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The Need for and Benefits of Tier 3 Vehicle and Fuel Regulations

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Meeting of the Metropolitan Washington Air Quality Committee
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The Issue

- Areas across US, including DC metro area, face difficult air quality problems
- Mobile source emissions are primary contributor
- In 2004, EPA implemented “Tier 2” vehicle emissions and gasoline sulfur standards
  - Cars, SUVs and light trucks 90 to 95% cleaner
  - Sulfur in gasoline cut by ~ 90% (to average of 30 parts per million)
- Next step: New “Tier 3” vehicle emissions and gasoline sulfur standards to achieve substantial additional emissions reductions at very modest cost
- EPA’s proposed Tier 3 program has been ready since Dec. 2011
  - Tougher tailpipe emission standards for cars, SUVs and light trucks
  - Reduced sulfur levels in gasoline to average of 10 ppm
- **But**…this proposal has yet to see the light of day

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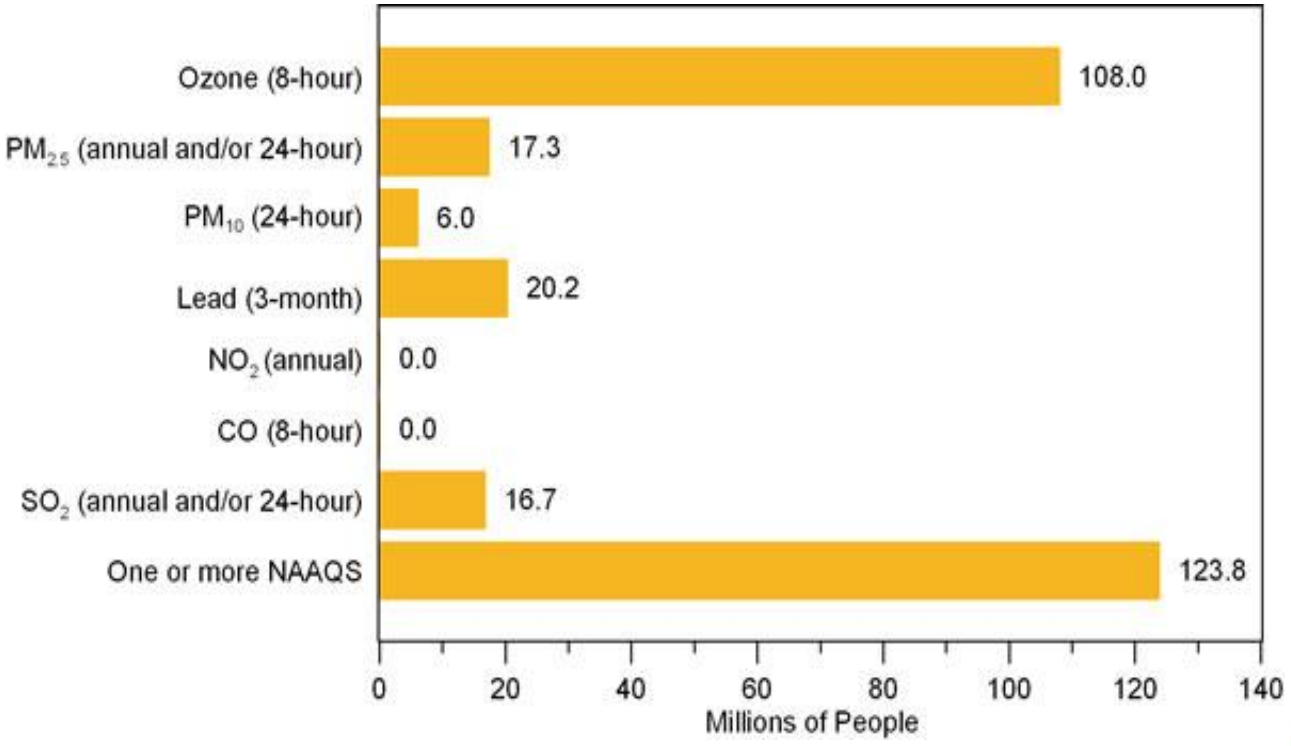
We Continue to Face Significant Air Pollution Challenges

Number of People Living in Counties with AQ Concentrations Above the Level of the NAAQS in 2010



