

Ultra-Low Sulfur Diesel Fuel Program



AWMA-PNWIS Conferences



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*EPA/Office of Transportation and
Air Quality*

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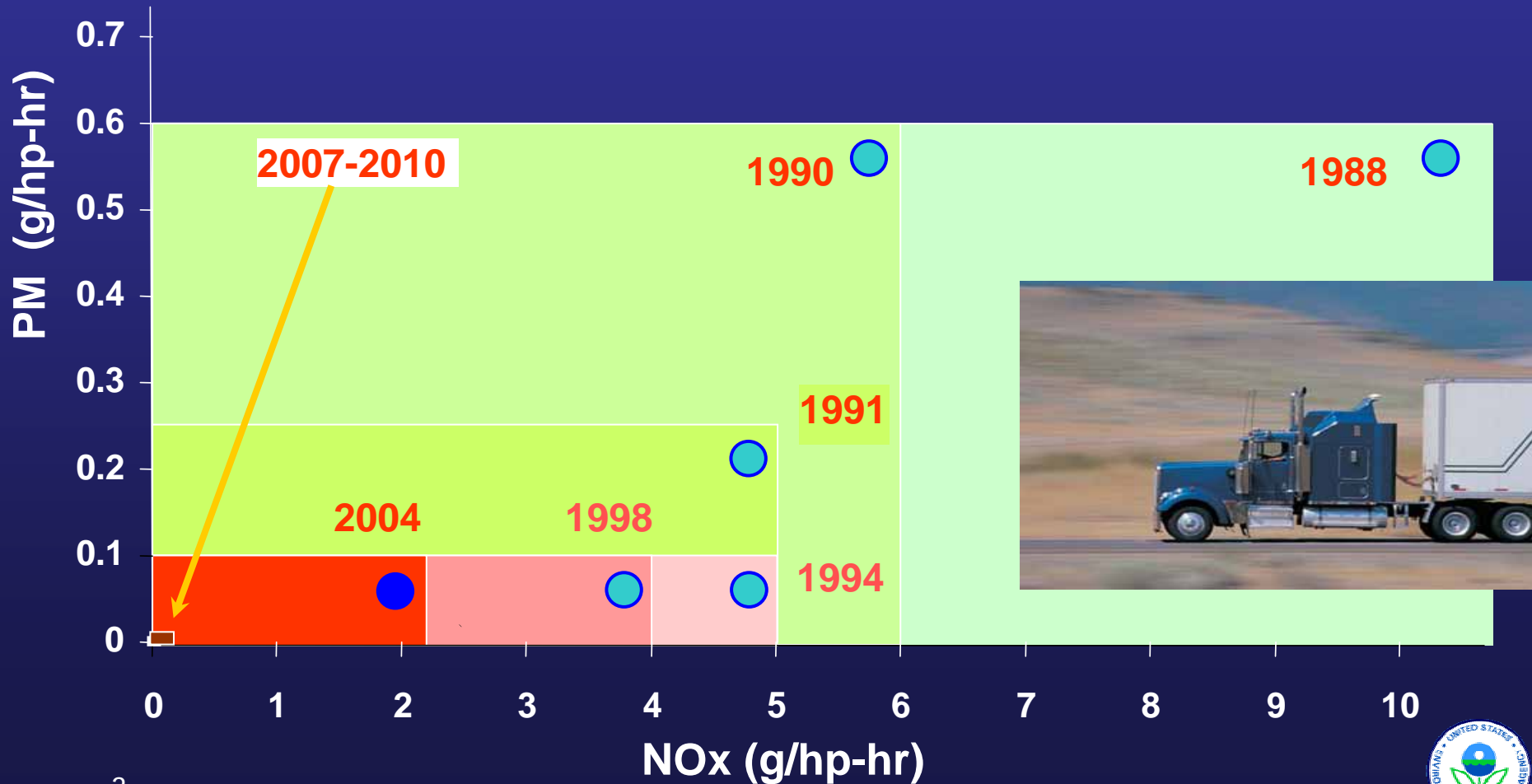


Today's topics

- Overview of the Diesel Rules
- Updates on Recent Activities
- Overview of the Fuel Provisions of the Rules
 - Background
 - Standards and implementation dates
 - Areas of compliance focus
 - Compliance and enforcement

