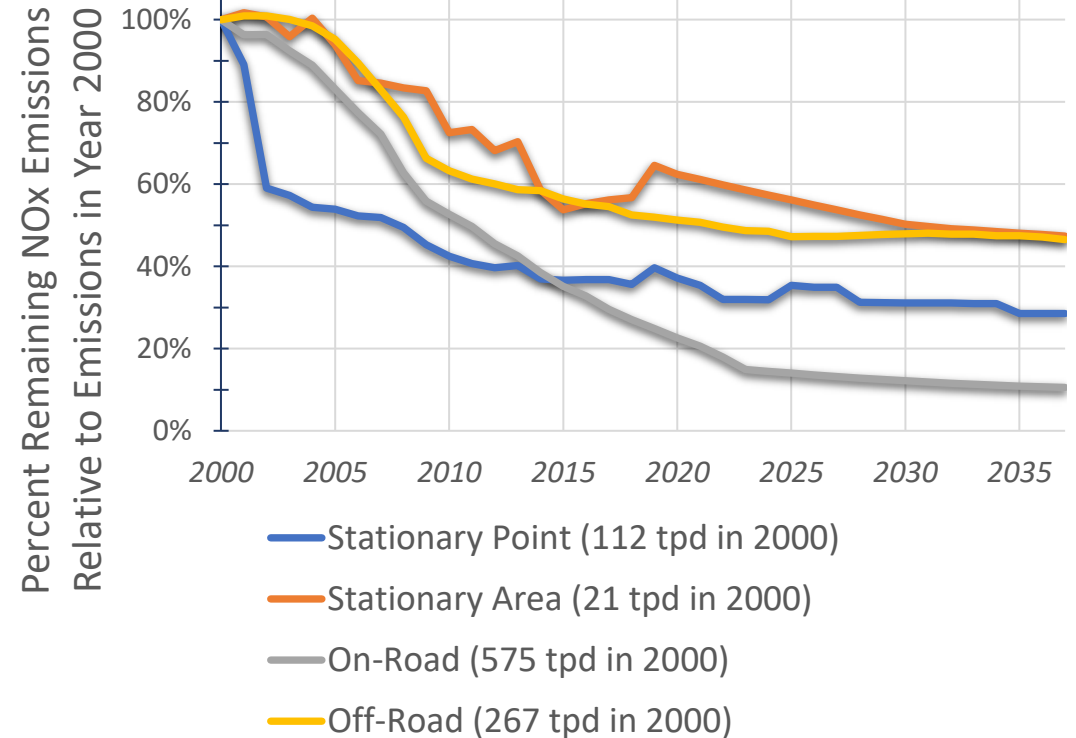


Historic and Projected Baseline NOx Emissions in South Coast

Total NOx Emissions by Major Emission Category

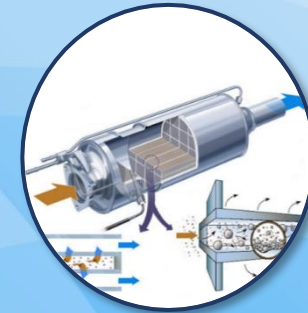


Percent Remaining Emissions by Major Emission Category



Additional Hurdles – cont'd

Air quality regulation and planning traditionally relies on additional tailpipe/exhaust stack controls, new engines technology, or fuel improvements tailored to individual use cases



It is not clear how this traditional approach can result in additional ~70% control in South Coast

Overcoming the Hurdles

- Only viable solution to achieving 70 ppb ozone standard requires significant push to zero emissions technology
- This approach requires economy-wide transition to different fuels



Key Questions on a Zero Emissions Approach

- Which fuels for which applications?



- What does the pathway look like through time?



- How can this be made most affordable?



- Ensures adoption at scale, and available equitably across society

Potential Approach for 2022 AQMP

Traditional control measure development

- Maximize implementation of *existing* zero and low NO_x technologies
- New zero emissions and ultra-low NO_x technologies still need to be invented for many use cases (stationary and mobile)

Use flexibility provided by Clean Air Act 182(e)(5)

