Racing toward Ozone Attainment: The 2015 Ozone Transport FIP

CIBO
May 10,2022
Environment, Energy & Sustainability Meeting

Today's Discussion

- 2015 Ozone NAAQS
- Clean Air Act Requirements for NAAQS Planning
- Proposed Ozone Transport FIP
- Discussion

It’s May in Indy!

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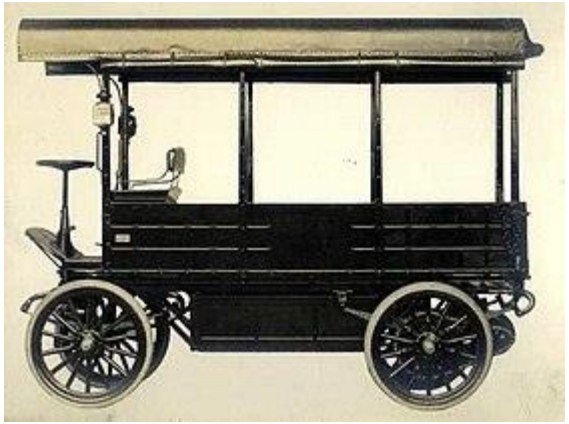


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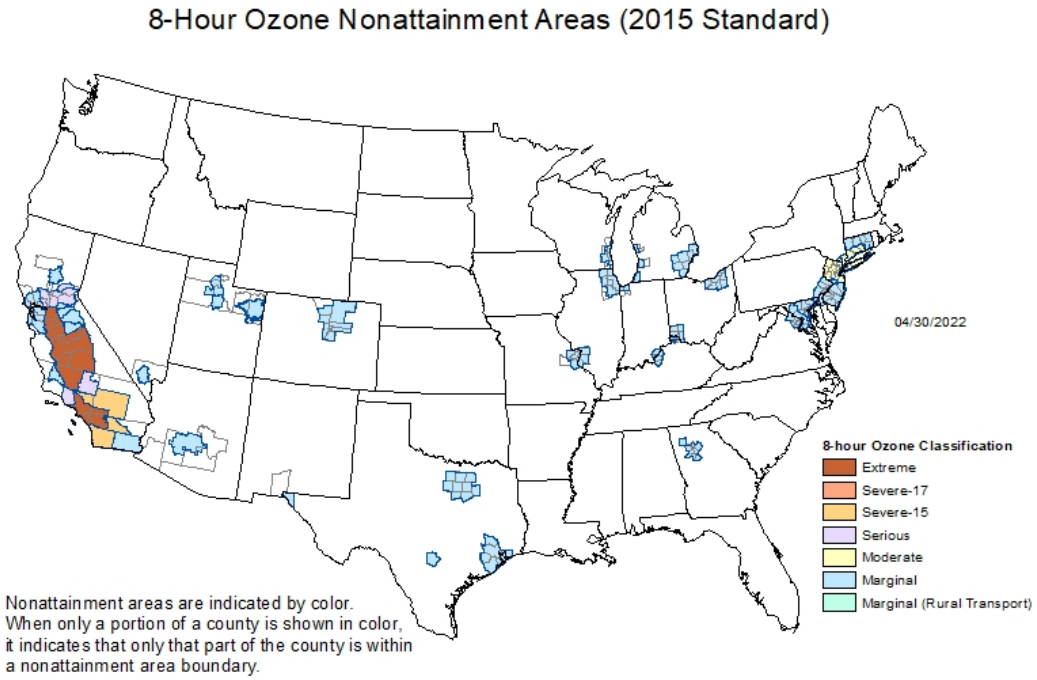
2015 Ozone NAAQS

2015 revisions to ozone NAAQS established 70 ppb standard

- Marginal - 3 years from effective date of designation
- Moderate - 6 years from effective date of designation
- Serious - 9 years from effective date of designation
- Severe - 15 years (or 17 years) from effective date of designation
- Extreme - 20 years from effective date of designation



SIP Obligations

- Implementation of RACT
- Vehicle Inspection & Maintenance/RFG
- Emissions Inventory updates
- More stringent permitting in non-attainment areas
- *Preparation and submittal of **Good Neighbor SIPs** to reduce interstate transport that interferes with downwind attainment*

State SIP Submittals

- Infrastructure SIP submittals were due in October 2018
- States made required submissions
- EPA made completeness determinations for many Midwest state submittals in mid-2019, but never proposed approval or disapproval of the elements

