



A Workshop on Reducing Emissions from Diesel Engines

April 7, 2008



Sprague 
DEMAND MORE THAN SUPPLY



Doing More

Ultra Low Sulfur Diesel Update
Tim Keaveney



Agenda

- **Introduction to Sprague**
- ULSD supply update
- ULSD supply considerations
- Conclusion

Sprague Energy: Evolving to Meet Customer Needs



Fueling America's Growth 1870-1950

- Founded in Boston
- Supplied whale oil and coal to fuel thriving economy
- Owned fleet of 27 vessels
- Ran Allied coal support efforts in WWII



Modernization 1950-1960

- Transitioned to residual fuel oils
- Acquired and built new terminals
- Focused on industrial customers



The Energy Crisis 1970-1985

- Sprague family sold to Royal Dutch Shell...
- ...only to sell to Axel Johnson two years later
- Expanded into distillate fuels and reseller class of trade
- Built two refineries



Expanding Capabilities 1986-Today

- Expanded product offerings:
 - Gasoline
 - Jet fuel
 - Natural gas
- Leveraged terminals for bulk materials handling
- Expanded into break-bulk handling



Our Products and Services

End Users



Natural Gas

Fuel Oils

Coal



Clean fuels



Motor fuels

Resellers



Home Heating Fuels



Motor Fuels

Risk Management



Materials Handling



Bulk



Break Bulk



Lumber



Liquid

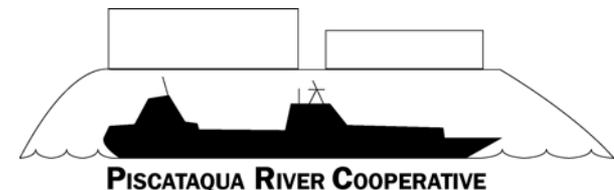
Sprague's Commitment to the Environment

- **Industry leader in marketing clean fuels**
 - Ultra Low Sulfur Diesel
 - Built the infrastructure for and began marketing ULSD 6 years ahead of the EPA mandate
 - Supplying over 100 million gallons annually to nearly every major transit authority in the Northeast
 - 2005 Inaugural EPA Children's Environmental Health Award recipient
 - Biodiesel & Bioheat
 - First terminal operator/marketer to provide biodiesel blending capabilities in the Northeast
 - First operator to market biofuel specifically for home heating applications