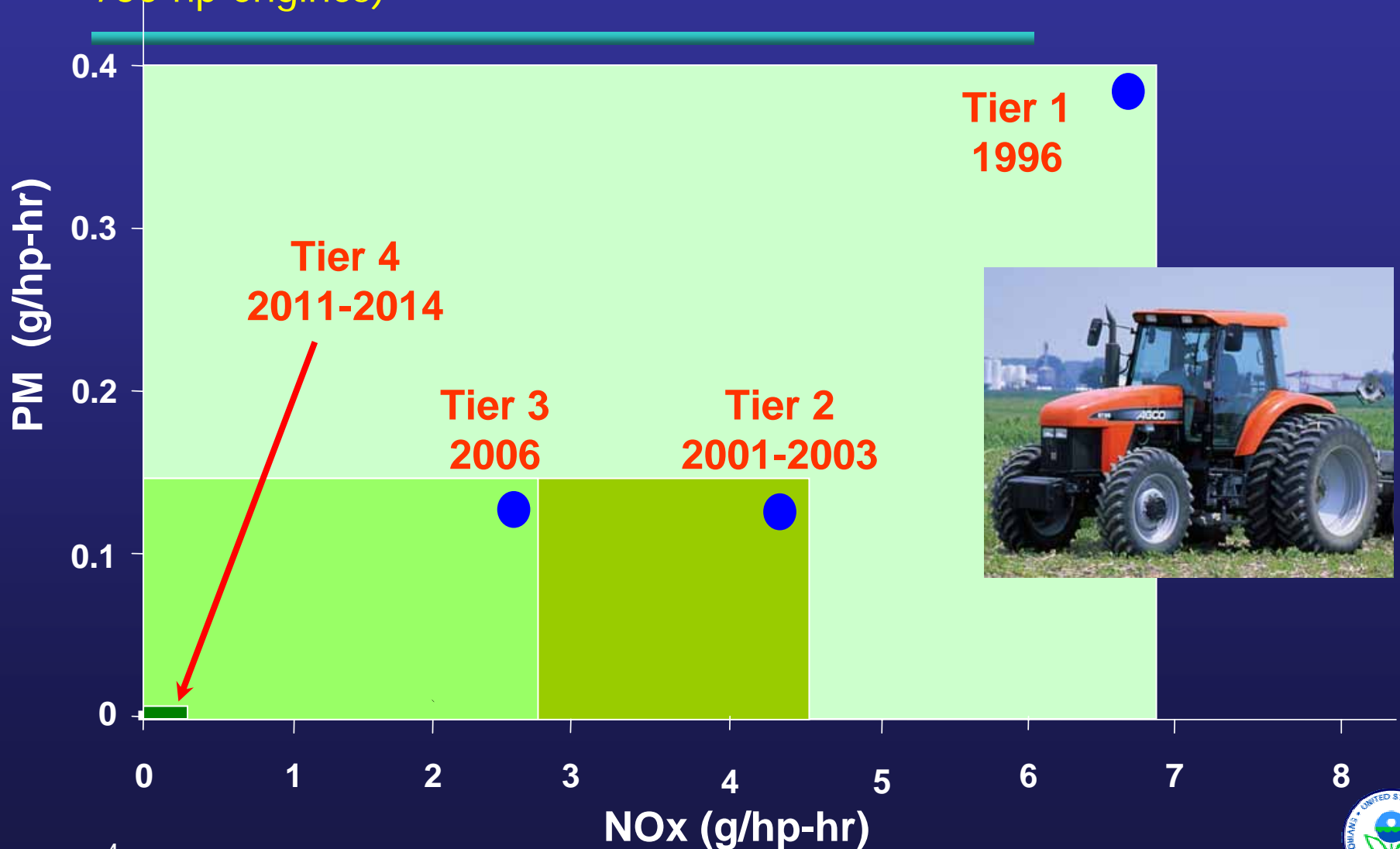


Highway Heavy-duty Diesel Standards

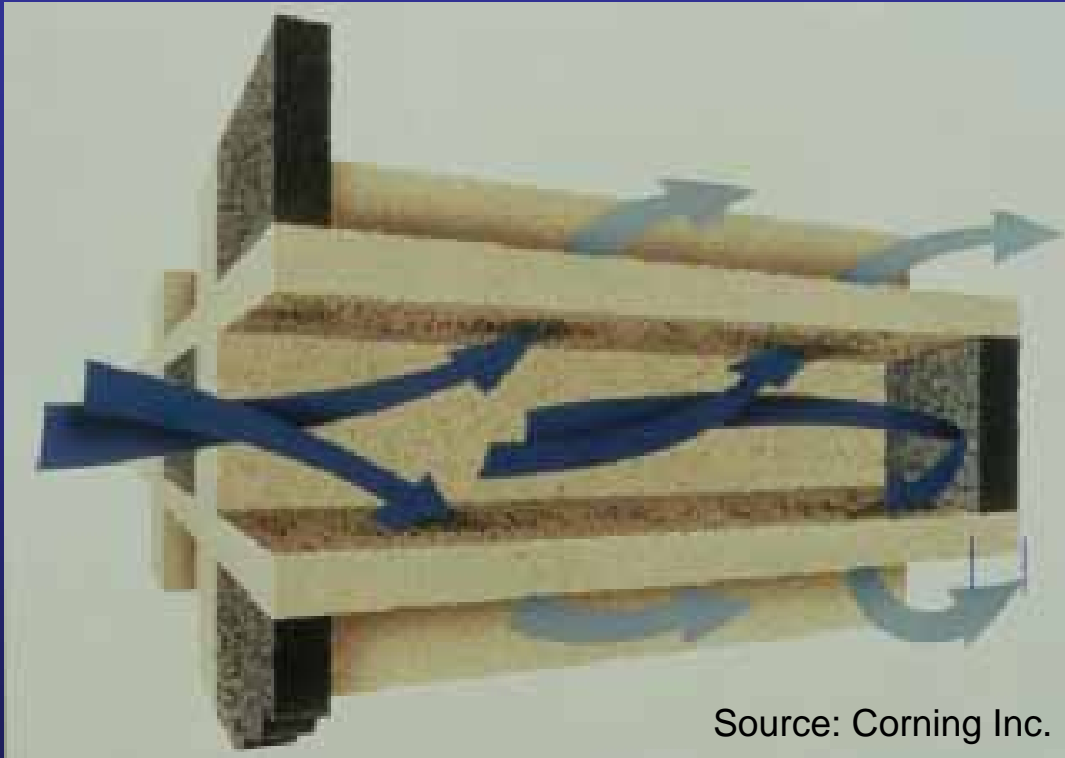


Nonroad Diesel Standards

(standards vary somewhat by power category; those shown are for 175-750 hp engines)



