Mobile Source Control Measures

August 2009

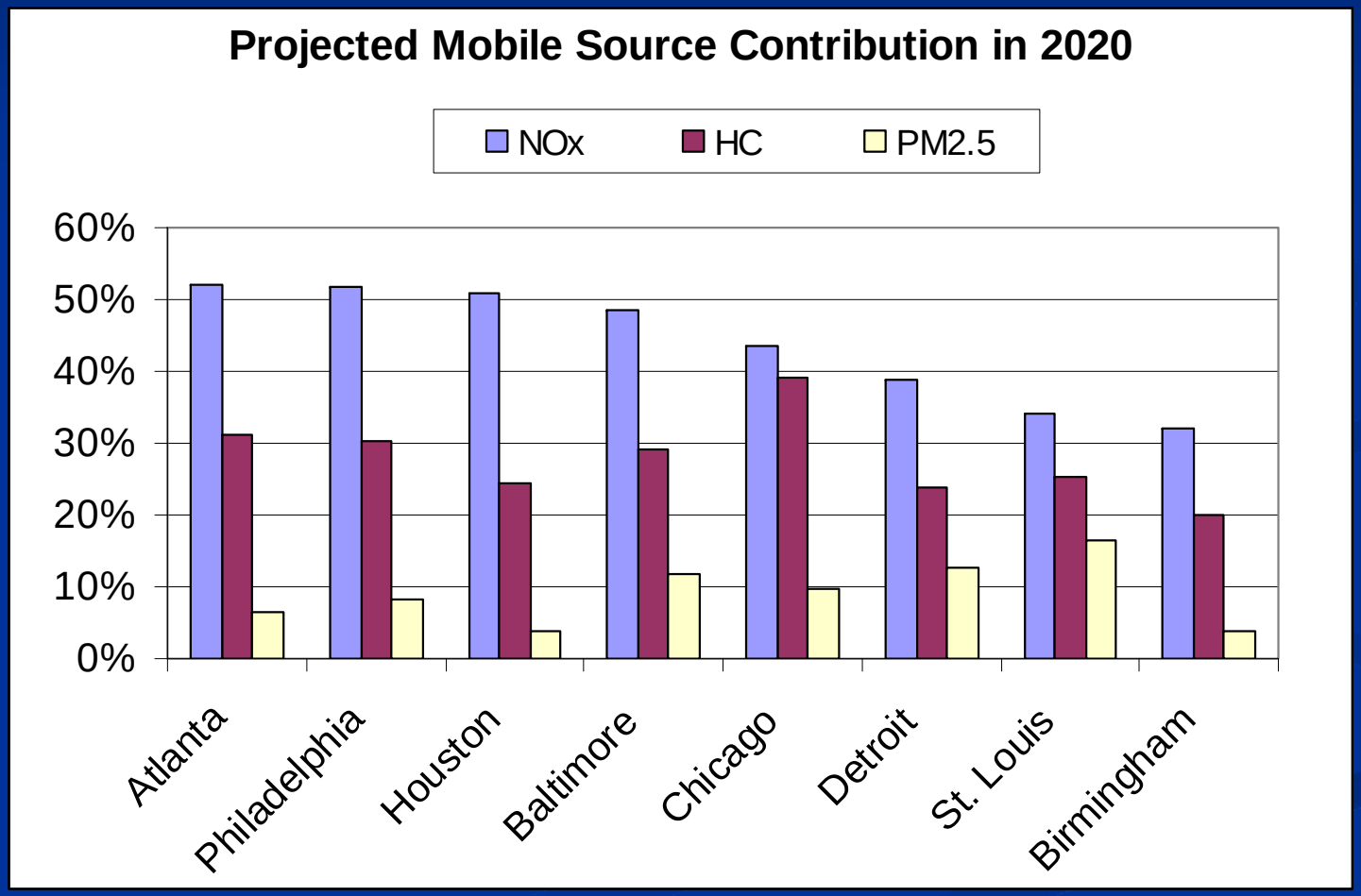
Overview

- Introduction
- Federal Regulations
- State and Local Programs
- Resources for State and Local Agencies