National Biodiesel Board Member

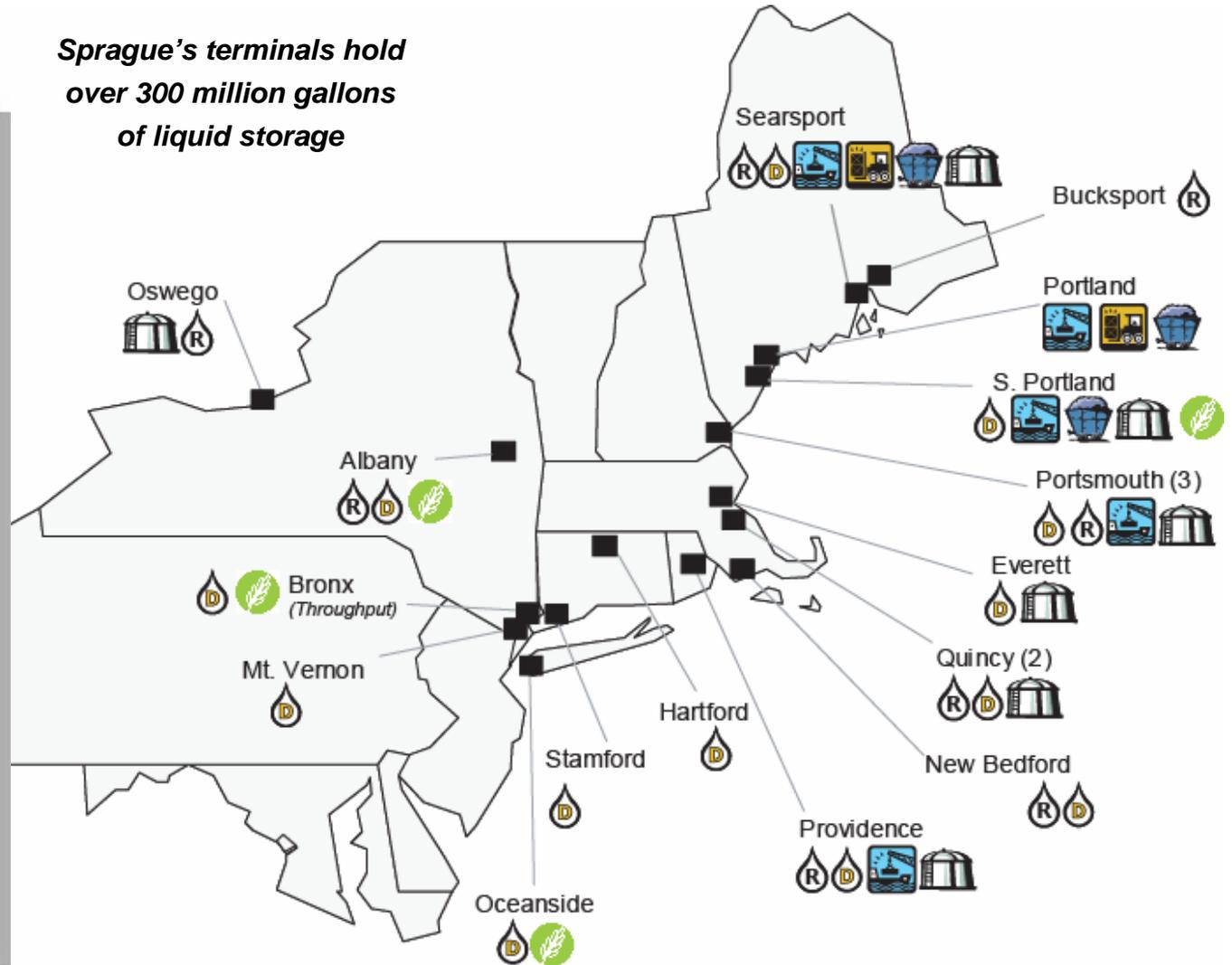
- **Industry leader in environmental preparedness**
 - Active participant in regional response cooperative
 - Extensive employee training program