Enabling Near Zero Emission Levels



Catalyzed Diesel Particulate Filters (CDPFs)
can eliminate 99% of solid particles (soot & metals)
can eliminate >90% of semi-volatile hydrocarbons

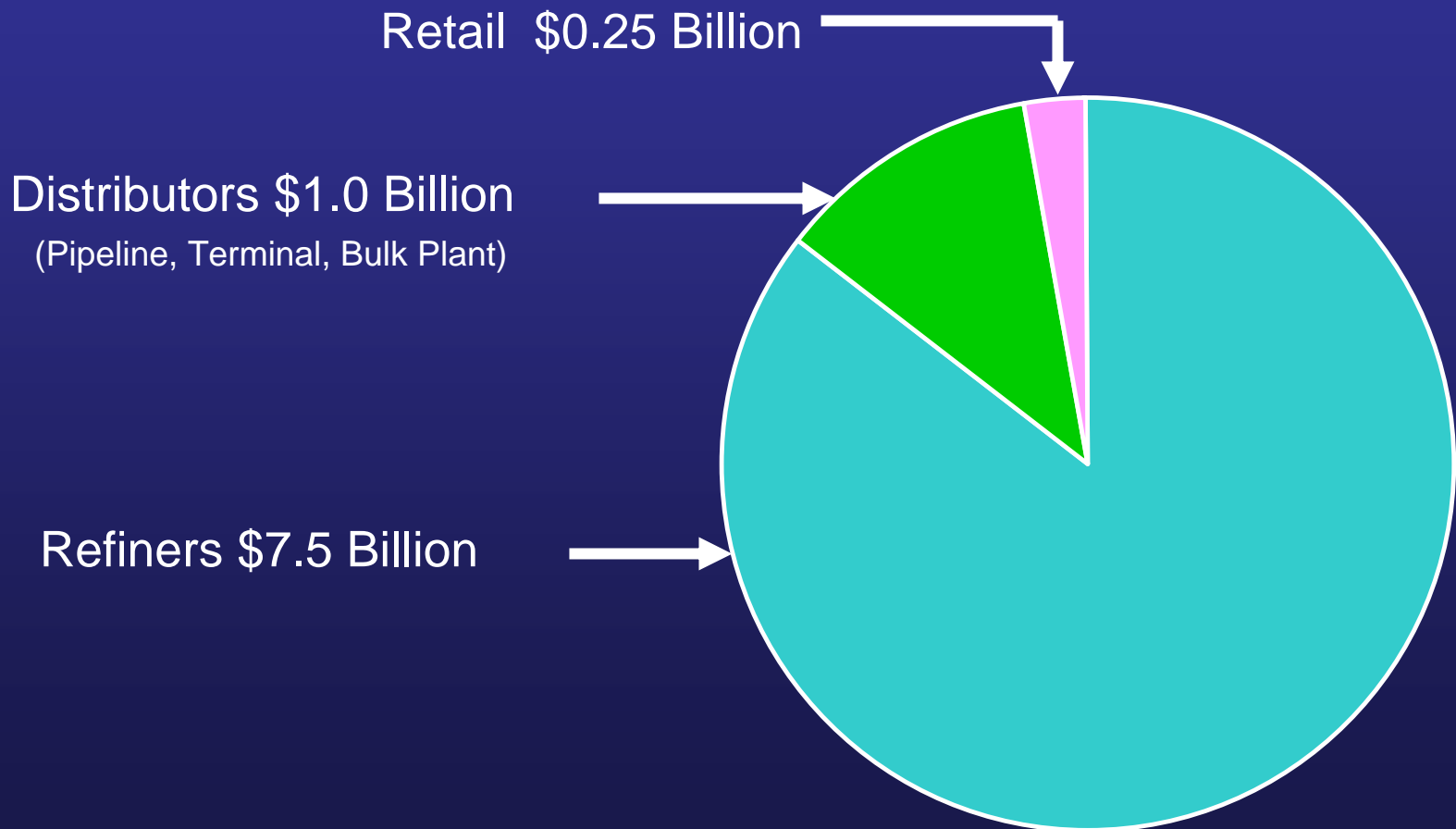


Ultra-Low Sulfur Diesel Standards

Fuel	2006	2007	2008	2009	2010	2011	2012	2013	2014
Highway 67%	80% 15 ppm / 20% 500 ppm				100% 15 ppm				
Nonroad (NR) 12%	HS	500	500	500	15	15	15	15	15
Locomotive and Marine (L&M) 6%	HS	500	500	500	500	500	15	15	15
Heating Oil 15%	HS	HS	HS	HS	HS	HS	HS	HS	HS
Jet Fuel	HS	HS	HS	HS	HS	HS	HS	HS	HS