EPA Consent Decrees

- State of New York, et al. v Regan et al. Docket ID No. EPA-HQ-OGC-2021-0444
  - EPA failed to act to approve or disapprove Good Neighbor SIP submissions from IN, KY, MI, OH, TX and WV
  - No later than 4/30/2022, EPA must sign notices of final rulemaking to approve or disapprove the Good Neighbor SIP submissions for 21 states
  - Notwithstanding that, if EPA proposes full or partial disapproval of a SIP submission from one of the 21 states, and proposes a replacement FIP to address interstate transport by February 28, 2022, deadline for final action extended to December 30, 2022

- Downwinders at Risk et al. v Regan et al. Docket ID No. EPA–HQ–OGC–2021–0692
  - EPA failed to act to approve or disapprove Good Neighbor SIP submissions from 21 states
  - No later than 4/30/2022, EPA must sign notices of final rulemaking to approve or disapprove the Good Neighbor SIP submissions for the 21 states
  - Notwithstanding that, if EPA proposes full or partial disapproval of a SIP submission from one of the 21 states, and proposes a FIP to address interstate transport by February 28, 2022, deadline for final action extended to December 30, 2022

- Our Children's Earth Foundation v Regan Docket ID No. EPA-HQ-OGC-2021-0800-0001
  - EPA failed to act on SIP submissions made by the state of New York
  - No later than 4/30/2022, EPA must sign notices of final rulemaking to approve or disapprove the submissions from New York
  - Notwithstanding that, if EPA proposes full or partial disapproval of a SIP submission and proposes a replacement FIP by February 28, 2022, deadline extended to December 30, 2022

2015 Ozone NAAQS Good Neighbor SIP Disapproval

- February 22, 2022: EPA proposes disapproval of 19 GNS submittals
  - Alabama, Arkansas, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, New Jersey, New York, Ohio, Oklahoma, Tennessee, Texas, West Virginia, and Wisconsin
  - Starts clock on two-year period for states to remedy deficiencies in Good Neighbor SIPs
- SIPs for Kansas and Iowa proposed for approval by EPA

https://www.trinityconsultants.com/news/epa-proposes-to-disapprove-interstate-transport-elements-of-19-states-ozone-sips

2015 Ozone NAAQS Good Neighbor SIP Disapproval

- EPA's rationale for disapproving the SIPs varied by state but involved several general themes
  - Many states suggested that significance should be established using a threshold of 1 ppb (consistent with EPA's 2018 guidance on significant impact levels for Prevention of Significant Deterioration permitting), rather than 0.7 ppb. EPA disagreed with this approach and pointed to use of the 0.7 ppb threshold in earlier rulemaking including the Cross State Air Pollution Rule (CSAPR).
  - EPA noted that many states did not properly identify potentially culpable sources; did not fully evaluate possible emission reduction strategies; relied on emission reductions that are not part of SIPs; and/or failed to develop permanent and enforceable emission reductions to reduce ozone impacts in downwind states.

https://www.trinityconsultants.com/news/epa-proposes-to-disapprove-interstate-transport-elements-of-19-states-ozone-sips

INDIANAPOLIS MOTOR SPEEDWAY

HOW BIG IS THE 2.5-MILE OVAL? HERE'S WHAT FITS INSIDE.

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Ozone Transport FIP

Proposed "Good Neighbor" Plan to Cut Smog Across Much of the United States

- Signed by Administrator Regan on February 28, 2022
- Published in the Federal Register on April 6, 2022 – 60-day comment period
  - Comments due on or before June 6, 2022
- Designed to ensure states meet their obligations under the Clean Air Act's "Good Neighbor" provision for the 2015 ozone National Ambient Air Quality Standards (NAAQS)
  - Requires upwind states to eliminate their significant contribution to nonattainment, or interference with maintenance, of the NAAQS in other downwind states. 42 USC 7410(a)(2)(D)(i)(I).

