



Cost-Effectiveness

South Coast Air Quality Management District

October 5, 2022

Background

- California Health & Safety Code requires consideration of cost-effectiveness of control measures in the AQMP
 - Must evaluate cost-effectiveness of each control measure to the greatest extent possible
 - Control measures must be ranked by cost-effectiveness
- Cost-Effectiveness is the total cost (capital and annual operating costs) to achieve a standard over the emission reductions for the life of the equipment *compared to a business-as-usual scenario*

$$\text{Cost-Effectiveness} = \frac{\text{Total Costs}}{\text{Tons of Emissions Reduced}}$$

High and Low Cost-Effectiveness Scenarios

High Cost-Effectiveness

Low Cost with
Very Low Reductions

$$\frac{\$50,000}{0.5 \text{ ton}}$$

High Cost with
Moderate Reductions

$$\frac{\$1,000,000}{10 \text{ tons}}$$

Cost-Effectiveness
\$100,000/ton

High cost-effectiveness does not
necessarily mean high cost

Low Cost-Effectiveness

Low Cost with
Moderate Reductions

$$\frac{\$50,000}{10 \text{ tons}}$$

High Cost
Very High Reductions

$$\frac{\$1,000,000}{200 \text{ tons}}$$

Cost-Effectiveness
\$5,000/ton

Low cost-effectiveness does not
necessarily mean low cost

Requirements for Cost Effectiveness Under the Health and Safety Code

2022 AQMP

Requires cost-effectiveness analysis of each control measure to the greatest extent possible

Requires that control measures are ranked by cost-effectiveness

Rulemaking

Must account for economic impacts when establishing BARCT standards

Requires cost-effectiveness analysis when establishing BARCT

AQMP Control Measure
Initial cost-effectiveness estimate



Proposed Rule
Comprehensive cost-effectiveness analysis

Cost-Effectiveness Analysis in Rulemaking

Comprehensive cost-effectiveness analysis conducted when establishing BARCT standards during rulemaking

Capital Costs (One-Time Costs)

- Equipment costs
- Installation costs
- Permitting fees

Annual Costs (Recurring Costs)

- Labor and maintenance
- Fuel, Electricity, etc.
- Source Testing
- Monitoring, Reporting, and Recordkeeping
- Catalyst, filters or other materials for pollution controls

Bottom-Up Approach

- Facility-specific information where available
- Use actual cost data where available from affected facilities and equipment vendors