Sprague Owned Terminal Network

Sprague's terminals hold over 300 million gallons of liquid storage

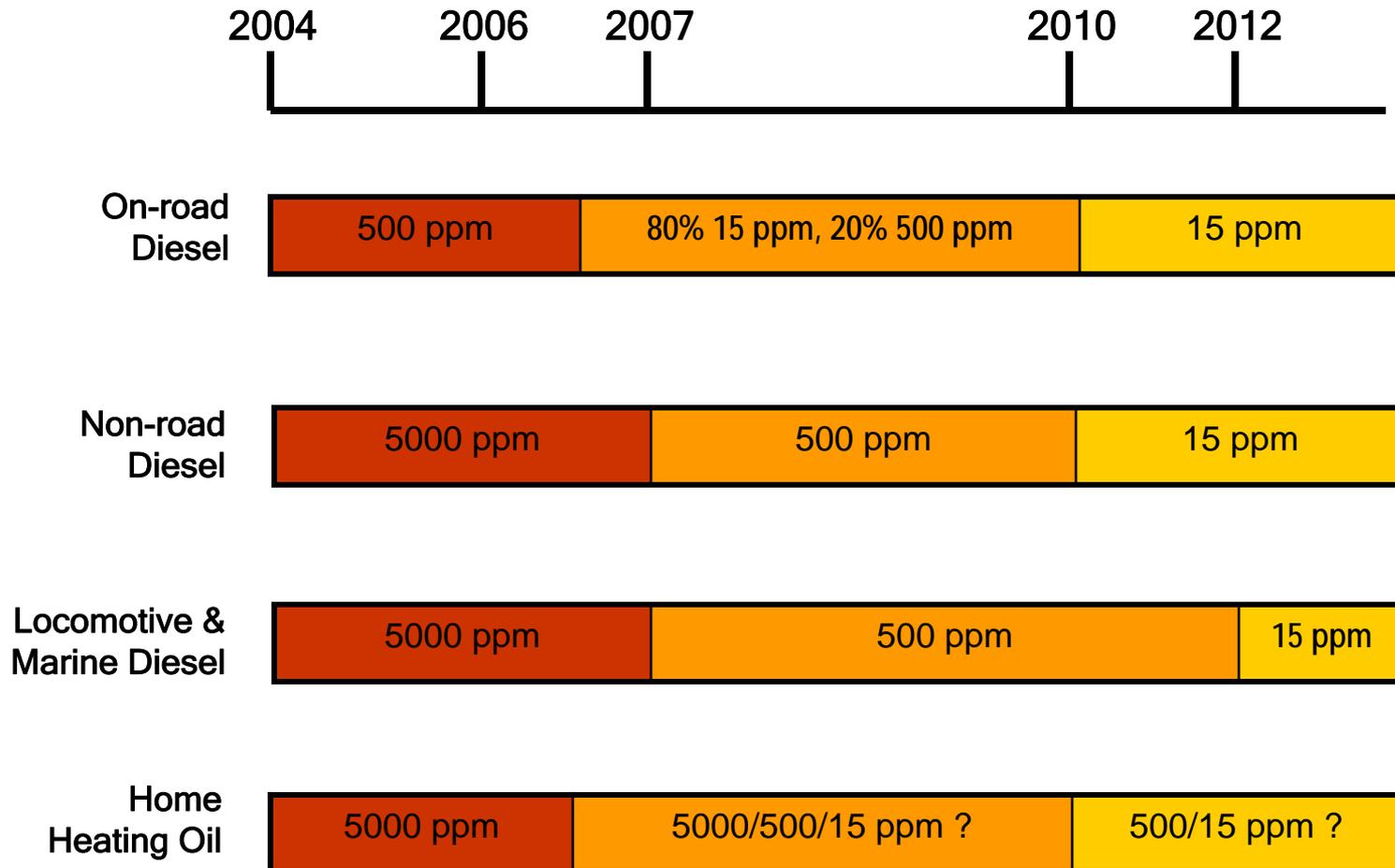
	Distillate
	Residual
	Bulk
	Break Bulk
	Liquid
	Biofuel
	Coal



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Ultra Low Sulfur Diesel Regulations



ULSD Implementation

Key Dates

- Key Dates: -
 - On-Highway
 - **June 1, 2006** – 80% of **refinery** output & **imports** will be 15ppm (excludes refiners granted hardship provisions)
 - **September 1, 2006** – **terminals** that participate in selling ULSD must adhere to all requirements
 - **October 15, 2006** – **retail outlets and trucking fleets** must adhere to all documentation and tracking requirements
 - June 1, 2010 – all on road fuel is 15ppm
 - **Non-Road, Locomotive & Marine (NRLM)**
 - **June 2007** – NRLM fuel sulfur content reduced to 500ppm
 - **June 2010** – NR fuel sulfur content reduced to 15ppm
 - **June 2012** – LM fuel sulfur content reduced to 15ppm
 - Jan. 1, 2007 – OEM's introduce into marketplace new vehicles with emission control devices, which will require the use of ULSD

ULSD Update

- The fear is behind us!
- 2006 transition from LSD to ULSD has gone smoothly
- Proper planning has paid off
- No significant strain on ULSD supply
- The impact to the ***on road*** sector has been minimal
- Challenge: supplying those calling for LSD!