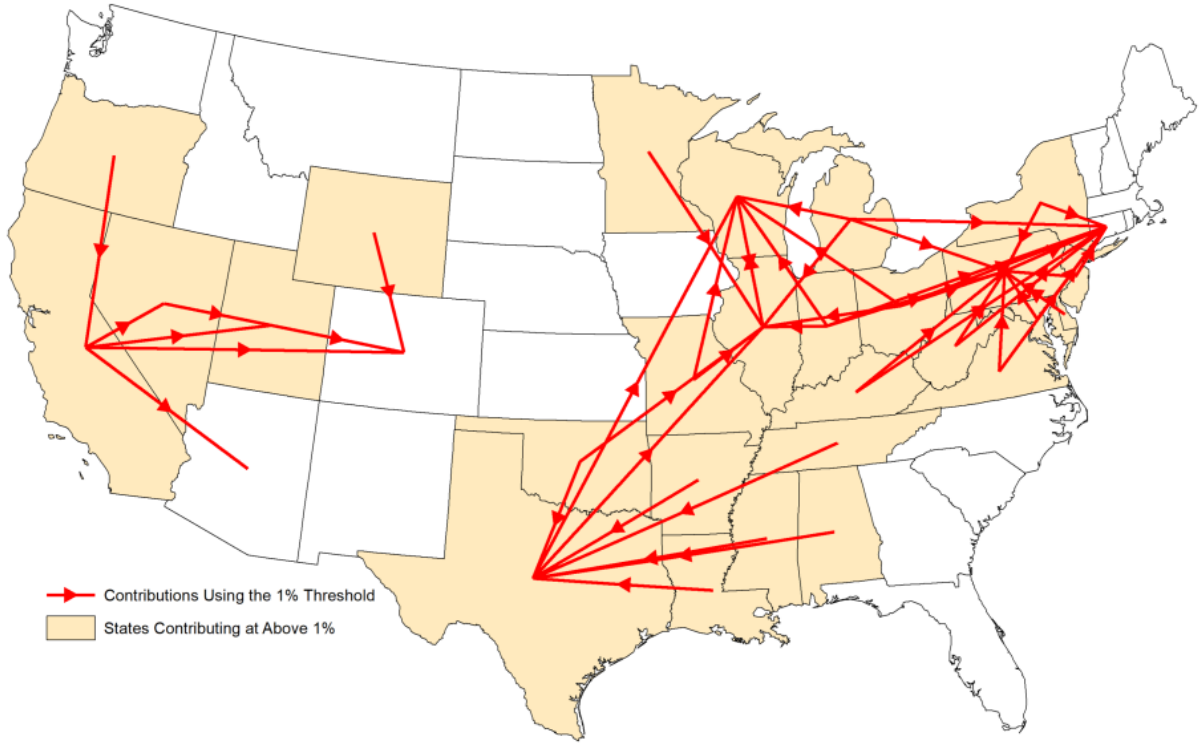
Ozone Transport FIP

- Proposed rule applies 4-step interstate transport framework for establishing Good Neighbor requirements
- Updates to keep pace with more protective NAAQS, updated evaluation of ozone transport, and latest technical analysis
- Sets forth Federal Implementation Plans (FIP) requirements for states *where EPA disapproves Good Neighbor State Implementation Plans (SIP)* and for states for which EPA has made Findings of Failure to Submit

Ozone Transport FIP

- EPA's 4-Step Interstate Transport Framework
  1. Identify downwind receptors expected to have problems attaining or maintaining the NAAQS
  2. Determine which upwind states are ''linked'' to these downwind air quality problems and thereby warrant further analysis of their emissions
  3. For states linked to downwind air quality problems, identify upwind emissions on a statewide basis that significantly contribute to nonattainment or interfere with maintenance of a standard in any area, using a multifactor analysis
  4. For upwind states that are found to have emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, implement the necessary emissions reductions within the state

Upwind State Contributions



Ozone Transport FIP

- Identifies 27 states that contribute above 1% of the NAAQS to downwind air quality problems for purposes of the Good Neighbor provision
- Determines required reductions in ozone precursor emissions (NOx) for 26 of the 27 states
- 25 states subject to requirements for Electric Generating Units (EGUs)
- **23 states subject to requirements for certain industrial source categories (non-EGUs)**

Ozone Transport FIP Non-EGU Sources

- Proposed Rule adds 40 C.F.R. §§52.40 –52.45 for sources of NOx not subject to the ozone season trading program
  - §52.40(b) defines the emissions units in specific source categories that are subject to the proposed rule
- Proposed rule covers boilers and furnaces in 5 source categories, plus RICE engines in pipeline natural gas sector and kilns in cement and concrete sector
- Proposed rule does not apply to ICI boilers in other sectors or source categories (e.g., in support of district thermal systems)