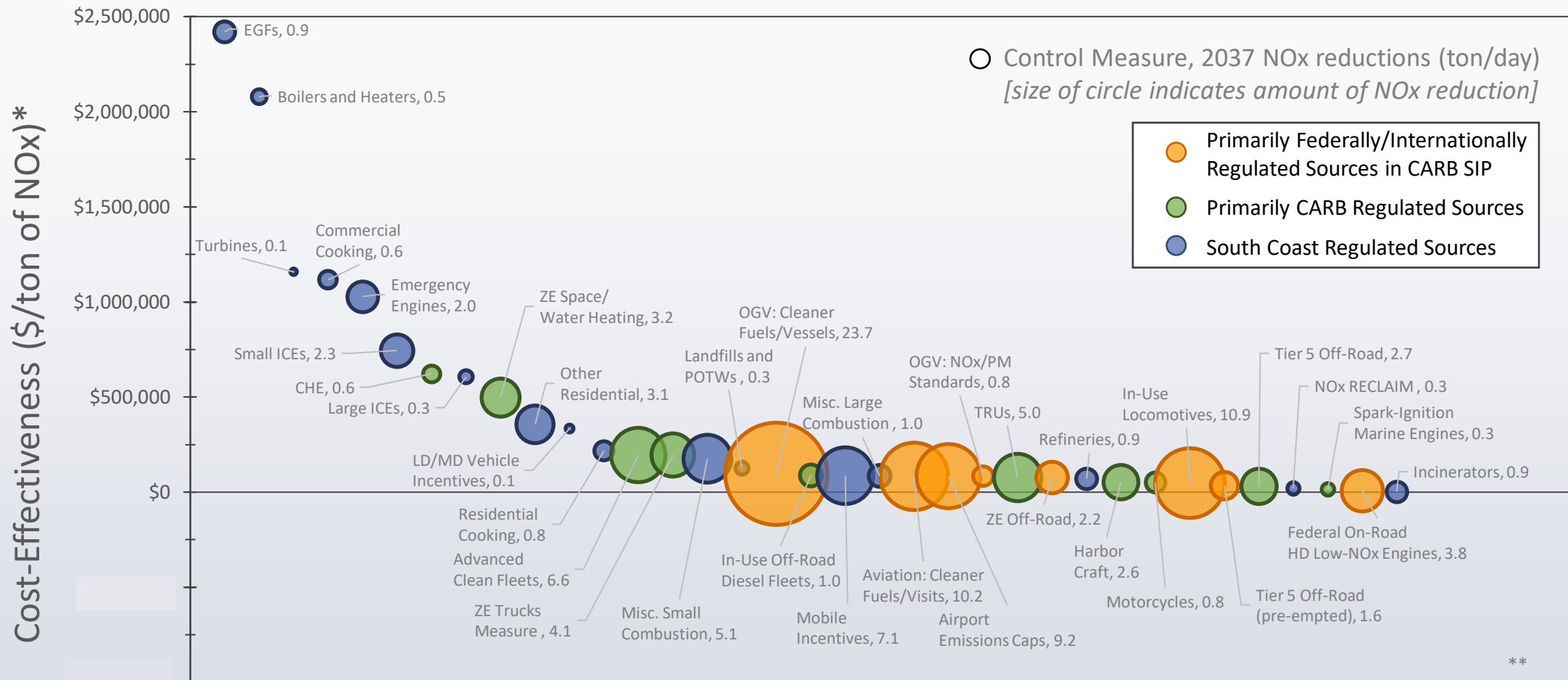
Other Considerations

- Stranded assets
- Cost savings
- Equipment life

Cost-Effectiveness Threshold for Rulemaking

- Comprehensive cost-effectiveness analysis will continue to be conducted during rulemaking
- To guide rulemaking efforts, previous AQMPs included cost-effectiveness thresholds to assess the cost-effectiveness of a proposed rule
- If the average cost-effectiveness exceeded the threshold, previous AQMPs suggested that the rulemaking include:
 - A more rigorous cost-effectiveness analysis
 - Alternatives to lower the cost
 - Additional public meetings
- Draft 2022 AQMP proposed a cost-effectiveness threshold of \$59,000/ton of NO_x reduced, which is based on past AQMP costs adjusted to inflation
- Some Board members expressed concern that \$59,000/ton may be too low
 - Particularly when considering the cost-effectiveness of measures in the 2022 AQMP

Control Measure Cost-Effectiveness and NOx Emission Reductions



*Using Levelized Cash Flow Method
(modified for costs incurred through 2037)
**Clean Miles Standard, [0.1 tpd] (not shown)
has a cost savings

Control Measures Ranked by Cost-Effectiveness

Alternative Cost-Effectiveness Threshold

- Staff is proposing an alternative cost-effectiveness threshold based on public health benefits instead of cost of pollution controls
- Public health benefits threshold monetizes public health impacts associated with specific air contaminants such as:
 - Premature deaths, lost school and work days, hospital admissions, respiratory and cardiovascular symptoms
- Public health benefits threshold:
 - Accounts for health impacts and overall benefit to society from improved air quality
 - Used by U.S. EPA and CARB for rulemaking



Alternative Cost-Effectiveness Threshold (cont.)

- Revised Draft 2022 AQMP proposed an alternative public health benefit screening threshold of:
 - \$325,000/ton of NOx reduced
 - Based on U.S. EPA studies and 2016 AQMP
- Threshold would be used as a guide for evaluating the:
 - Cost-effectiveness and incremental cost-effectiveness for stationary and mobile source rulemakings
 - If cost-effectiveness or incremental cost-effectiveness of the proposed rule exceeds the threshold, public meeting would be required
 - Public meeting would identify alternatives to reduce the cost-effectiveness
- Public hearing for proposed rules includes cost-effectiveness analysis and will be presented to the Board for their consideration