



Low Sulfur Heating Oil

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Regional Low Sulfur #2 Distillate Initiatives

- MANE-VU States are proposing 500 ppm cap on #2 distillate used for residential & commercial heating beginning July 1, 2012
- Ultimate goal is ULSD heating oil
- Strategy is among the most significant & cost-effective air pollution control options available

Support for Low Sulfur Heating Oil Initiative

NEG/ECP Resolution – August 29, 2005

“BE IT FURTHER RESOLVED THAT the Conference directs its Committee on the Environment to develop a cost-effective, regional low sulfur heating oil strategy for reducing the public health and environmental impacts of air pollution associated with residential and commercial space heating.”

Consumer Energy Council of America – Sept 2003

“CECA finds that low sulfur fuel is superior to traditional heating oil, and will contribute to significant environmental and consumer benefits – both directly and indirectly.”

Support for Low Sulfur Heating Oil Initiative

NEFI Position Paper – March 1, 2004

“NEFI is firmly committed to reducing the sulfur content in home heating oil. As an organization we recognize that reducing sulfur in home heating oil is good for the environment, good for energy consumption, improves efficiency of the equipment and therefore helps reduce greenhouse gas emissions.”

NORA Information Pamphlet

“We operate today with a framework of advanced technology, sophisticated fuel markets, and acute environmental sensitivity. By including low sulfur product in your delivery stream you will be taking a responsible step forward that can answer many issues of the day while improving the outlook for Oilheat. Your customers benefit and so do you.”

Why are States Pursuing this Strategy

- Residential & commercial heating is among largest source of SO_2 in MANE-VU region
- Significant source of direct fine particulate matter
- Source of NO_x
- Oil heat responsible for about 10% of CO_2 in NESCAUM region
- Potentially one of largest in-region sources of mercury

Why States are Pursuing this Strategy

- These emissions need to be controlled to meet federal fine particulate (PM) standards & regional haze objectives and to protect public health
- SO₂ is the most significant constituent of PM_{2.5} and the primary cause of visibility impairment in the East

How Did We Get Here

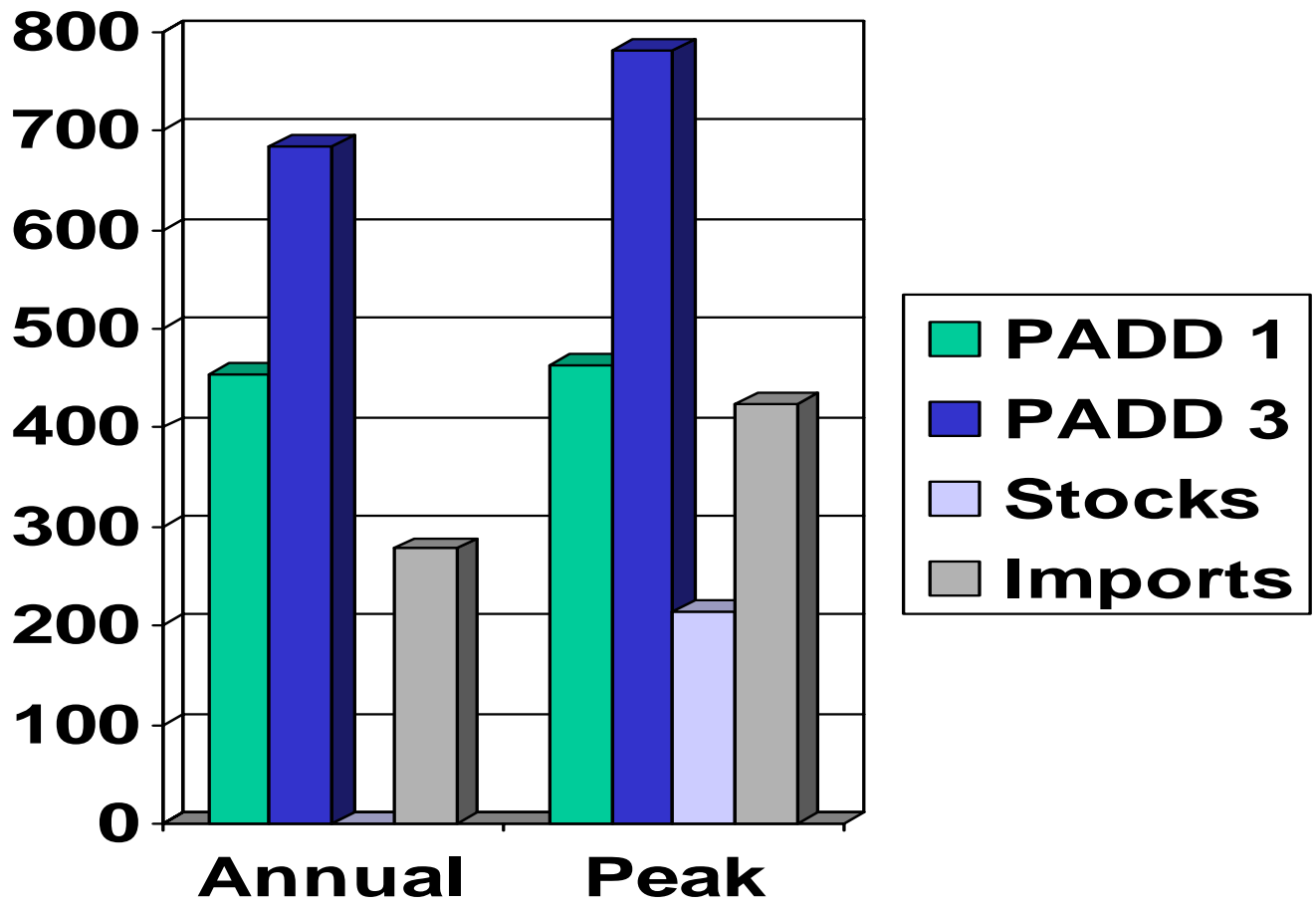
- NESCAUM states drafted MOU in 2004 calling for 500 ppm sulfur heating oil by July 1, 2007
- Proposal was presented and discussed with broad group of industry stakeholders in April 2005
- Heating oil wholesalers & retailers indicated support for moving to 500 ppm, but raised some concerns
- NESCAUM conducted cost & benefits assessment
- States revised proposal with start date of July 1, 2009
- Met with stakeholder on April 4, 2006 to discuss