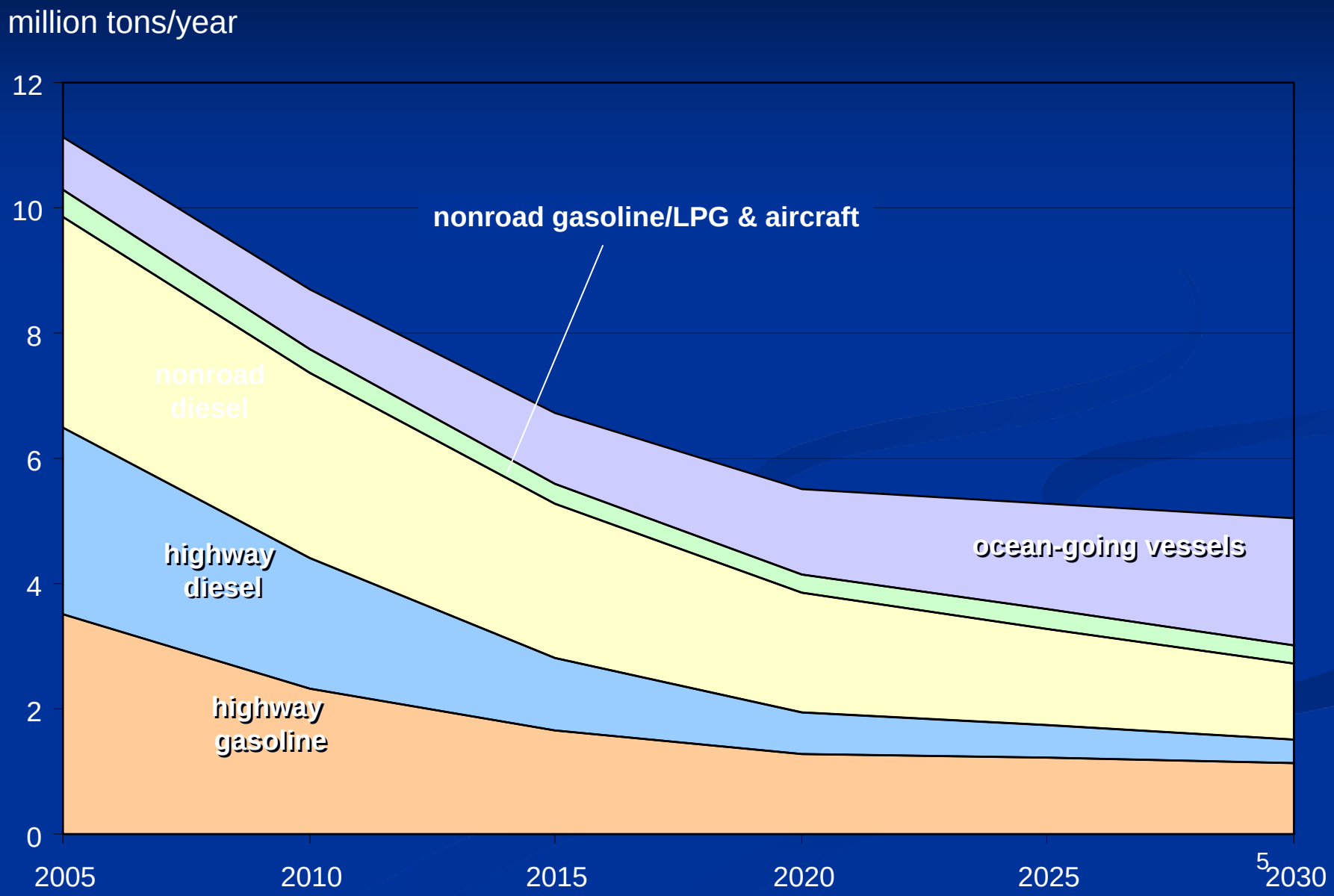
Helping States Achieve the NAAQS for PM, Ozone, NO2 and CO