Highway and Nonroad Diesel Fuel Program Capital Costs

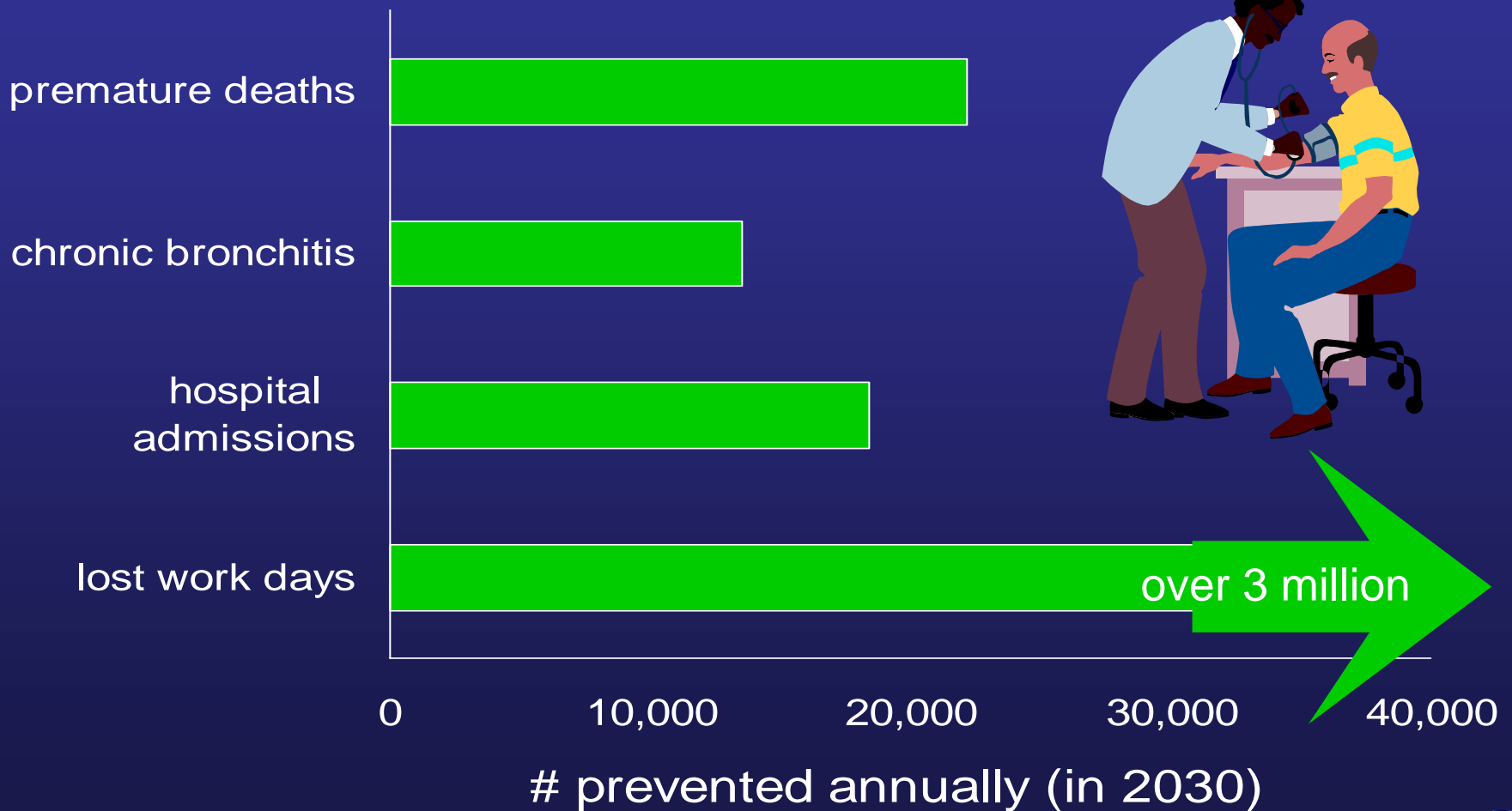


Pipeline & Terminal Actions

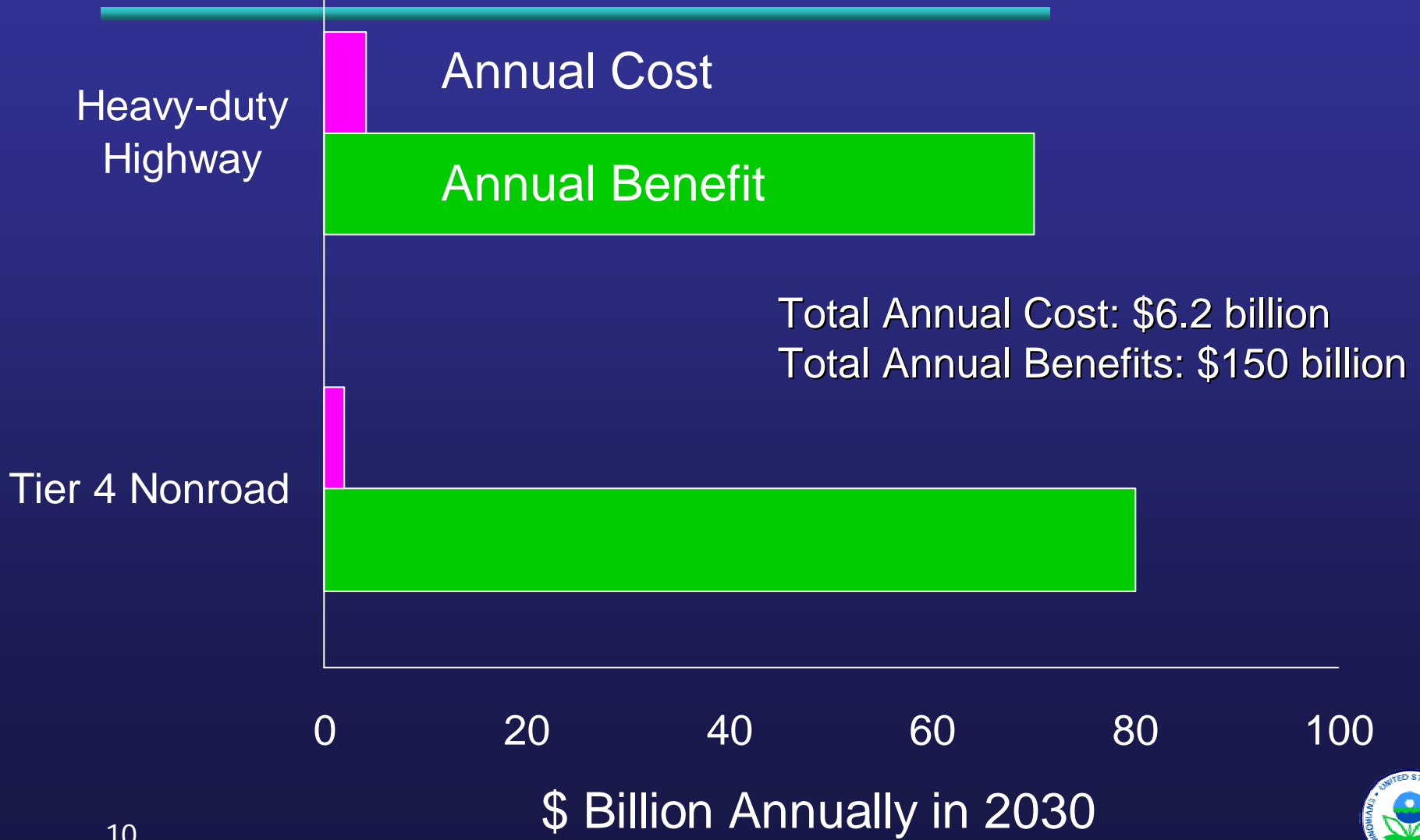
- Tankage
 - Dedicated service
 - Reallocation among products
- Piping
 - Isolate ULSD from high sulfur
 - Remove dead legs
 - Reconfigure/dedicate manifolds
- Valves
- Interface
 - Detection equipment
 - Batch cutting procedures
- Pumps/sump management
- Sulfur Testing
- Tank Trucks
 - Segregated
 - Transfer hoses
- Truck Loading Rack
 - Drain facilities
 - Additive/marker blending



Benefits of Clean Fuel and Vehicle Programs

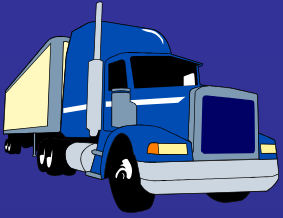


Benefits of Clean Diesel Overwhelm the Costs

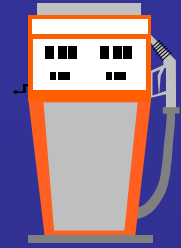


Updates on Recent Activities





Progress Toward 2007



- Engine
 - 2002, 2004 progress review reports
 - 2002-5 site visits to engine, vehicle, technology manufacturers in U.S., Europe, Japan
 - Vehicles, Light-duty and Heavy-duty, now in fleet testing

- Diesel fuel
 - 2003, 2004 Refiner pre-compliance reports
 - ULSD will be produced...
 - On time
 - In sufficient quantity
 - Nationwide
 - 2005 Report will be out later this Fall
 - Implementation Workshops
 - 2002, 2004, Again in November 2005



Progress Toward 2007

- Series of meetings with Refiners, Pipelines, Terminals, etc. earlier this year
- Refiners
 - Re-affirmation of pre-compliance reports
 - Refiners plans are on track
- Pipelines and Terminals
 - Engineering analysis essentially complete
 - Have already committed to some investments
 - Additional investment decisions are in process
 - Need to put in place recordkeeping/reporting processes for compliance obligations
- Three Main Issues Highlighted
 - Concern over sulfur testing uncertainty
 - Desire by pipelines to test their systems with ULSD early
 - Desire additional transition flexibility



Sulfur Test Method Uncertainty

- Final rule allows a 2 ppm downstream test tolerance
- Industry is concerned that actual reproducibility may be greater
 - ASTM results had been in the range of 3-5 ppm
- However, this data is not reflective of 2006
 - None of the labs in the ASTM program were qualified for measuring sulfur in the 15 ppm range for precision and accuracy
- Significant improvement expected once labs are qualified
- We initiated an EPA Round-Robin test program
 - 131 qualified labs (using 151 qualified instruments) nationwide
 - Samples were sent out in July and August
 - Data analysis is underway; results will be presented at Nov workshop
- Based on the results, we will adjust the test tolerance accordingly