Non-EGU Units in the Ozone Transport FIP

- EPA focused its efforts to identify contributions from industry (the non-EGU sector) by identifying emission units with NOx emissions > 100 tons per year
  - By limiting the focus to potentially controllable emissions, well controlled sources that still emit greater than 100 tpy are excluded. [87 FR 20083]
  - Focus is on uncontrolled sources or sources that could be better controlled at a reasonable cost
- EPA's methodology outlined in the Non-EGU Screening Assessment
  - *Knee of the curve* analysis to determine cost effectiveness

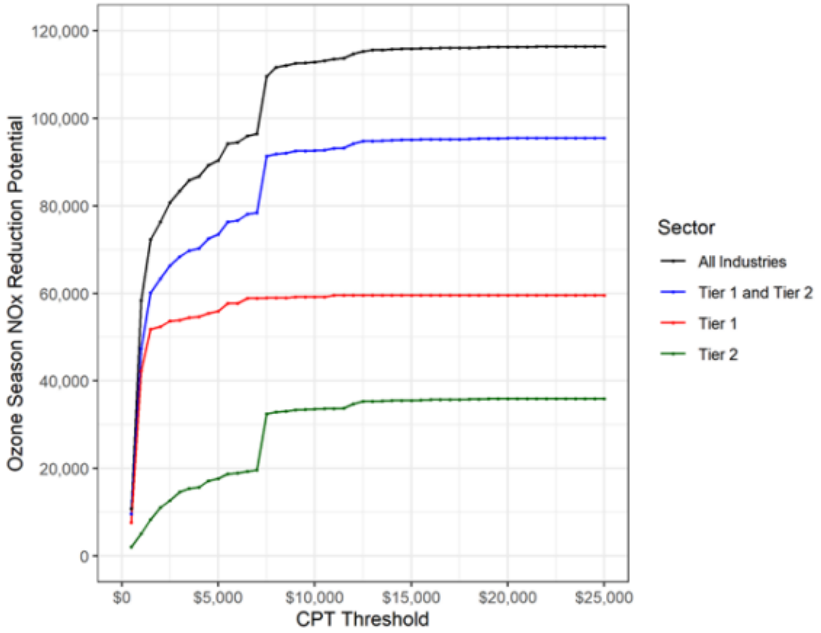
https://www.epa.gov/system/files/documents/2022-03/nonegu-reductions-ppb-impacts-2015-o3-transport-fip-final-memo.pdf

Knee of the Curve

- **Tier 1:** maximum contribution to any one receptor > 0.10 ppb and ≥ 0.01 ppb to at least 10 receptors
- **Tier 2:**
  - maximum contribution to any one receptor > 0.10 ppb but ≥ 0.01 ppb to *fewer than* 10 receptors

  OR
  - maximum contribution to any one receptor < 0.10 ppb but ≥ 0.01 ppb to at least 10 receptors

Figure 1. Ozone Season NOx Reductions and Costs per Ton (CPT) for Tier 1, Tier 2 Industries, and Other Industries



Non-EGU Source Categories in the Ozone Transport FIP

- **Pipeline Transportation of Natural Gas -** reciprocating internal combustion engines
- **Cement and Concrete Product Manufacturing** kilns
- **Iron and Steel Mills and Ferroalloy Manufacturing** boilers and furnaces
- **Flat Glass and Glass Products Manufacturing f**urnaces

