

Reducing LD On-Highway Emissions Through 2025

John Cabaniss

Director, Environment & Energy
Association of Global Automakers



Ozone Transport Commission | June 11, 2014 | Baltimore, MD



ASTON MARTIN



HONDA



OUR MEMBERS



ISUZU



TOYOTA

Recent Major Rulemakings

- Tier 3 & Gasoline Sulfur Rules
- 2012 – 2016 Model Years Greenhouse Gas (GHG) Rule
- 2017 – 2025 Model Years GHG Rule

Upcoming Rulemakings

- 2014 - Significant New Alternative Policy (SNAP) Refrigerant Proposal
- 2015 - CARB Onboard Diagnostics
- 2017 - Mid-Term Review GHG

Tier 3 Vehicle and Fuel Standards

- What is Tier 3?
- Why Tier 3?
- Overview of the Program
- New Technical Areas of Interest for LDV OEMs

What is Tier 3?

- Systems Approach: More Stringent Vehicle Standards Enabled by Gasoline Sulfur Control
- Harmonized Vehicle Program Nationwide
 - Coordinated with California Low Emission Vehicle (LEV) III Standards
 - Enables automakers to produce one fleet of vehicle nationwide
- Phases in with 2017 Model Year
- Coordinated Compliance with Both LEV III and LD GHG/FE Standards for MY 2017-2025

Tier 3: Air Quality and Public Health

- Tier 3 Has Immediate Health and Air Quality Benefits
 - Reduces: Ozone, particulate matter and toxics
- Helps States and Localities Attain and Maintain Ozone and PM NAAQS
- Reduces Pollution Near Roads
 - More than 50 million people live, work, attend school near major roads

Why Lower Sulfur Gasoline?

- Tier 3/LEV III Vehicles Rely on Ultralow Sulfur Gasoline
 - Sulfur Degrades Vehicle Catalytic Converters
- Tier 3 Stds Not Achievable Without Ultralow Sulfur
- Lower Sulfur Provides Immediate Emission Reductions from the Existing Fleet
 - NACAA: Equal to Removing 33 Million Vehicles from the Road in 2017
- California and Other Countries Already have Ultralow Sulfur Gasoline
- Enables Technologies for Complying with LD GHG Standards

Tier 3 Vehicle Standards

- Phase in Between 2017 and 2025
- Tighter VOC and NOx Tailpipe Standards
 - 80% Reduction from Today's Fleet Average
- Tighter PM Tailpipe Standard
 - 70% Reduction in Per-Vehicle Standard
- Evaporative Emissions Standards
 - Reduced Emissions and Improved Durability
- Regulatory Streamlining/Harmonization

Tier 3 Fuel Standards

- Lowers the Annual Average Sulfur Standard from 30 to 10 ppm
 - Starting January 1, 2017
- Includes a Range of Compliance Flexibilities for Refiners