Test Batches

- Pipelines have been working with various refiners to obtain test batches
 - Confirm capability
 - Assess need for additional changes
- Requested that EPA further encourage early production of ULSD for such tests
- Processed a minor rule change to provide greater access to early credits



Transition Flexibility

- Considerable interest has been expressed by the petroleum industry for some additional flexibility to help smooth the initial transition to ULSD
- Many competing interests and challenges
- Spent several months in discussions with
 - Refiners, pipelines and terminals
 - Engine and vehicle manufacturers
 - States and Environmental groups



Transition Flexibility

- Announced some additional transition flexibility on May 25 at a meeting with industry
 - No change in June 1, 2006 refinery date
 - 45 day extension of terminal and retailer transition periods
 - Terminal: ~~July 15~~ **Sept 1, 2006**
 - Retail: ~~Sept 1~~ **Oct 15, 2006**
 - Relax the definition of ULSD during these transition periods
 - ~~15 ppm~~ **22 ppm**
- Rulemaking to codify these changes is expected out shortly



*Overview of the Diesel
Sulfur Rules and
Regulatory
Requirements*



Rule Developed with Industry Input

- Several flexibilities were built into the rules
 - Highway 80/20 production requirement
 - Allowance for a separate “Alaska Plan”
 - Nonroad 2-step program
 - Small refiner options
 - Credit averaging, banking, and trading program
 - Opportunities to downgrade off-spec product
- Flexibility breeds regulation complexity