Industry Reaction

- Oilheat wholesalers and retailers voiced continued support for 500 ppm sulfur heating oil
- Based on concerns about supply constraints, industry indicated that 2009 start date was too soon
- “Offshore” product from Venezuela, Caribbean & Russia are key to meeting peak supply & refiners in those countries are not expected to have low sulfur heating oil available to our market in near-term
- Prefer largest geographic region for program implementation

Sources of Northeast Distillate

(avg. 2001-04 in TBD)



Federal Diesel Sulfur Standards

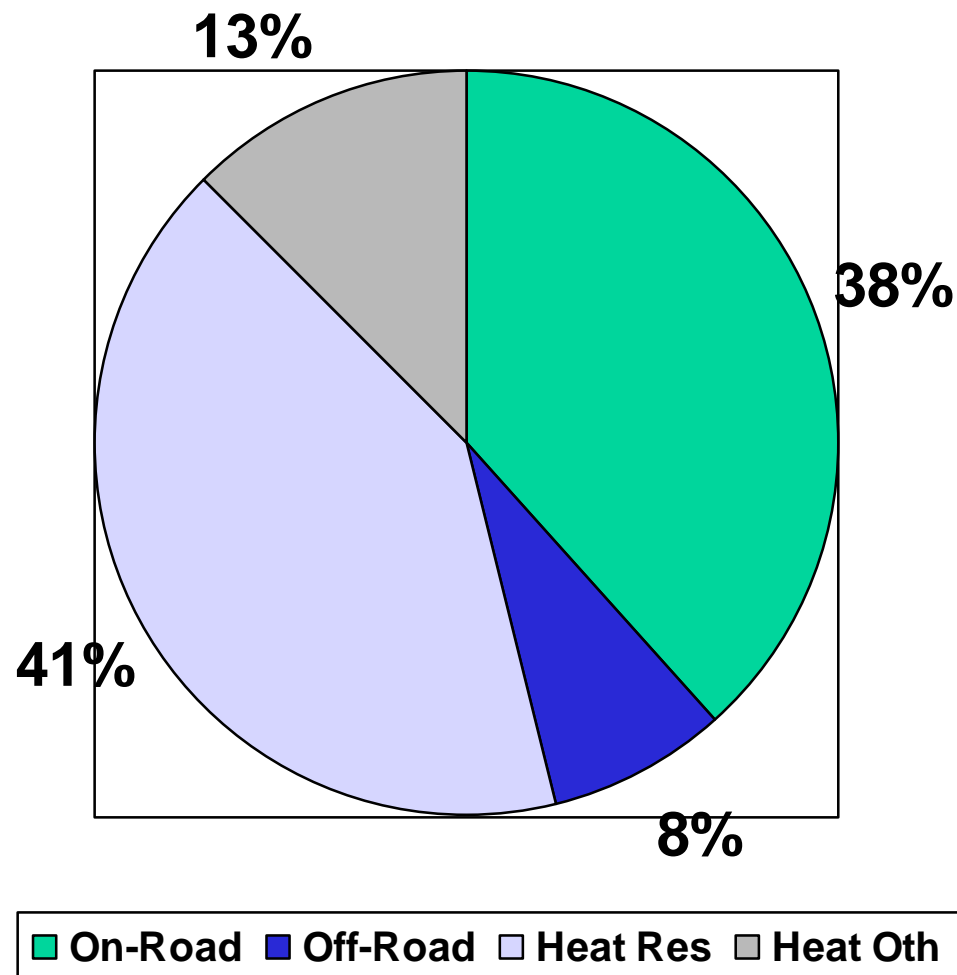


Who	Covered Fuel	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Highway Diesel		80% 15 ppm / 20% 500 ppm			15	15	15	15	15
Large Refiner & Importer	Nonroad (NR)		500	500	500	15	15	15	15	15
Large Refiner & Importer	Loco/Marine (LM)		500	500	500	500	500	15	15	15
	NRLM w/Credits		HS	HS	HS	500	500	500	500	15
Small Refiner	NRLM		HS	HS	HS	500	500	500	500	15
Transmix & In-use	NR		HS	HS	HS	500	500	500	500	15
Transmix & In-use	LM		HS	HS	HS	500	500	500	500	500

Heating Oil Market in the Region

- Collectively the Northeast/Mid-Atlantic States constitute the world's largest market for heating oil
- In Northeast States, 54% of total distillate demand is for heating oil (42% residential)
- This compares to 38% for highway diesel

Northeast Distillate Demand



Estimated Emission Benefits of Low Sulfur Heating Oil

**Emission Benefits of 500 ppm Sulfur Heating Oil
(% reduction compared to 2,500 ppm sulfur fuel)**

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Pollutant	% Reduction with
SO₂	75 %
PM	80 %
NO_x	10 %
Hg	n/a
CO₂	1%-2%%

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Largest Sources of SO₂ Emission in the MANE-VU Region

Source Category	Emissions (tpy)	% of Regional Total
EGUs	1,628,333	71%
ICI Boilers	156,333	7%
Residential/Commercial Oil Heat Burners & Furnaces	153,225	7%

Largest Sources of SO₂ Emission in the NESCAUM Region

Source Category	Emissions (tpy)	% of Regional Total
EGUs	433,754	53%
Residential/Commercial Oil Heat Burners & Furnaces	120,508	15%
ICI Boilers	58,683	7%

Annual Emission Benefits in the MANE-VU Region of 500 ppm Sulfur Limit

2009	SO₂	NO_x	PM
Emissions 2,500 ppm fuel	176,742 tons	65,087 tons	6,541 tons
Projected Reductions 500 ppm	132,557 tons	6,509 tons	5,211 tons
Remaining Emissions	44,185 tons	58,578 tons	1,303 tons

