What Impacts from Traffic Emissions Can Be Expected in the Future?

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What Regulatory Programs Will Affect Motor Vehicle Emissions in the Next 20 Years?

• A variety of new vehicle emission standards will reduce average fleet emission rates
  – Tier 2 emission standards for light-duty
  – 2007/2010 heavy duty emission standards
  – cold temperature VOC standard (2007 MSAT rule)
What Regulatory Programs Will Affect Motor Vehicle Emissions in the Next 20 Years?

• In addition, fuel standards will impact vehicle emissions
  – Low sulfur for gasoline and diesel fuel
  – Fuel benzene standard (2007 MSAT rule)
  – Renewable Fuel Standards
    • 35 billion gallons of renewable fuel
    • Large increases in ethanol in gasoline expected
    • Impacts in 2022 relative to current renewable fuel volumes
      – Small increases in NO\textsubscript{x} and HC from vehicles expected
      – Small decreases in direct emissions of PM
      – Large increases in direct emissions of acetaldehyde and ethanol
What are projected emission inventory impacts?

• Large reductions in vehicle emission rates
• Partially offset by increases in vehicle miles travelled
• Still, significant inventory reductions anticipated
Projected VMT Trend

Source: AEO 2009
VOC Emission Trend (ktons)

- On-road diesel
- On-road gasoline
NO$_x$ Emission Trend
(ktons)
PM$_{2.5}$ Emission Trend

(ktons)

- **On-road diesel**
- **On-road gasoline**
CO Emission Trend (ktons)

- On-road diesel
- On-road gasoline
Toxics Emission Trend
(all highway; tons)
Voluntary Programs Will Also Impact Emissions

- National Clean Diesel Campaign
- Clean School Bus USA
- Smartway Transport Partnership
  - Encourages more efficient goods shipment
  - Loans for truck replacement
- Improved transportation planning
Have we solved the motor vehicle emissions problem?

• Despite continuing reductions in highway vehicle emissions, they remain a public health issue
  – Strong spatial gradients near roads
  – Local impacts can be large
  – Recently lowered NAAQS standards
  – Some sources (e.g. brake and tire wear) relatively uncontrolled
  – Changes in emission composition from new technologies and fuels could present unforeseen public health issues