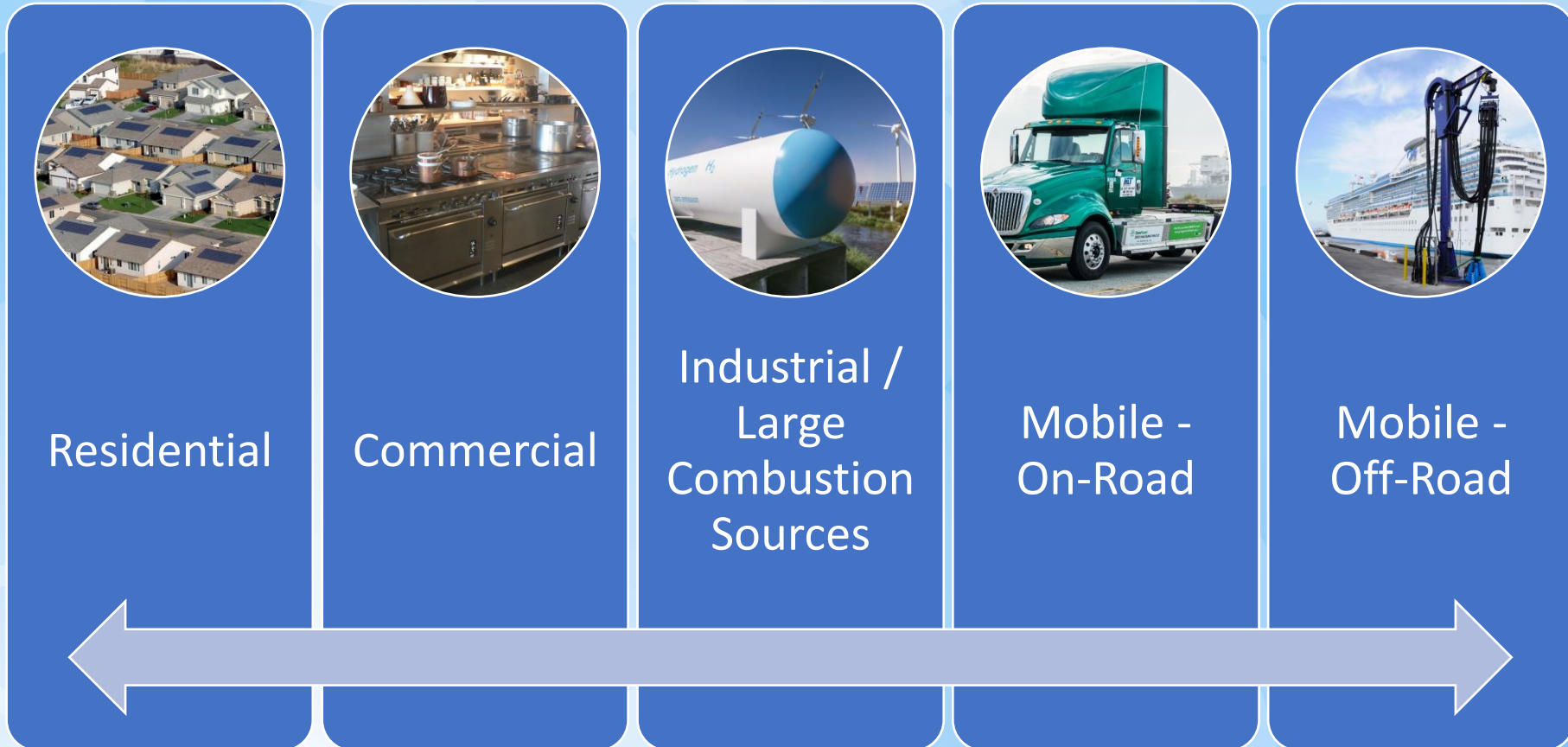
New analyses and processes needed

- Technology development
- New funding and programs needed for research, development demonstration, and deployment
- Analysis of fuels switch broadly across sectors
- Costs of different fuel mixes
- Identification of new regulations, policies, incentives

Include preliminary analysis in 2022 AQMP and establish future workplans



Widespread Deployment of Zero Emission Technology Needed for All Sectors



Deployment Path for ZE Technologies



Zero Emission
Technology

Not Yet
Available

Technology
Pathway

New ZE
Technology

Available Now
/ Near Term

Policy Pathway

Lower Cost

Accelerated
Turnover

Widespread
Adoption

Continued improvement of remaining combustion equipment/vehicles



Technology Pathway



Every ZE Technology is currently at a different point along this pathway.



Policy Pathway

Market
Assessment

Policy
Development

Incentives &
Mandates

ZE Policies are also at different points along this pathway.



Policy Pathway: Infrastructure

- Existing infrastructure is currently not sufficient for widespread adoption of ZE technologies
- ZE Infrastructure will not only be needed for mobile sources but also for stationary sources
- ZE technology and infrastructure needs assessment of each sector to inform policy decision making





Policy Pathway: Policy Coordination

- Widespread adoption of fuel switch policies and technologies will be helped by having a realistic picture of market needs
- To achieve district-wide fuel switch, policy drivers and coordination with other agencies will be needed
 - CARB, CEC, CPUC, CalSTA, EPA, Local Utilities, SCAG, Local Governments, etc.

Example Incentives:

- South Coast AQMD's Residential EV Charging Incentive Program
- CARB's HVIP Program
- FTA's Low or No Emission Vehicle Program

Example Mandates:

- South Coast AQMD's WAIRE Program
- CARB's Advanced Clean Truck and Fleet Rules
- CEC's Building Energy Efficiency Standards



Next Steps

- **Next series of Mobile Source Working Group meetings in December 2021 / January 2022**
 - **Aircraft**
 - **Construction and Industrial Equipment**
 - **Heavy-Duty Trucks**
 - **Ocean-Going Vessels**
 - **Zero Emission Infrastructure**