- Despite our successes, air pollution remains a public health problem.
  - A new vehicle today is up to 95% percent cleaner than a new vehicle in 1970.
- By 2020, mobile sources are still projected to account for up to 50% of the NOx emissions, and substantial hydrocarbon and PM emissions.
- Even with the control strategies “in the pipeline,” mobile sources will continue to significantly contribute to air pollution problems in many parts of the country.
- OTAQ is assessing the potential of new mobile source measures – for both vehicles and fuels - that could help States as they work to achieve new NAAQS standards.

Projected 2020 Mobile Source Contribution for Select Cities



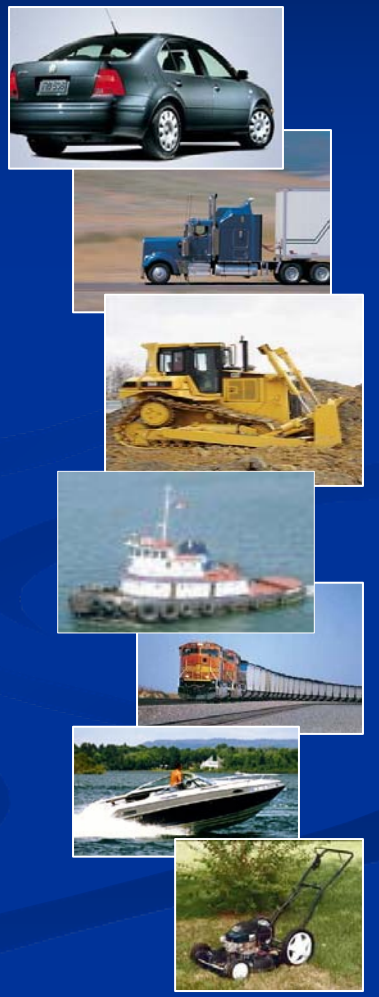
Nationwide Mobile Source NO_x



Federal Regulations

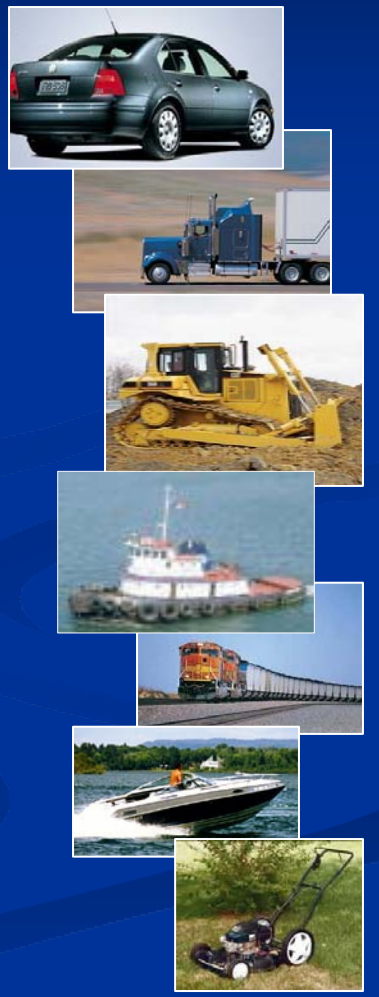
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Clean Cars and Passenger Trucks –Tier 2**
  - Stringent emissions standards for new gasoline and diesel light trucks and cars beginning in 2004
  - 90 percent reduction in gasoline sulfur content, beginning in 2006
  - National emissions reductions in 2030 of 3 million tons per year (tpy) of NOx and 800,000 tpy of VOCs



