

heating oil. Other refineries would shift the production of high sulfur diesel fuel and heating oil to the 500 ppm NRLM market. The second exception would be refiners granted special provisions due to the small size of their business (*i.e.*, SBREFA refiners) or economic hardship, as discussed in section IV above. The high sulfur distillate production levels of these refineries is small enough that they can sell into more local nonroad, locomotive and marine markets or the heating oil market without using pipelines and so they could continue to produce high sulfur distillate.

Based on refinery distillate production data from the Energy Information Administration (EIA), there are 122 refineries currently producing highway diesel fuel and 105 refineries producing high sulfur diesel fuel or heating oil. Using the methodology described above, absent this proposal, we project that roughly 114 refineries will invest in additional desulfurization equipment to produce 15 ppm highway diesel fuel; 74 refineries in 2006 and 40 in 2010.²⁷³ These 114 refineries include 109 of the 122 refineries which currently produce highway diesel fuel, plus 5 refineries which currently only

produce high sulfur distillate fuel today. Again absent the proposed NRLM diesel fuel program, we project that roughly 13 refineries currently producing highway diesel fuel will shift to producing high sulfur distillate fuel. This would leave a total of 113 refineries still producing high sulfur distillate after full implementation of the 2007 highway diesel fuel program.

The number of these 113 domestic refineries expected to produce either 500 ppm or 15 ppm NRLM diesel fuel in response to this proposal is summarized in Table V–A–2.

TABLE V–A–2 REFINERIES PROJECTED TO PRODUCE NRLM DIESEL FUEL UNDER THIS PROPOSAL

Year of Program	500 ppm diesel fuel		15 ppm diesel fuel	
	All refineries	Small refineries	All refineries	Small refineries
2007–2010	42	0	0	0
2010–2014	37	19	25	0
2014+	25	12	37	7

As shown in this table, we project that 42 of the 113 refineries currently producing some high sulfur distillate would desulfurize their high sulfur diesel fuel in response to the proposed 500 ppm standard in 2007. The remainder would continue producing either high sulfur NRLM diesel fuel under the proposed small refiner provisions, or high sulfur heating oil. As explained in section IV.F, we project that these refiners would use conventional hydrotreating technology to meet this standard. Of these 42 refineries, we project that 32 would build new hydrotreaters to meet the 500 ppm sulfur cap. We project that three of the remaining ten refineries would be able to meet the 500 ppm cap with their existing hydrotreater which is currently being used to produce highway diesel fuel. These three refineries are projected to build a new hydrotreater to produce 15 ppm highway diesel fuel in 2006, so their existing highway fuel hydrotreater could process their current high sulfur diesel fuel. The remaining seven refineries currently produce relatively small amounts of high sulfur diesel fuel compared to their highway diesel fuel production. We project that these refiners would be able to economically revamp their existing highway

hydrotreater to process their non-highway diesel fuel.

We project that the capital cost involved to meet the 2007 500 ppm sulfur cap would be \$600 million, or \$9.7 million per refinery building a new hydrotreater. The bulk of this capital would be invested in 2007 (\$500 million), with the remainder being invested in 2010.²⁷⁴ Operating costs would be about \$3 million per year for the average refinery. We request comment on the number of refiners who would need to build new equipment to meet the 500 ppm sulfur cap, the capital cost for this new equipment and the cost of operating this equipment.

Starting in mid-2010, we project that 25 refineries would add or revamp equipment to meet the 15 ppm cap on nonroad diesel fuel, while 20 refineries (nearly all of them small refiners) would add or revamp equipment to produce 500 ppm nonroad or locomotive and marine diesel fuel. Finally, an additional 12 refineries (again nearly all of them small refiners) would begin producing 15 ppm nonroad diesel fuel in 2014.

We project that 80 percent of the 15 ppm nonroad diesel fuel volume would be desulfurized by advanced technologies, while the remaining 20 percent would be desulfurized by conventional hydrotreaters. Since the

bulk of the hydrotreating capacity being used to meet the 2007 500 ppm standard for NRLM diesel fuel would have just been built in 2007 or 2010, we expect that it would have been designed to facilitate further processing to 15 ppm sulfur and the added 15 ppm facilities would be revamps. However, those refiners who used their existing highway diesel fuel hydrotreaters to meet the proposed 500 ppm cap in 2007 would likely have to construct new equipment in 2010 or 2014 to meet the 15 ppm cap on nonroad diesel fuel, since these hydrotreaters could not be revamped in 2006 to produce 15 ppm highway diesel fuel. When the proposed NRLM diesel fuel program would be fully implemented in 2014, roughly 51 refineries are still projected to produce high sulfur heating oil and thus, would not face any refining costs related to this proposal.

Our projection that 80 percent of refineries would utilize some form of advanced technology to meet the proposed 15 ppm nonroad fuel sulfur cap is based on the fact that this 15 ppm cap would follow the production of 15 ppm highway diesel fuel by four years. Several firms are expending significant research and development resources to bring such advanced technologies to the market for the highway diesel fuel

²⁷³ These (and the subsequent) estimates of the number of refineries investing in new equipment to produce diesel fuels of various sulfur levels should be understood as rough estimates which assist us in projecting costs and other impacts related to this proposal. They are most reasonable when

evaluating the total number of refineries investing in a particular year or region. We are not indicating that we believe that we can predict which specific refineries would invest in desulfurization equipment in response to this proposal.

²⁷⁴ Some refineries would be able to delay production of 500 ppm NRLM fuel until 2010 due to the proposed small refiner provisions. Likewise, some refineries would be able to delay production of 15 ppm nonroad diesel fuel until 2014.