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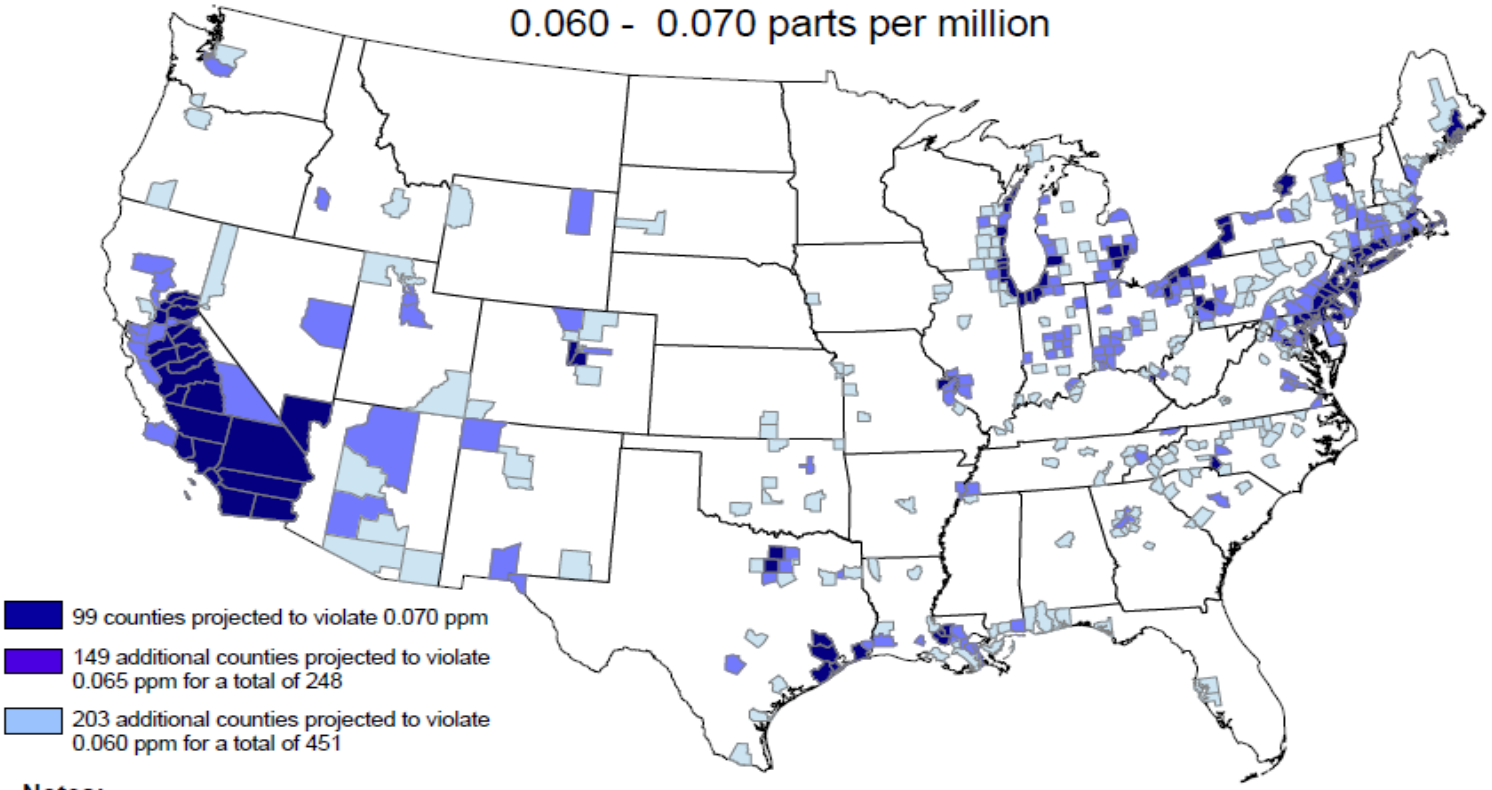
Counties With Monitors Projected to Violate Primary 8-hour Ground-Level Ozone Standards in 2020
0.060 - 0.070 parts per million



Notes:

1. The modeled emissions in 2020 reflect the expected emissions reductions from federal programs by 2020 including: the Clean Air Interstate Rule, the Clean Air Mercury Rule, the Clean Air Visibility Rule, the Clean Air Nonroad Diesel Rule, the Light-Duty Vehicle Tier 2 Rule, the Heavy Duty Diesel Rule, the proposed rules for Locomotive and Marine Vessels and for Small Spark-Ignition Engines, and an estimate of State-level mobile and stationary source controls that were projected to be needed to attain pre-existing PM 2.5 and ozone standards.
2. Controls applied are illustrative. States may choose to apply different control strategies for implementation.
3. EPA did not model future violations outside the continental U.S.
4. EPA is proposing to determine compliance with a revised primary ozone standard by rounding the 3-year average to three decimal places.