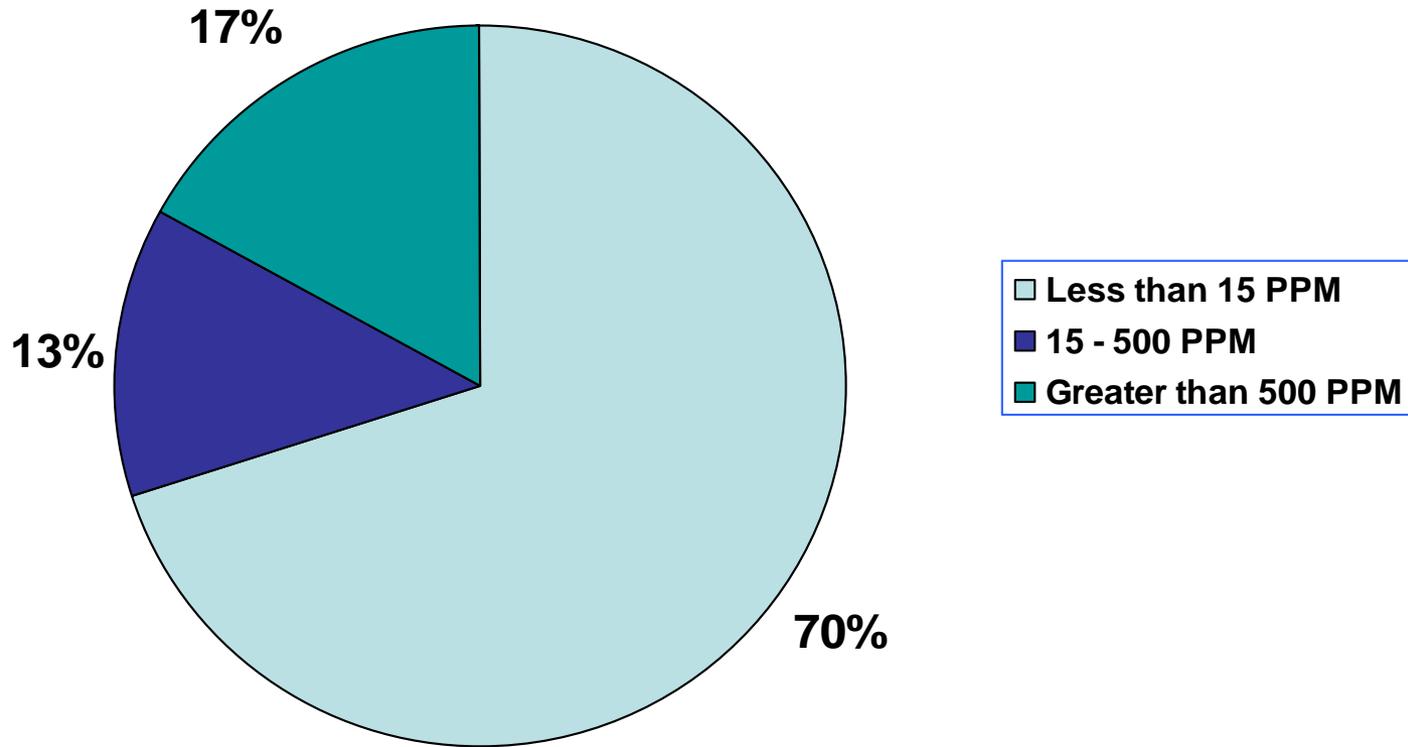
Who is Storing What?

- Limited storage capacity reduces dual fuel capabilities
- The Rule: All major northeast wholesale fuel oil terminal operators now store 15ppm ULSD
- The Exception: Terminals that store 500ppm LSD
- Conclusion: ULSD is now widely available in the marketplace, with 500ppm being a “niche” product





US Distillate Fuel Oil Production, Sulfur Content (PPM)