Cost-Effectiveness

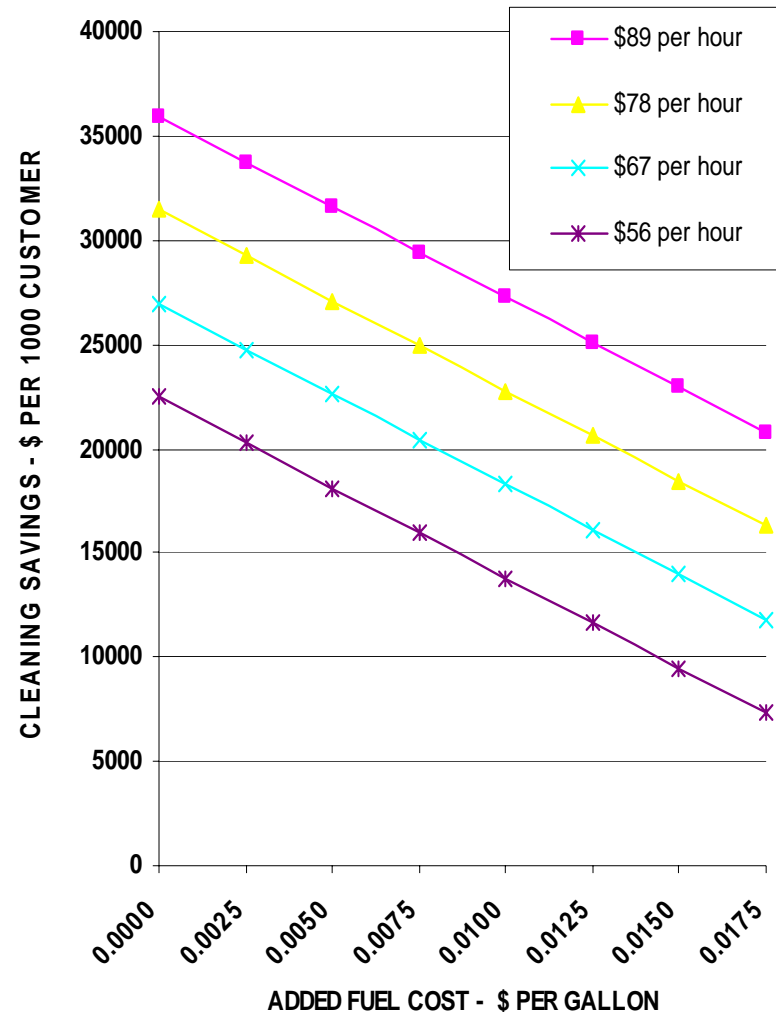
- At less than \$700 per ton of SO_2 reduced, low sulfur heating oil is among the most cost-effective strategies available to states
- This assumes:
 - 6,000,000,000 gal/yr sold in OTR
 - 1.5 cent/gal incremental cost (10-yr average)
 - 75% reduction in SO_2
 - 133,000 tons/yr SO_2 reduction in OTR
- Current price of SO_2 allowances in the power sector is \$735 per ton

Consumer Benefits of Low Sulfur Heating Oil



For: 0.25% S (initial) and 865 Gal per Year

- Reductions can be achieved at a net savings to the consumer
- Low sulfur heating oil reduces rate of fouling of heating equipment & therefore reduces maintenance
- Table shows net cost savings per 1,000 households at various cost points



Other Benefits of Low Sulfur Heating Oil

- Improved efficiency of existing systems (reduces costs & emissions)
- Availability of low sulfur fuel enables use of advanced technology such as condensing furnaces which are highly efficient (>95%)
- Consistent with European move to lower sulfur (1000 ppm in 2008)

Responding to Industry Concerns

- States have proposed later date
- Northeast states coordinating with Mid-Atlantic states & Eastern Canadian provinces to ensure consistency
- States willing to consider an appropriate sulfur content averaging program to minimize supply & cost impacts during periods of peak demand
- Encourage suppliers to increase stocks of low sulfur fuel at beginning of heating oil season
- States are interested in working with industry to promote blending of domestically-produced biofuels to extend supplies & provide economic opportunity

Low Sulfur #2 Distillate Initiatives

- Pushes back previously proposed start date 3 years to accommodate industry request for additional time
- Why 2012 is significant:
 - “check-in” year for regional haze progress
 - Compliance with new PM NAAQS will be based on air quality data for 2013 through 2015
 - BART sources must have controls in place by 2013

Next Steps

- Series of meetings with stakeholder groups:
 - Oilheat dealers
 - Offshore refiners
 - Environmental/public health advocates
- MOU for final consideration in Fall
- Fuel sampling program to evaluate the mercury content in distillate products and the potential relationship between sulfur and mercury concentrations