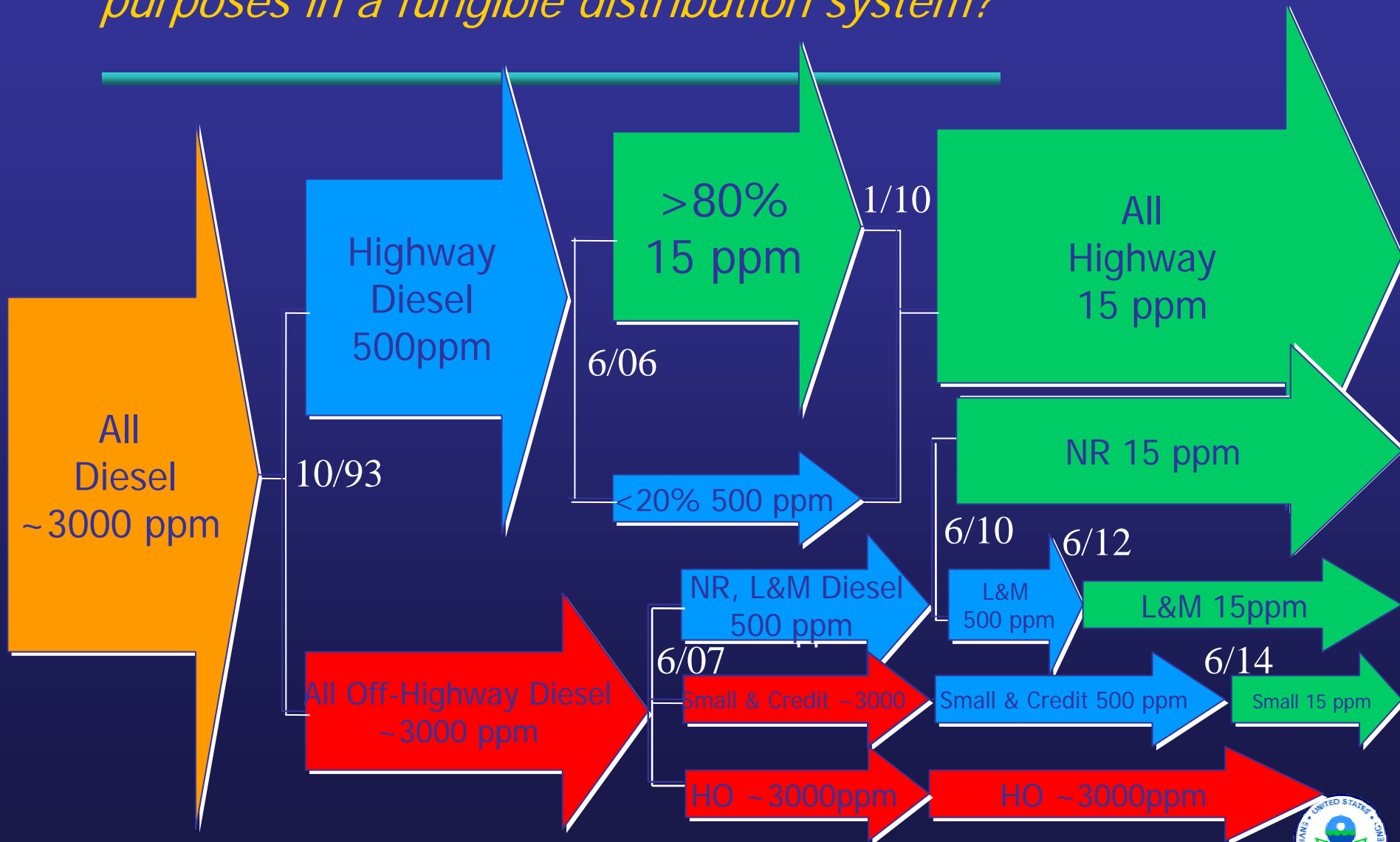


MVNRLM Diesel Fuel Standards

Who	Covered Fuel	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Highway Diesel Fuel	80% 15 ppm / 20% 500 ppm				100% 15 ppm (including small refiner fuel)				
Large Refiner & Importer	Nonroad		500	500	500	15	15	15	15	15
Large Refiner & Importer	Loco and Marine		500	500	500	500	500	15	15	15
	NRLM with Credits (Not in NE or AK)		HS	HS	HS	500	500	500	500	15
Small Refiner	NRLM (Not in NE, w/ approval in AK)		HS	HS	HS	500	500	500	500	15
Transmix Processor & In-use	Nonroad (Not in NE or AK)		HS	HS	HS	500	500	500	500	15
Transmix Processor & In-use	Loco and Marine (Not in NE or AK)		HS	HS	HS	500	500	500	500	500



How can we enforce different refinery production requirements for identical fuels used for different purposes in a fungible distribution system?



* This figure is intended to illustrate the timeline for the final highway and nonroad diesel fuel sulfur control programs. It is not drawn to exact scale. Refer to 40 CFR Part 80 for specific program dates.



Program Enforcement Options

- Segregate the fuels, utilize markers/dyes
- Establish refinery baselines to use as production requirements
 - EPA's proposal
- Designate and Track- *accounting mechanism*
 - Developed through extensive industry interactions
 - Final Rule



Designate and Track

- Purpose
 - Ensure refinery production requirements are met by ensuring that what is sold matches what was produced
 - While allowing like products to be shipped fungibly
- Two main accounting components
 - Handoffs from one party to the next **MUST** match
 - No net change in fuel designations while in a party's possession over the course of a compliance period
- Key advantages of D&T
 - Will allow for fungible shipment of like fuels
 - 500 HW and 500 NRLM
 - Heating oil and high sulfur NRLM (credit, small)
 - 500 NR (credit, small) and 500 LM from 2010-12
 - Avoids tank segregations
 - NRLM no longer required to be dyed at the refinery if <500 ppm





D & T-Downstream



- Refiners will “designate” their fuel volumes as meeting a specific type and standard
- Parties in the distribution system are made responsible for “tracking” the fuel downstream of the refinery
 - Maintain records and report to EPA on volumes received from whom and delivered to whom
 - Maintain records and report to EPA on total receipts, deliveries and inventory changes by fuel designation
- Custody-based (by facility) program
 - Ends at the point that fuel is dyed/taxed

Anti-Downgrading

- No more than 20% of a facility's 15 ppm HW diesel can be downgraded to 500 ppm HW diesel fuel in a given compliance period
- Limit was put in place to protect availability of ULSD at the start of the program
 - To avoid intentional commingling of 15 ppm and 500 ppm diesel fuel by distributors/marketers, which would limit availability
- Limit was set sufficiently high to allow for the worst case scenario of expected contamination
- Begins October 1, 2006 to allow for the transition
(Date will be modified)
- Managed through the same designate and track regulations



The Real D&T

- Registration
- Designation
- Tracking
- Managing
- Reporting

Source: Buster Brown, Colonial Pipeline



Dye Requirements

- Dye requirements were modified to allow for the fungible shipment of 500 ppm highway and 500 ppm NRLM diesel fuel
 - 500 ppm fuel will be dyed at the terminal, not refinery
 - Rely on D&T
- High sulfur (heating oil or NRLM) will continue to be dyed at the refinery until June 1, 2010