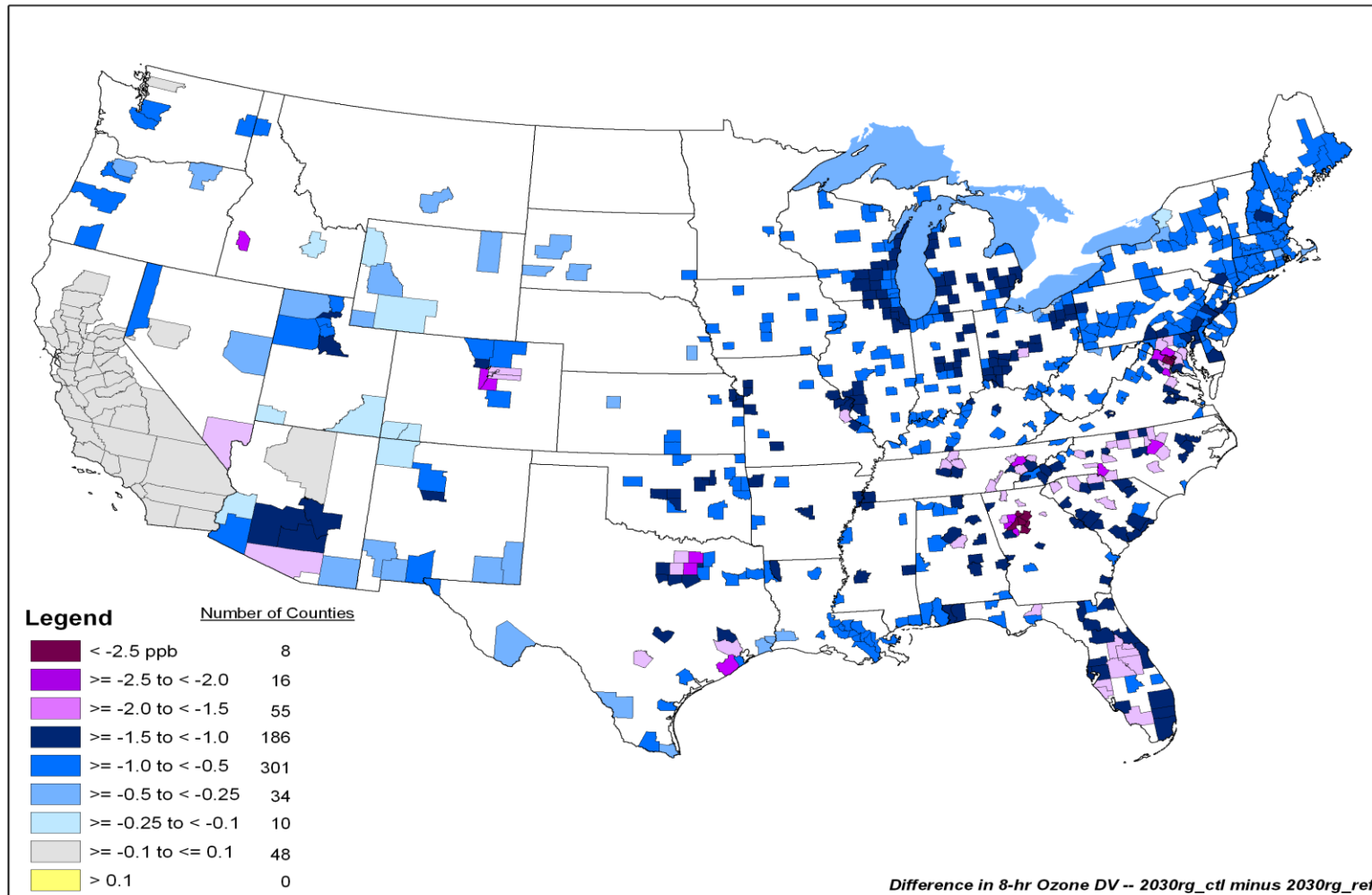
Tier 3 Emission Reductions in National On-Road Inventory

	2018		2030	
	Reduction (US Tons)	% Reduction	Reduction (US Tons)	% Reduction
NOx	260,000	10%	330,000	25%
VOC	48,000	3%	170,000	16%
PM2.5	100	0.1%	8,000	16%
Benzene	2,000	6%	5,000	26%

- Lower NOx, VOC, and PM2.5 emissions lead to:
 - Moderate to large ozone decreases across the country
 - Small to moderate PM decreases across the country