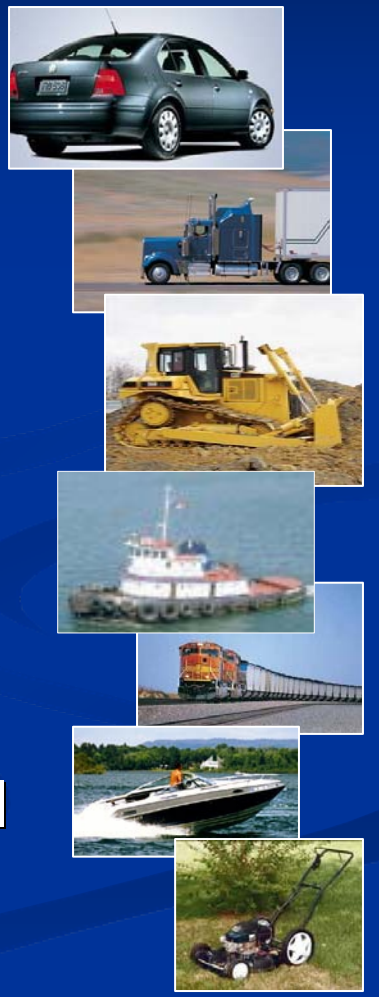
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Clean Heavy-Duty Trucks and Buses**
  - Stringent emissions standards for new buses and trucks beginning in 2007
  - 97 percent reduction in diesel sulfur content, phased in from 2006-2010
  - Up to a 90% reduction in NOx and PM emissions



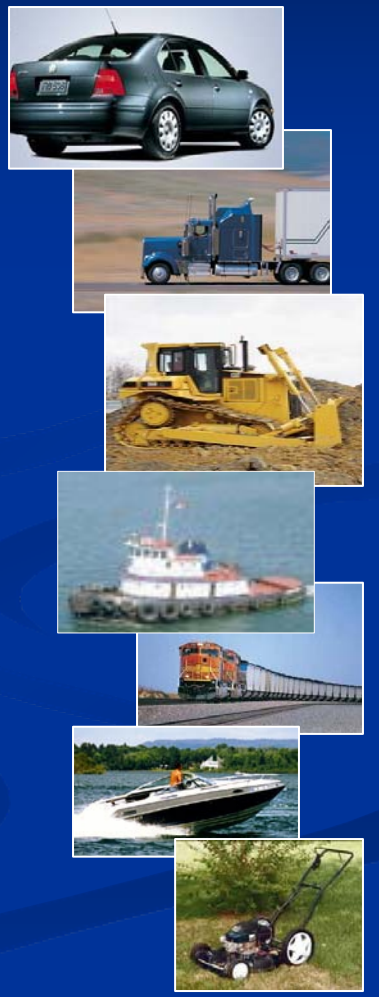
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Clean Non-road Diesel Engines and Equipment**
  - Stringent emissions standards many types of non-road equipment
    - Standards phase-in between 2008 and 2015 between 2008 and 2015 depending on engine size
  - 99 percent reduction in diesel sulfur content, by 2010
    - Marine and locomotive diesel sulfur control in 2012
  - NOx and PM emissions reductions of more than 90 percent



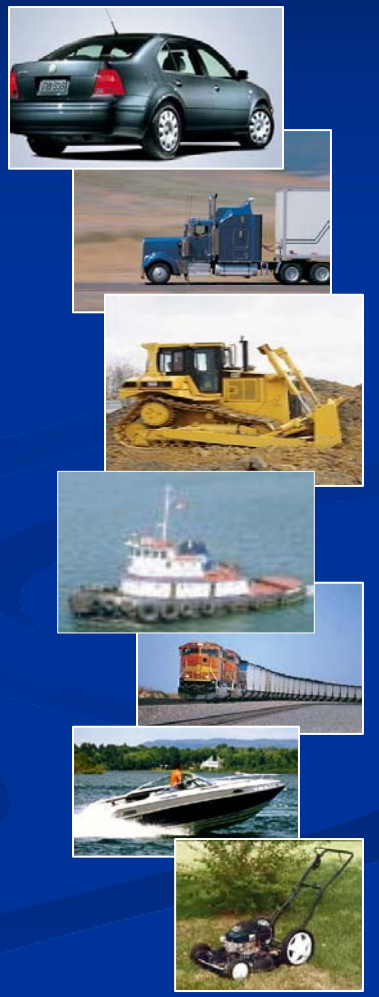
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Mobile Source Air Toxics Rule**
  - Fuel benzene standards beginning in 2011;
  - Cold temperature hydrocarbon standards for vehicles phased in between 2010 and 2015; and
  - Portable fuel containers beginning in 2009
  - Significantly reduces hydrocarbon air toxics while delivering PM co-benefits
  - National emissions reductions in 2030 of 1 million tpy of VOCs and 19,000 tpy of PM