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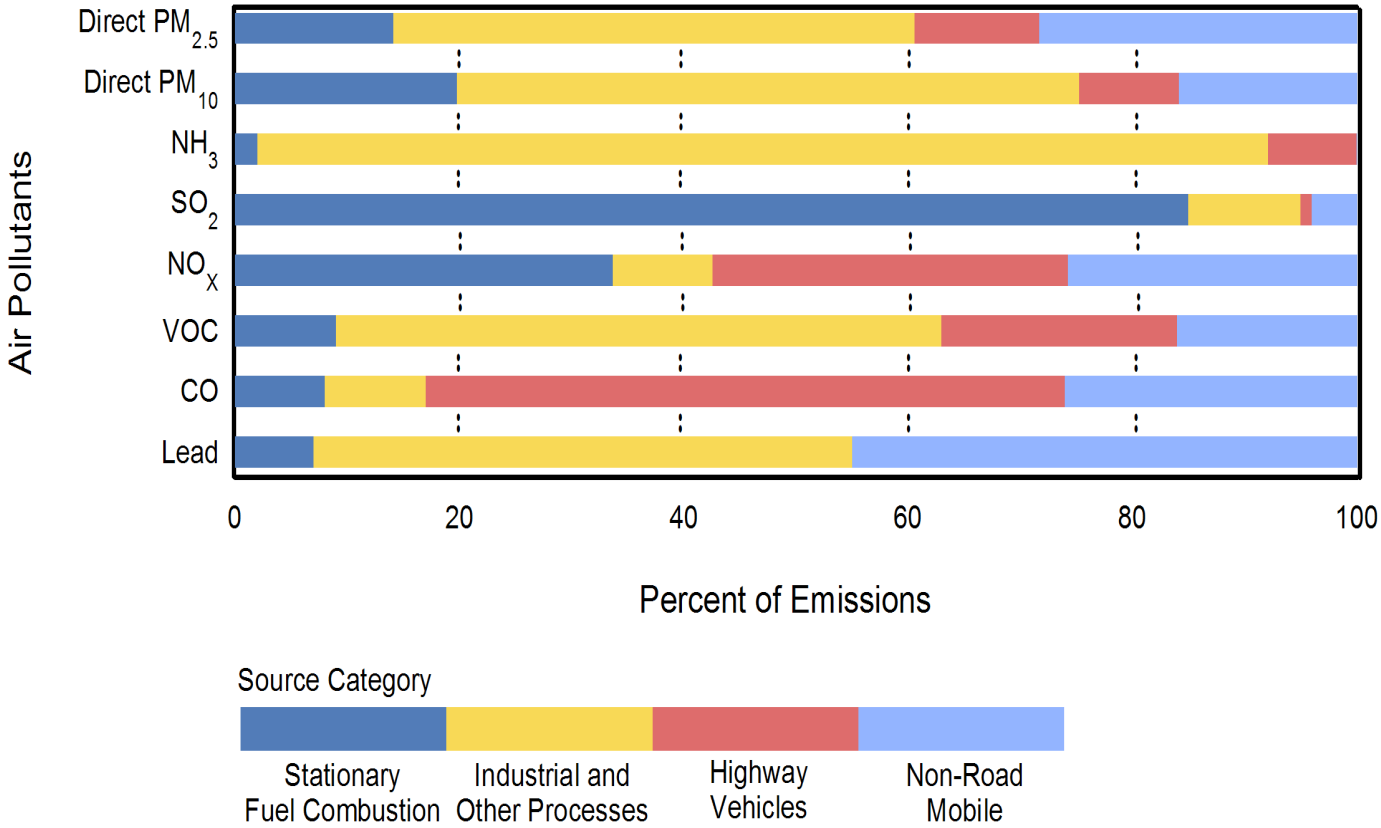
Vehicles Remain a Major Source



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When Will EPA Propose Tier 3?