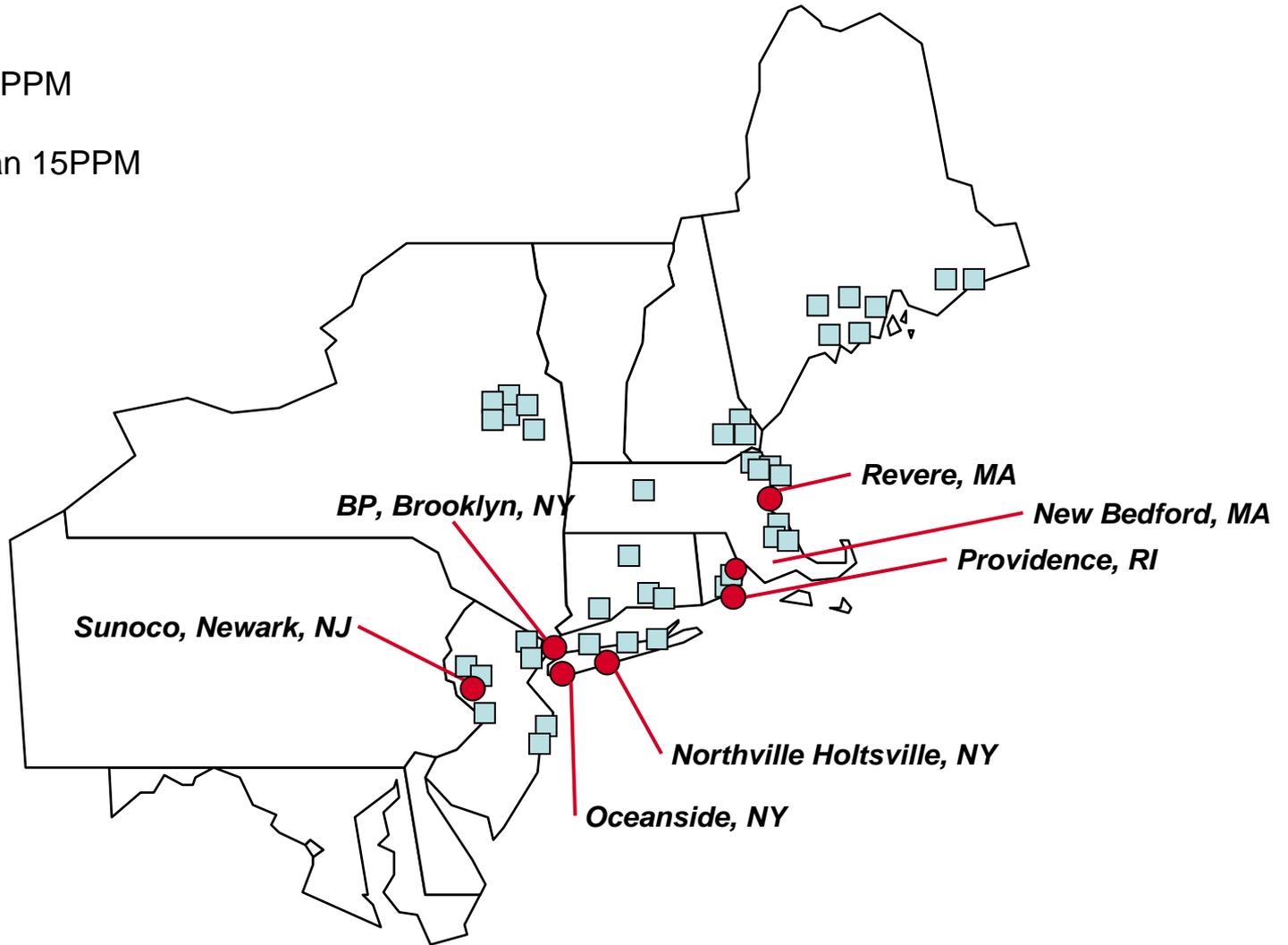
Total US Production ~ 4.2 million bbls/day

Source: US Energy Information Administration

500 PPM Diesel Availability Today

● 15 - 500PPM

■ Less than 15PPM



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ULSD Supply Considerations

- Contract with experienced, credible, financially responsible supplier
- Obtaining consistent high quality product
 - meeting/exceeding OEM specifications
 - meeting operability standards
 - meets federal, state and local regulations
 - utilize Quality Assurance Control Program to ensure product integrity
- Securing adequate supply
 - vendor alternative supply sources
 - geographically desirable back-up terminal network supply system
 - back-up delivery system
- Securing competitively priced product
 - posting mechanism options
 - firm fixed price opportunity
 - bulk purchase opportunity

ULSD Supply Considerations

- Lubricity
 - ULSD is deficient in lubricity characteristics
 - Suppliers now required to treat for lubricity at terminals
 - Typical ULSD >600 um HFRR testing
 - ASTM D975 spec = <520 um wear scar
 - Consult with OEM for specific lubricity requirements
 - Ask your ULSD supplier for HFRR test results

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Conclusion

- EPA mandates now require non road users to burn low sulfur fuels
- Limited supply of LSD will force non road users to burn greater amounts of ULSD through 2010
- 2010 all non road fuel will be required to be ULSD
- Diesel users should work with OEMs and fuel suppliers in order to source the proper fuel for their equipment



Sprague

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Tim Keaveney

603 – 430 - 7236

tkeaveney@spragueenergy.com