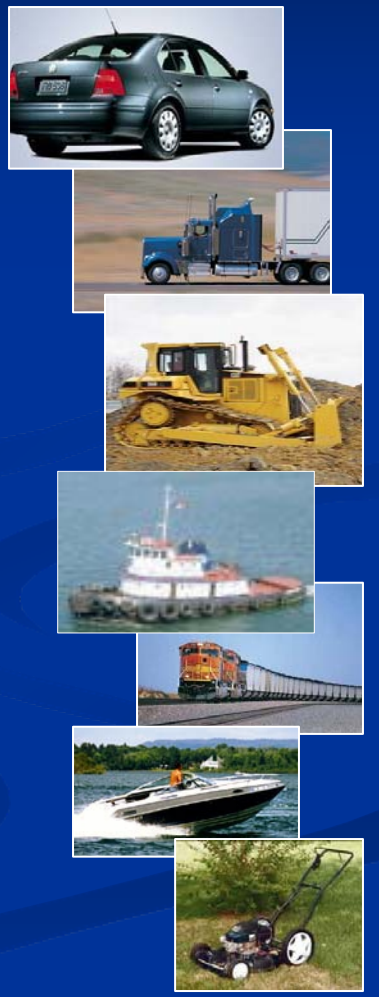
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Locomotive and Marine Diesel Standards**
  - Requires the same technologies as on-highway and non-road diesel engines
  - Reduces PM by 90 percent and NOx by 80 percent for newly-built locomotives and marine diesel engines
  - Tightens standards for existing locomotives and large marine diesel engines when they are remanufactured
  - New engine standards phase-in beginning in 2009



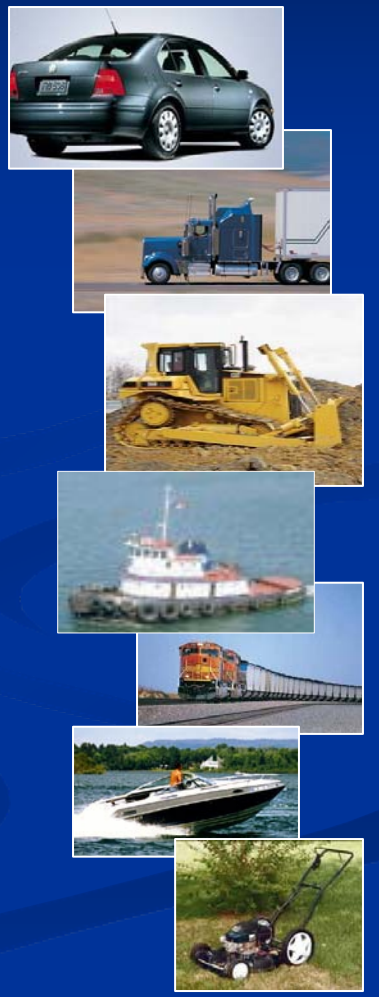
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Small Gasoline and Recreational Marine Standards**
  - New exhaust emission standards take effect in 2010-2012 depending on engine type/size
  - First time ever evaporative emission standards for these sources
  - Covers lawn and garden, utility vehicles, generator, a variety of other equipment, personal watercraft and outboard engines
  - National emissions reductions in 2030 of 600,000 tpy of VOCs, 130,000 tpy of NOx, 5,500 tpy of PM, and 1.5 million tpy of CO.