- Tier 3 still undergoing review by Office of Management and Budget
- Hope OMB will release rule this week and EPA will sign soon thereafter, but still great deal of uncertainty
- **Immediate communications to White House and EPA from those who support Tier 3 are critical**
- If Tier 3 not **proposed and finalized in 2013**, will lose entire model year of vehicles – program would apply to MY 2018 instead of MY 2017

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Why Should MWAQC Support Tier 3?

- Vehicle emissions control technology for Tier 3 already exists
- 10-ppm sulfur gasoline already in the marketplace in U.S. and around the world
- Emissions reductions are huge
- Added vehicle and fuel costs are low, cost effectiveness is high, jobs will be created
- Reducing air pollution is a zero-sum game
- **We know of no other air pollution control strategy that can achieve such substantial, cost-effective and immediate emission reductions as Tier 3**

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Vehicle Emissions Control Technology for Tier 3 Already Exists

- EPA's Tier 3 vehicle tailpipe standards modeled on California's Low-Emission Vehicle III (LEV III) program
- Potential Tier 3 technologies almost entirely the same as those already on today's California vehicles
  - Increased precious metal catalyst loading, optimized close-coupled catalysts, secondary air injections pumps, evaporative control systems

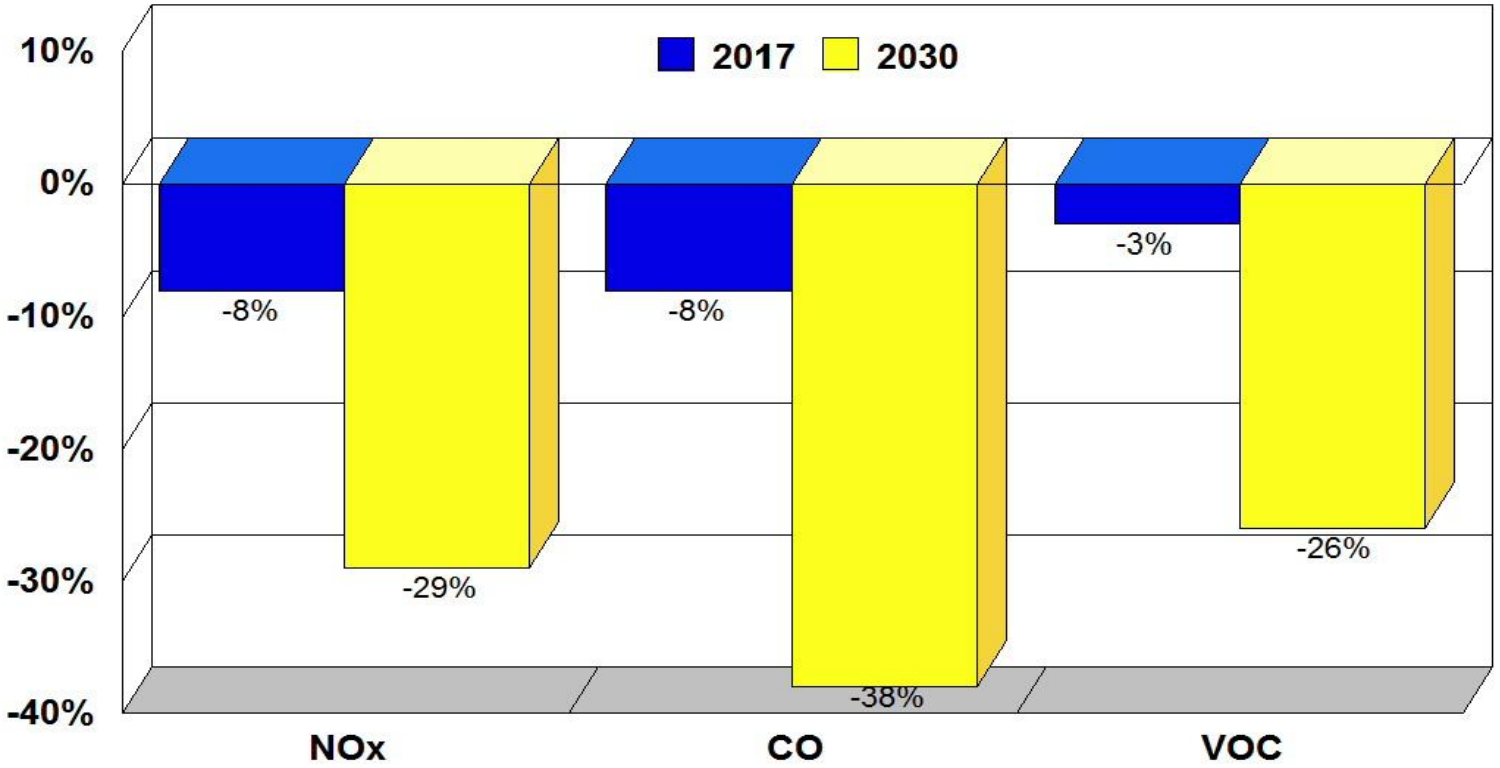
Low-Sulfur Gasoline Is Key

- Sulfur poisons catalysts that control vehicle exhaust; inhibits performance of catalytic converters, thereby increasing vehicle emissions
- Reducing average gasoline sulfur levels from current 30 ppm to 10 ppm will enable achievement of tighter emissions standards
- California's gasoline already achieves 10 ppm sulfur, as does gasoline in various other nations (e.g., European Union, Japan, Korea) and there is global movement towards it (e.g., China adopted 10 ppm sulfur this year to take effect in 2017)

Emissions Reductions Are Huge

- By 2030, Tier 3 program – tailpipe standards and low-sulfur gasoline together – expected to reduce mobile source NO_x, VOC and CO emissions by 29%, 26% and 38%, respectively
- 10-ppm sulfur gasoline will result in immediate improvement in effectiveness of NO_x controls on all existing (Tier 2) cars
- Reducing sulfur in gasoline to 10 ppm will result in overnight reduction in NO_x emissions of 260,000 tons – equivalent to taking > 33 million cars off nation's roads in 2017 when program takes effect

Overall Emissions Reductions From Onroad Mobile Sources



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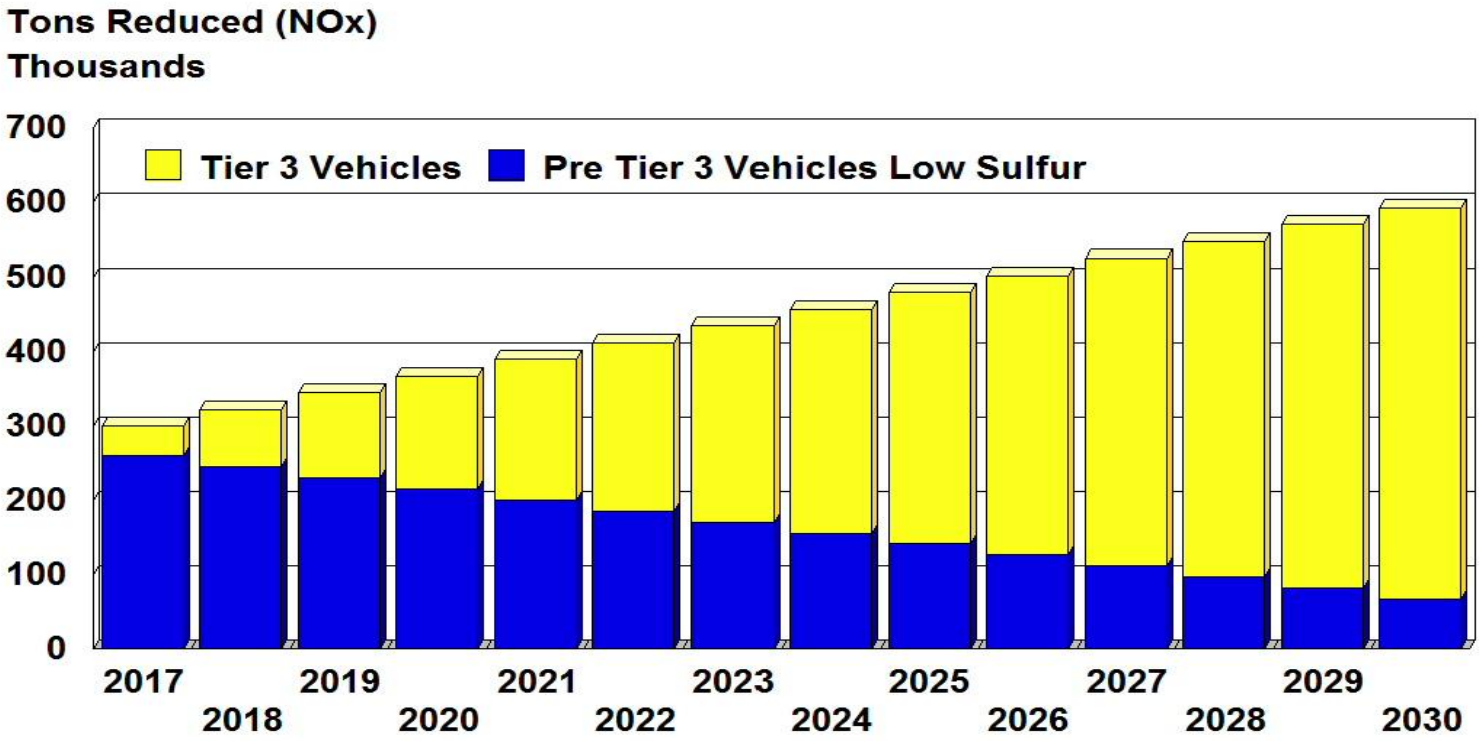
Emissions Reduction Benefits From Tier 3 Vehicle and Fuels Requirements