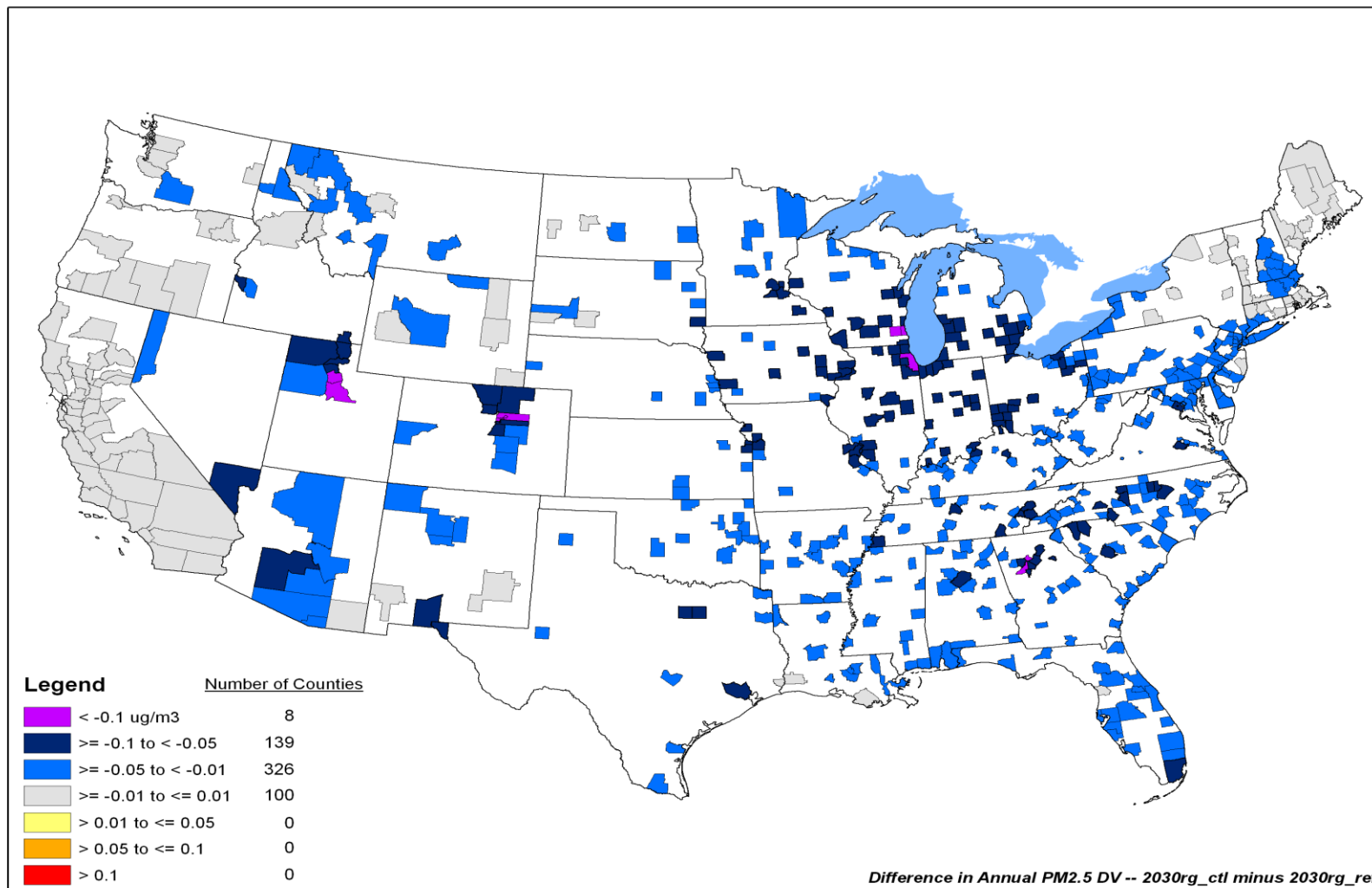


AQ Impacts in 2030 - Ozone





AQ Impacts in 2030 – Annual PM_{2.5}

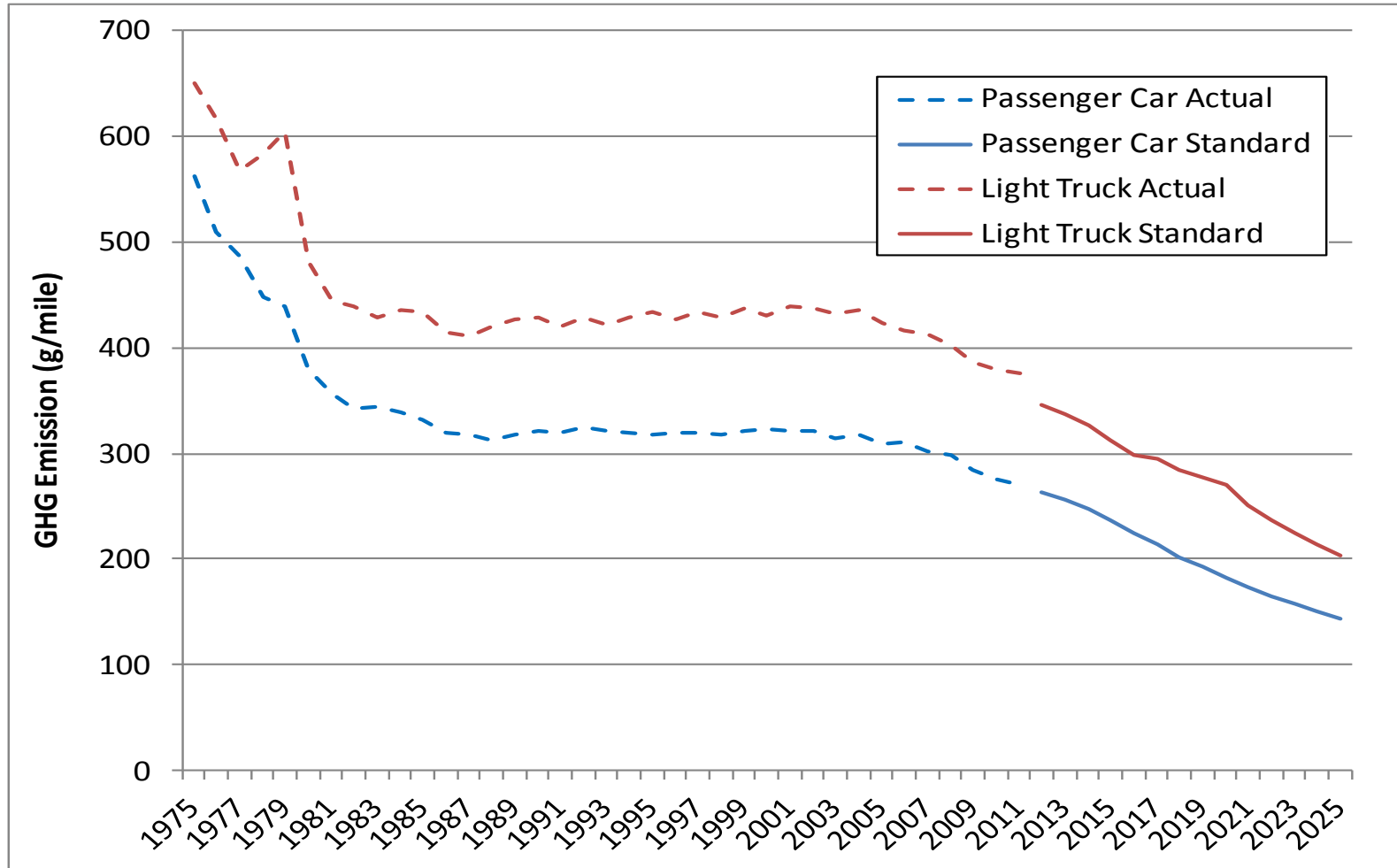


National GHG Program Overview:

2012-2016 / 2017-2025

- Reduces GHG Emissions 50% and Doubles Fuel Economy by 2025
- Allows Automakers to Plan Long-Term and Build a Single Fleet of Vehicles (Harmonized Federal and CA Standards)
- Ensures Consumers Continue to Have a Full Range of Vehicle Choices and No Compromise in Vehicle Safety
- Supported by Automakers and Other Stakeholders

GHG Standards and Actual Fleet Emissions



Vehicle Technologies

Current Technologies:

- Advanced Gasoline Engines and Transmissions
- Mass Reduction
- Improved Aerodynamics
- Lower Rolling Resistance Tires
- Clean Diesel Engines
- More Efficient Accessories
- Improved Air Conditioning

More Electric Technologies:

- Start-Stop Systems
- Hybrids
- Plug-In Hybrids
- All Electric Vehicles
- Fuel Cell EVs



PHEV

Audi- A3 e-tron PHEV

BMW- i8 PHEV

Ford- Fusion Energy PHEV

GM- Cadillac ELR PHEV

Honda- Accord PHEV

Hyundai- Sonata PHEV

Infiniti- Emerg-E PHEV

Kia- Optima PHEV

Land Rover- Range Rover PHEV

Mercedes-Benz- C class PHEV

S class PHEV

Mitsubishi- Outlander PHEV

Subaru- Crosstrek Electric PHEV

Toyota- Prius PHEV

Volkswagen- Golf PHEV



New Collaboration for ZEV Success

- Last November, Initiated a Collaborative Process
 - Automakers and ZEV States Working Together to Ready the Marketplace to make ZEV Technology Successful
- Eight ZEV States Adopted a MOU in October 2013 and Released a Multi-State Action Plan
 - This Action Plan Identifies Multi-State Actions, Actions by Individual States, and Research Activities
 - Addresses Infrastructure, Incentives, Public Education and Other Actions Needed to Ensure Market Readiness
- This Remains a Top Priority for Automakers

2017 Mid-Term Evaluation

- Agencies Will Review a Wide Range of Factors
 - E.g., Powertrain Improvements, Mass Reduction and Safety Impacts, Market Penetration and Acceptance of Fuel Efficient Technologies, Fuel Prices, Infrastructure, Consumer Payback Periods, Car/Truck Fleet Mix Changes, and Others
- Could Result in the 2022-2025 Standards Remaining Unchanged, or Being Changed to a Higher or Lower Stringency

Thank You