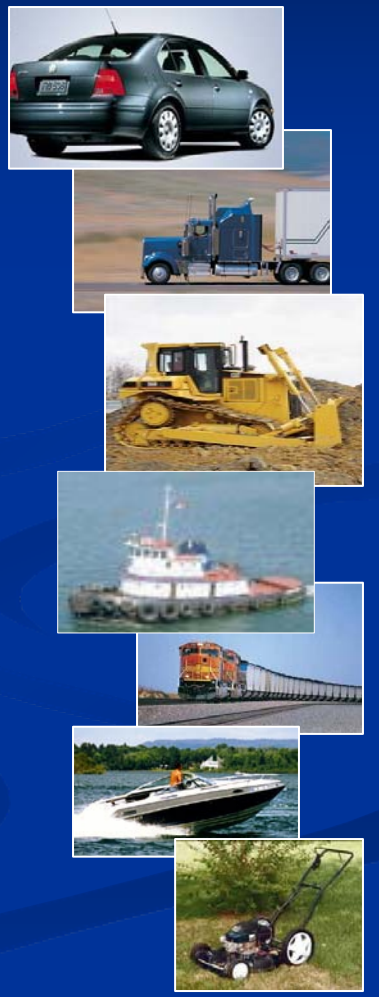
Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Ocean-going Vessels**
  - By 2030 Ocean-going vessels (OGVs) will contribute about 34% of NOx and 45% of PM emissions from mobile sources
    - Over 40 major ports are located in PM and NOx nonattainment areas
  - In March 2009, the US proposed that the International Maritime Organization (IMO) to designate US coastlines as Emission Control Areas (ECAs)
    - Final action expected in early-2010
    - New engines



Mobile Source Clean Air Rules:
Comprehensively Addressing Air Pollutants

- **Ocean-going Vessels**
  - 20% reduction in NOx beginning in 2011
  - 80% NO_x reduction beginning in 2016
- Existing engines – 15-20% NOx reductions starting in 2010
- Fuel Quality Standards
  - 30% fuel sulfur reduction by 2012
  - 97% fuel sulfur reduction by 2015
- EPA is developing regulations to implement these standards



State and Local Programs

Inspection and Maintenance (I/M)

- The 1990 CAA established requirements for “basic” and “enhanced” I/M programs.
  - Basic I/M is required in moderate ozone and carbon monoxide (CO) areas.
  - Enhanced I/M is required in serious and above ozone and/or CO areas as well as in the ozone transport region. It requires higher minimum emission reductions than basic I/M.

Inspection and Maintenance (I/M)

- I/M tests have evolved from simple idle tests, to dyno-based tests that simulate driving, to the most recent advance, emission component testing via the vehicle's onboard diagnostic (OBD) computer on 1996 and newer vehicles.
  - With OBD, the practical difference between basic and enhanced I/M has been reduced to a few administrative requirements, like waivers and on-road testing.
- Currently, 32 states plus DC have one or more I/M programs within their boundaries; additional I/M programs may be required in the future as air quality standards are tightened.

Federal Fuel Programs Tied to Attainment Status

- Federal Reformulated Gasoline (RFG)
  - Required areas: CAA Section 211(k)(10)(D) provides that severe ozone nonattainment areas become RFG covered areas effective one year after classification as 'severe' ozone nonattainment or bump-up to a severe classification.
  - Opt-in: Section 211(k)(6)(A) provides that upon the application of a Governor, EPA shall apply the prohibition against selling conventional gasoline in "any area in the State classified under subpart 2 of Part D of Title I as a marginal, moderate, serious or severe" ozone nonattainment area.