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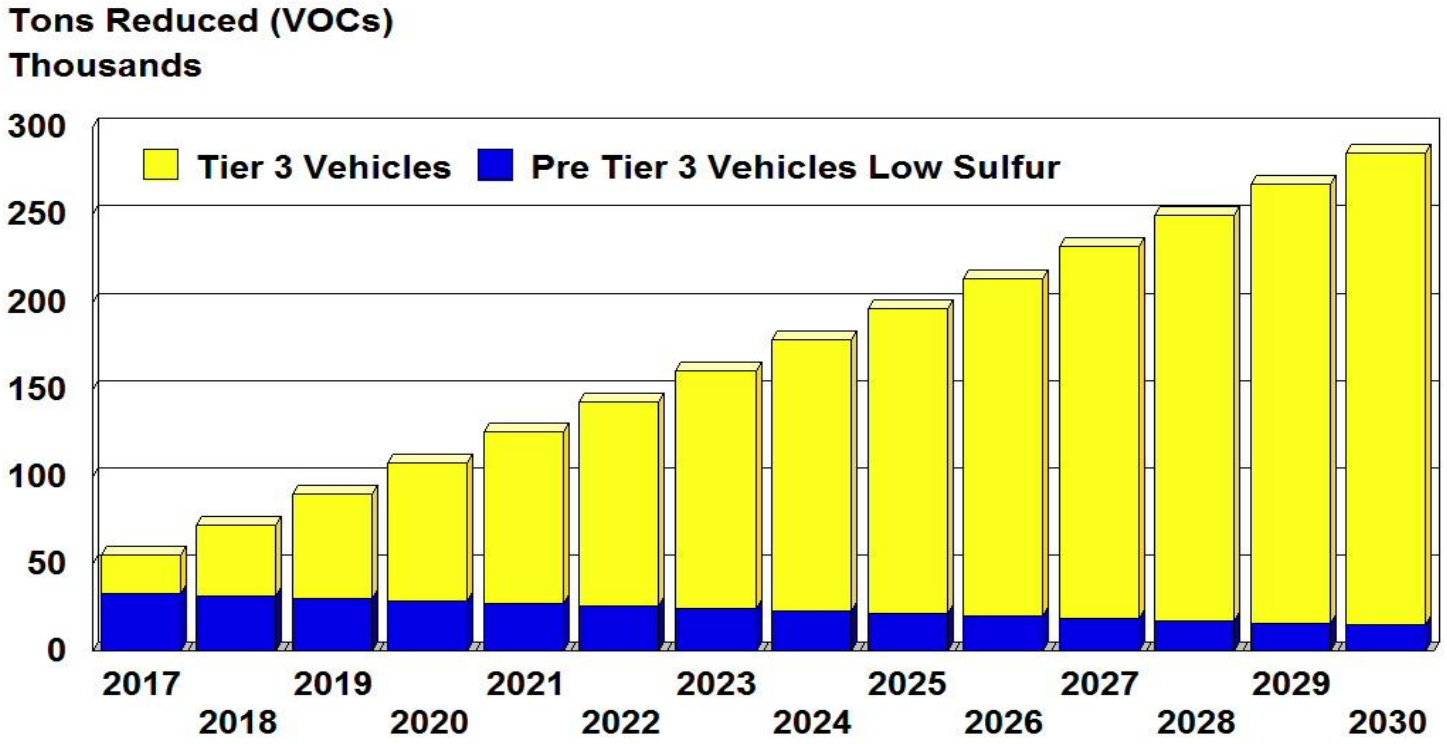
Emissions Reduction Benefits From Tier 3 Vehicle and Fuels Requirements



