

TABLE V—A—1.—INCREASED COST OF PROVIDING NONROAD, LOCOMOTIVE AND MARINE DIESEL FUEL

	Cents per gallon of affected fuel			Affected fuel volume (million gallons/year) ^a
	Refining	Lubricity and distribution	Total	
Step One—500 ppm NRLM diesel fuel	2.2	0.3	2.5	9,504
Step Two—5 ppm Nonroad diesel fuel	4.4	0.4	4.8	7,803
Step Two—500 ppm Locomotive and Marine diesel fuel	2.2	^b 0.2	2.4	4,093

Notes:^a 2008 for Step One (without consideration of small refiner provisions), 2015 for Step Two.^b 0.4 cent per gallon from mid-2010 to mid-2014 due to need for marker.

The majority of the fuel-related cost of the proposal is refining-related. These costs include required capital investments amortized at 7 percent per annum before taxes. The derivation of these costs is discussed in more detail below and in the Draft RIA. We request comment on the estimated cost of meeting the 15 ppm and 500 ppm sulfur caps.

We also project that the increased cost of refining and distributing 15 ppm and 500 ppm fuel would be substantially offset by reductions in maintenance costs. These savings would apply to all diesel engines in the field, not just new engines. Refer to section V. B for a more complete discussion on the projected maintenance savings associated with lower sulfur fuels.

1. Refining Costs

Our process for estimating the refining costs associated with the proposed fuel program consisted of four steps. One, we estimated the volume of 500 and 15 ppm nonroad, locomotive and marine diesel fuel which had to be produced in each PADD ²⁷¹ in each phase of the program. This step utilized diesel fuel and heating oil use estimates from the Energy Information Administration's (EIA) Fuel Oil and Kerosene Survey for 2000, shipments of diesel fuel between PADDs, projected loss of 15 and 500 ppm volume due to contamination during distribution and small refiner provisions. This nonroad diesel fuel consumption in 2000 is lower than that inherent in the emission estimates described above, which are based directly on the results of EPA's NONROAD emission model. We are investigating ways to make the two estimates more consistent.

Growth in distillate fuel use off this year 2000 base was estimated using projections from EIA's Annual Energy Outlook, with one exception. This exception was that the growth in nonroad diesel fuel use was taken from EPA's NONROAD emission model

(roughly three percent per year), as opposed to EIA's projected growth of roughly one percent per year. The higher growth rate is consistent with that inherent in the emission estimates described above.

Refinery production of low and high sulfur distillate fuel in the year 2000 was based on actual reports provided to EIA by all U.S. refiners and importers. Refinery production of low and high sulfur distillate fuel was assumed to grow at the same rate as consumption of the two types of fuel, respectively. These rates were roughly three percent and one and a half percent for low and high sulfur distillate fuel production, respectively. The specific volumes of highway, nonroad, locomotive, and marine diesel fuel by calendar year are presented in chapter 7 of the Draft RIA.

Two, we estimated the cost for each refinery to desulfurize its high sulfur fuel to 500 and 15 ppm. This was based on their historical production volume of high sulfur diesel fuel and estimates of the composition of this fuel (straight run, light cycle oil, etc.).²⁷² We also considered whether these refineries would be modifying or building hydrotreating capacity in order to meet the 15 ppm highway cap.

Three, we estimated which refineries would find it difficult to market all of their current high sulfur diesel fuel as heating oil, due to their location relative to major pipelines and the size of the heating oil market in their area. Those not located in major heating oil markets and not connected to pipelines serving

these areas were projected to have to meet the 500 ppm cap in 2007.

Four, we determined the additional refineries which would produce 500 ppm and 15 ppm fuel to satisfy demand during each phase of the fuel program. Refineries projected to have the lowest compliance costs in each PADD were projected to produce the lower sulfur fuels until demand was met. PADD 3 refineries were allowed to ship low sulfur fuel to the Northeast, but no other inter-PADD transfers were assumed. Imports of 500 ppm highway diesel fuel were assumed to increase at the rate of highway diesel fuel consumption and be converted to 15 ppm diesel fuel, 80 percent in 2006 and 100 percent in 2010. Imports of high sulfur distillate fuel were assumed to increase at the rate of high sulfur distillate fuel consumption, but were assumed to remain entirely high sulfur heating oil even after today's NRLM fuel proposal. In other words, all 15 ppm and 500 ppm NRLM fuel produced under this proposal was assumed to be produced by domestic refineries. This assumption increased the projected costs of the proposal described above more than would have been the case had we assumed that domestic production and imports of high sulfur distillate fuel would each keep their respective shares of the NRLM diesel fuel and heating oil markets in response to this proposal. The relative costs of producing 15 ppm nonroad diesel fuel by domestic and overseas refiners is discussed further in section V.A.6. below.

With the onset of a 2007 500 ppm sulfur cap for nonroad, locomotive and marine diesel fuel, we project that the market for high sulfur diesel fuel and heating oil would become so small that high sulfur fuel would no longer be shipped through common carrier pipelines in most areas. The prime exception to this would be the Northeast, where the heating oil market is very large. Thus, refiners located in the Northeast and those along the major pipelines serving the Northeast, namely the Colonial and Plantation pipelines, could continue to produce high sulfur

²⁷² The composition of nonroad diesel fuel in each PADD was based on a survey conducted by API and NPRA in 1996. Crude oils processed by domestic refiners have been becoming heavier over time, necessitating greater use of coking and hydrocracking to convert the heavy material into lighter, saleable products. Thus, the contributions of coker and hydrocracked distillate to the overall distillate pool are rising. Coker distillate is somewhat more difficult to desulfurize than average distillate, but hydrocracked distillate is much easier to desulfurize. Overall, this trend could increase projected desulfurization costs slightly. We plan to update these compositions to reflect trends in crude oil quality and refinery configuration in our analysis for the final rule to the extent that more recent data allow.

²⁷¹ Petroleum Administrative for Defense Districts.