Federal Fuel Programs Tied to Attainment Status

- Federal Low RVP Gasoline
  - Section 211(h) provides for EPA to establish more stringent Reid Vapor Pressure standards in nonattainment areas as the Administrator finds necessary to achieve comparable emissions (on a per vehicle basis) in nonattainment areas.
- Winter Oxygenated Fuels Program
  - Areas designated nonattainment for CO shall require oxygenated gasoline to be blended during that portion of the year prone to high ambient concentrations of carbon monoxide.

State (Boutique) Fuel Programs Designed to Attain a NAAQS

- In general, the CAA provides that States are preempted from adopting their own fuel control requirements different from existing requirements.
  - Types of Fuels that would be preempted include: Low RVP fuel programs, clean burning gasoline programs (RFG look-alikes), clean diesel programs.

State (Boutique) Fuel Programs Designed to Attain a NAAQS

- EPA may waive preemption through approval of the fuel program into a SIP. Approval into the SIP requires:
  - a demonstration that the program is necessary to achieve a NAAQS that the plan implements.
    - "Necessary" means that no other measures exist that would bring about timely attainment or that other measures exist and are technically possible to implement, but are unreasonable or impracticable

State Fuel Programs: Restrictions on SIP approval

- Meets the boutique fuel restrictions imposed by the Energy Policy Act of 2005:
  - EPA may not approve a state fuel program into the SIP if it would cause an increase in the total number of fuels approved into SIPs as of September 1, 2004.
  - In cases where our approval would not increase the number of fuels, then approval requires a finding w/DOE that the new fuel will not cause supply or distribution problems or have adverse impacts on fuel producibility in the affected or contiguous areas.

State Fuel Programs: Restrictions on SIP approval

- Meets the boutique fuel restrictions imposed by the Energy Policy Act of 2005:
  - We may not approve a state fuel unless that fuel is already approved in at least one SIP in the applicable PADD.
    - However, 7.0 psi RVP fuel may be approved in any area that meets the necessity hurdle.

Addressing the Legacy Fleet through the National Clean Diesel Campaign

- There are about 11 million existing, high-polluting diesel engines not subject to our new standards.
- Focus on Key Sectors:
  - School buses, marine ports, construction, agriculture, freight

Addressing the Legacy Fleet through the National Clean Diesel Campaign

- Promoting retrofitting, early replacement, and idle reduction
  - In FY-08 national grants funded 14,000 retrofits which reduced NOx emissions by 46,000 tons and PM emissions by 2,200 tons.
- Program activities:
  - Technology verification
  - Technical and policy analysis
  - Coalitions and outreach
  - Innovative funding for projects
    - Federal grants, loans and tax incentives

Advancing Best Practices in the Freight Industry through SmartWay

- SmartWay Transport Partnership program works with the freight industry to adopt sustainable transportation strategies that save fuel, reduce emissions, and protect the environment.
- Launched in 2004, SmartWay currently has over 1,100 partners
  - Includes all major truck and rail operators; freight shippers; logistics companies; technology vendors and manufacturers; trucks stops; ports; banks; dealer and service centers
  - On track to reduce over 6 MMTCO2 and save the trucking industry over $1.8 billion in fuel costs (600 million gallons) each year by 2011

Advancing Best Practices in the Freight Industry through SmartWay

- Program promotes cost-effective strategies
  - idle control, enhanced aerodynamics, PM/NOx after treatment devices, improved logistics, hybrids
- Program components include:
  - Technology research and demonstration, including SmartWay certified tractors and trailers
  - Innovative financing for truck upgrades
  - Models and tools to evaluate carbon footprint and other pollutants

Resources for State and Local Agencies

Resources for State and Local Agencies

- EPA's state resources website at:
  http://www.epa.gov/otaq/stateresources/index.htm
- Website includes links to:
  - Guidance documents, models and calculators for quantifying emissions reductions from a wide range of mobile source measures
  - Regulations for on-road and non-road sources
  - Clean Diesel State and Local Tool Kit
  - Information on various funding sources