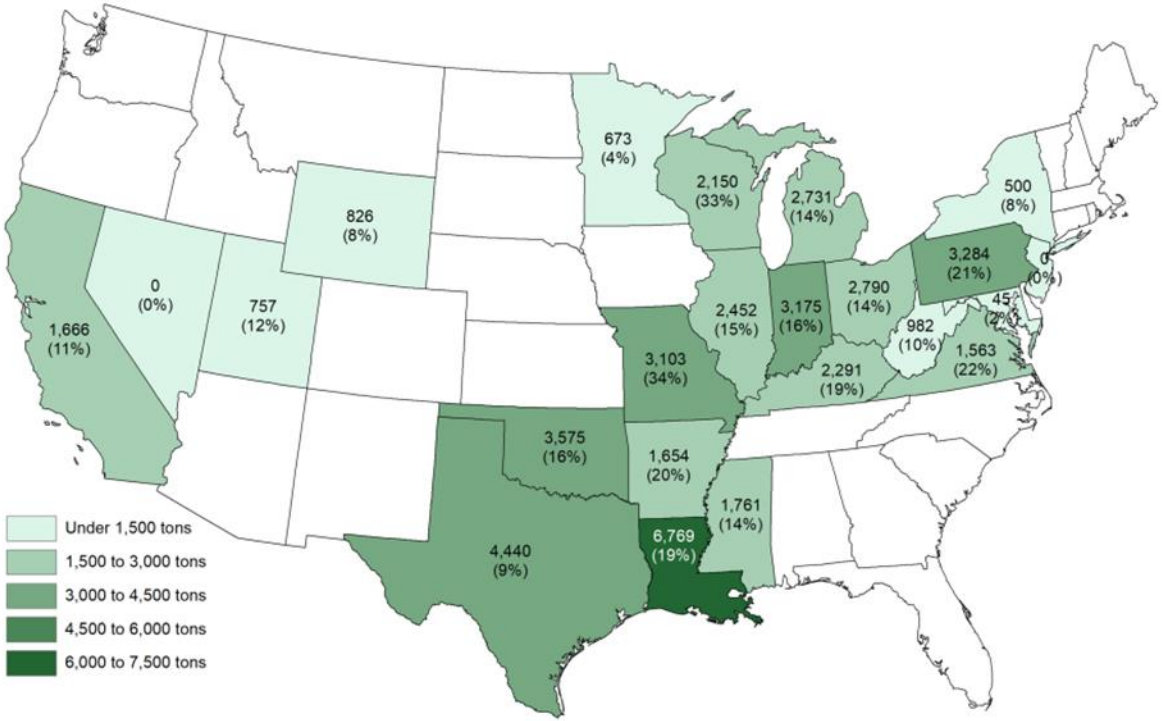
- **Basic Chemical Manufacturing** boilers
- **Petroleum and Coal Products Manufacturing** boilers
- **Pulp, Paper, and Paperboard Mills** boilers

Non-EGU Boiler Requirements

- Applies to boilers > 100 MMBtu/hr fired by coal, oil or gas in the identified source categories
- Not included in trading program with EGUs
- Imposes unit-specific emissions limits that apply on a 30-day rolling average beginning May 1, 2026
  - 0.20 lb/MMBtu for coal-fired boilers (also blast furnace gas and coke oven gas)
  - 0.20 lb/MMBtu for residual oil-fired boilers in iron and steel; 0.15 lb/MMBtu/hr for residual oil-fired boilers in Tier 2 sectors
  - 0.12 lb/MMBtu for distillate oil-fired boilers
  - 0.08 lb/MMBtu for natural gas-fired boilers

https://www.all4inc.com/4-the-record-articles/u-s-epa-proposes-federal-implementation-plan-with-expanded-requirements-for-combustion-sources-to-address-regional-ozone-transport-for-the-2015-ozone-national-ambient-air-quality-standard/

Non-EGU Reductions



Non-EGU Boiler Requirements

- Requires use of NOx CEMs unless emissions are ≤ 70% of the applicable emissions limit and EPA approves the alternative; install of CEMs can be delayed until after the initial performance test is conducted (refer to 40 C.F.R. §52.45(e)(8))
  - Units with CEMs installed and complying with Part 75 can continue to meet the Part 75 requirements to satisfy CEMs
  - Others must follow the Part 60 requirements, including provision of emission data during missing data periods to ensure data availability exceeds a minimum of 75% of the operating hours in each unit operating day, for at least 22 of 30 successive operating days
- Electronic reporting of compliance data through CEDRI required

https://www.all4inc.com/4-the-record-articles/u-s-epa-proposes-federal-implementation-plan-with-expanded-requirements-for-combustion-sources-to-address-regional-ozone-transport-for-the-2015-ozone-national-ambient-air-quality-standard/

The Marmon Wasp

Comment Schedule

- Comments on the proposed rule are due on or before June 6, 2022
- Reductions in the EGU budget for the 2023 ozone season based on available control measures, "*including consistently operating emissions controls already installed at power plants*."

Areas in which EPA seeks Comment

- All aspects of the rule
- Other Stationary Sources NOx Mitigation Strategies
- Municipal Solid Waste Combustion Units
- Co-Generation Units
- EGU Control Stringencies
- Non-EGU Control Stringencies and Measures
- Overcontrol
- Timing for Installation of Controls
- Non-EGU Emissions Monitoring
- Year Round Non-EGU Requirements
- Four Stroke Rich Burn Engines
- Four Stroke Lean Burn Engines
- Two Stroke Engines
- CEMS/Performance Tests
- Cement/Concrete: Applicability Threshold
- Retirement of Cement Kilns
- Kilns and CEMs or CPMs
- Iron and Steel Mills and Ferroalloy Manufacturing Applicability
- Glass and Glass Product Manufacturing, Applicability
- Glass Furnace Phase-Out
- Glass – Alternative Controls
- Boilers from Basic Chemical Manufacturing, Petroleum and Coal Products Manufacturing, and Pulp, Paper, and Paperboard Mills, Applicability.
- Lime and Gypsum Product Manufacturing
- Gas-Fired Industrial Boilers
- Submitting a SIP
- Climate Benefits and Non-Monetized Benefits

All costs are in 2016$ and do not include monitoring, recordkeeping, reporting, or testing costs.