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Tier 3 Costs Are Low, Cost Effectiveness Is High, Jobs Will Be Created

- Estimated cost of Tier 3 vehicle control technologies ~ $150 per vehicle – less than 1% of average cost of new car
- Estimated cost of reducing gasoline sulfur levels to 10 ppm ~ 0.8 cents per gallon
- Cost effectiveness of Tier 3 about $3,300 per ton of NO_x removed – far more cost effective than many other potential NO_x reduction measures considered in mid-Atlantic
- Installation of refinery equipment to reduce sulfur will generate 24,500 new jobs over three years; operation and maintenance of these facilities will create almost 5,300 permanent jobs

Cost Effectiveness of Tier 3 Low-Sulfur Gasoline Relative to Other NO_x Reduction Measures

NO_x Reduction Measure	Cost Per Ton of NO_x Reduced
Tier 3 Low-Sulfur Gasoline	$3,300
Oil/Gas Boilers Serving EGUs	$1,100 - 8,700
New Small Gas Boilers	$3,300 - 16,000
Municipal Waste Incinerators	$2,140 (SNCR)
High Energy Demand Days EGUs	$45,000 - $300,000 per unit
Stationary Generators	$39,700 - 79,700
Minor New Source Review	$600 - $18,000

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Reducing Air Pollution Is a Zero-Sum Game

- Reducing emissions that cause air pollution is a “zero-sum game”
- Foregoing reductions from one source category means garnering reductions from another
- Passenger vehicles are largest emitters of NO_X and one of largest emitters of VOCs, CO and $PM_{2.5}$ in DC area
- In absence of federal Tier 3 program, DC area (and others) will have no choice but to turn to other, more expensive, less cost-effective measures to achieve reductions necessary to meet clean air goals
  - What sources would DC area turn to?

Support for and Opposition to Tier 3

- Every key stakeholder save one supports Tier 3
  - Automakers
  - Emission control manufacturers
  - Environmental, health and conservation groups
  - State and local air agencies
- American Petroleum Institute alleges Tier 3 offers no benefits and low-sulfur gasoline requirements would wreak havoc on gasoline prices
  - Last year, API claimed Tier 3 would raise gasoline prices by 12 to 25 cents per gallon, erroneously citing impacts of change to gasoline volatility requirements that EPA is not contemplating
  - More recent API claims are an increase of 6 to 9 cents per gallon

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The Bottom Line

- Tier 3 will benefit all states across nation
- Emissions reductions will contribute to meeting national health- and welfare-based ozone, particulate matter, nitrogen dioxide and sulfur dioxide standards, achieving regional haze goals and reducing eutrophication of water bodies
- Clean Air Act sec. 177 allows states to opt into California's clean car tailpipe standards, but not all states able to take advantage of this opportunity
- No state outside California able to adopt low-sulfur fuel standards – preempted by the Clean Air Act
- Imperative that federal government take action **this year** to adopt Tier 3 program – tailpipe standards and low-sulfur gasoline standards
- ***We know of no other air pollution control strategy that can achieve such substantial, cost-effective and immediate emission reductions as Tier 3***

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For Further Information:

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NACAA's report, *Cleaner Cars, Cleaner Fuels, Cleaner Air: The Need for and Benefits of Tier 3 Vehicle and Fuel Regulations,* is available at http://www.4cleanair.org/Documents/NACAATier3VehandFuelReportFINALOct2011.pdf

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