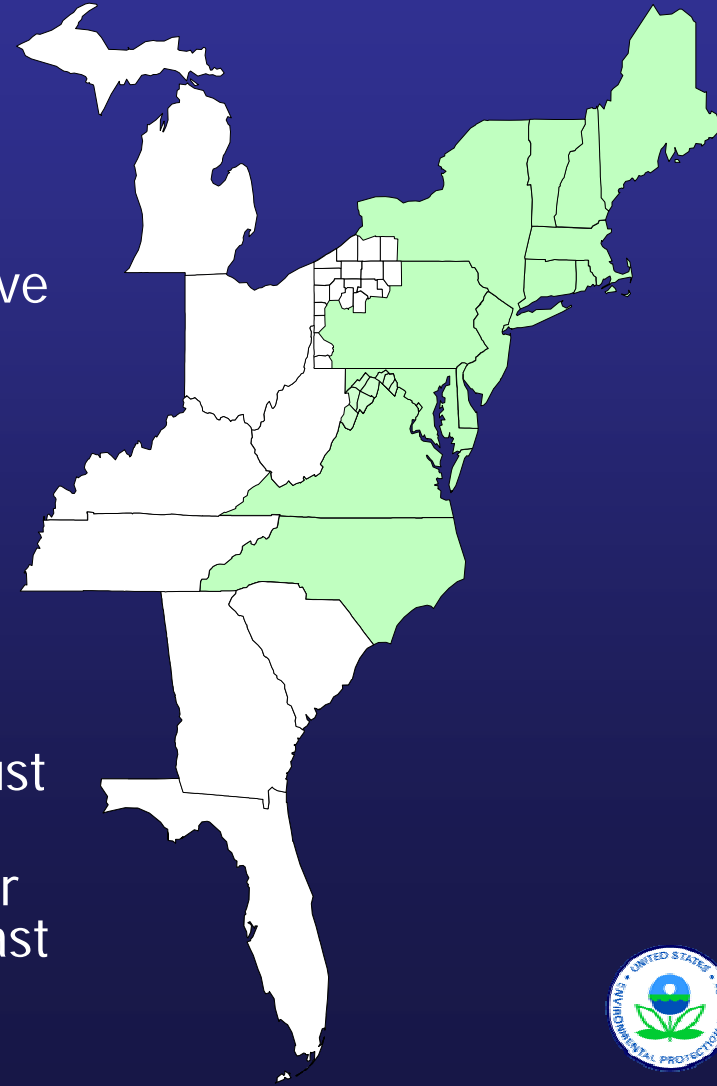
Marking Provisions

- New marker requirement for heating oil
 - To prevent heating oil from being used in NRLM equipment
 - 6 mg/L of solvent yellow 124
 - Added downstream at the terminal
- June 2007 – June 2010
 - Heating oil must contain the fuel marker, and have visible evidence of dye solvent red 164
 - All MV and NRLM diesel fuel must be marker free
- June 2010 – June 2012
 - Heating oil and 500 ppm LM diesel must be marked
 - MV and NR diesel fuel must be free of marker
- June 2012+
 - Heating oil must be marked
 - All MV and NRLM diesel fuel must be free of marker



Northeast/Mid Atlantic Area

- Refiners/Pipelines/Terminals agreed:
 - No marker requirement for HO in NE/MA Area
 - Due to cost/burden on terminals
 - Lack of small refiners in the area
- Eliminates flexibility for any fuel to be above the refinery gate standard, therefore:
 - No small refiner fuel
 - No credit fuel
 - No downstream LM downgrade flexibility
 - No alternative transmix standards
- Widely available heating oil market in this area provides the needed outlet for downgraded product
- Any heating oil shipped outside the NE must be marked
- Refiners may still generate credits (early or small) and trade them outside the Northeast





Urban Alaska

- Highway system (FAHS) parts of state are included in the national program
 - But no dye or marker requirements
- No flexibility for:
 - Credit use
 - Downstream downgrade to LM diesel fuel
- Small refiner fuel is permitted
 - Refiner must first obtain an EPA-approved compliance plan
 - Segregate fuel through to end-users
 - Report end-users, etc.
 - End-users must maintain fuel purchase records





Rural Alaska

- The State of Alaska requested that the ULSD program for both highway and nonroad be modified to account for Alaska's unique geographical, meteorological, air quality, and economic situation
 - Urban areas would follow the federal requirements for ULSD
 - Rural areas would require ULSD by 2010 for all HW, NR, and LM fuel
 - Represents a 4-year delay for HW, but a 2 year acceleration for LM
 - The State determines which areas are designated as urban and rural
- The State's request would not impact the new emission standards applicable to HW or NR engines
- A rulemaking is underway that will propose a specific transition plan for ULSD in rural Alaska



Transmix – (§ 80.513)

- If you process transmix, you are a refiner
- But if no blendstocks or crude processing, allow delayed compliance:
 - MV diesel fuel:
 - 100% 500 ppm until June 1, 2010
 - NRLM:
 - High sulfur until June 1, 2010 (except for AK & NE/MA)
 - 500 ppm till June 1, 2014 (except for AK & NE/MA)
 - 15 ppm starting 2014



Kerosene Blending (§ 80.525)

- Kerosene blenders subject only to downstream requirements if certain conditions are met
- Conditions include:
 - PTD for kerosene intended for blending into 15 ppm fuel must indicate meets the 15 ppm std.; or
 - The blender must have test results showing the kerosene meets the 15 ppm std.



Downstream Additive Blending (§ 80.521)

- MVNRLM Additives blended downstream
 - Additive PTDs w/ specified language
 - If for use in 15 ppm fuel, must meet 15 ppm std.; or
 - Additive may be >15 ppm if <1% of fuel volume and PTD warnings
 - Blender liable if resulting fuel exceeds 15 ppm
 - QA defense: didn't cause; PTDs; test every batch or, if Static-Dissipater additive, may use VAR approach
- Consumer additives must meet 15 ppm



Biodiesel blending

- Biodiesel is diesel fuel and must meet all standards and requirements, including refiner/importer requirements & fuel registration.
- If biodiesel is received from a fuel manufacturer/refiner then the terminal is just commingling 2 diesel fuels
 - Resulting mixture must meet applicable standards



Exemptions (§ 80.607, § 80.608)

- Exported fuel: PTDs/recordkeeping
- Approved research
- Limited military exemptions
- Territories exempt if:
 - Designated by refiner for use in territories & used there
 - Special PTD language
 - Segregated from non-exempt MVNRLM



For More Information...



Q&As and Workshop Materials:

www.epa.gov/cleandiesel/comphelp.htm

Web pages:

www.epa.gov/otaq/diesel.htm

www.epa.gov/nonroad-diesel/2004fr.htm

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