Table 2. Estimated Emissions Reductions (ozone season tons), Maximum PPB Improvements, and Costs

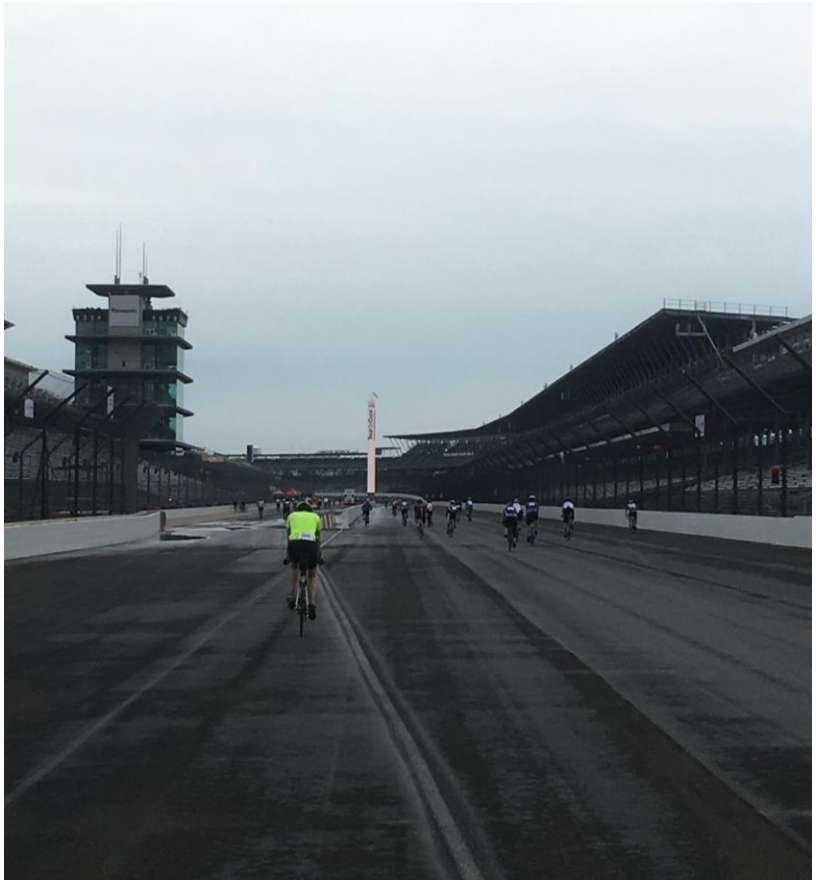
Option	Ozone Season Emissions Reductions (East/West)	Total PPB Improvement Across All Downwind Receptors	Max PPB Improvement Across All Downwind Receptors	Annual Total Cost (million $) (Avg Annual Cost per Ton)	Industries (# of emissions units > 100 tpy in identified industries)
Tier 1 Industries with Known Controls that Cost up to $7,500/ton	41,153 (37,972/3,181)	4.352	0.392	$356.6 ($3,610)	Cement and Concrete Product Manufacturing (47), Glass and Glass Product Manufacturing (44), Iron and Steel Mills and Ferroalloy Manufacturing (39), Pipeline Transportation of Natural Gas (307)
Tier 2 Industry Boilers with Known Controls that Cost up to $7,500/ton	6,033 (5,965/68)	0.809	0.169	$54.2 ($3,744)	Basic Chemical Manufacturing (17), Petroleum and Coal Products Manufacturing (10), Pulp, Paper, and Paperboard Mills (25)

The estimated ozone season reductions, total ppb improvements, and total cost are representative of single year impacts and not cumulative impacts.

Using ENR's Construction Cost Index, the current dollar cost per ton is approximately $9,500 per ton of NOx reduced

Prior CIBO Comments

- CEMs and monitoring/testing
- Cost/cost-effectiveness of controls
- Timing of retrofit installation of controls
- Use of a “one-size fits all” approach to control




Thank you!