

sulfur distillate material from the nonroad, locomotive and marine diesel fuel markets to the heating oil market starting in mid-2007, it would avoid the need to invest in new desulfurization equipment. Likewise, starting in mid-2010, a refiner could focus his 500 ppm diesel fuel in the locomotive and marine diesel fuel markets or shift this material to the heating oil market. The problem would be a potential oversupply of heating oil starting in 2007 and locomotive and marine diesel fuel and heating oil starting in 2010. An oversupply could lead to a substantial drop in market price, significantly increasing the cost of leaving the nonroad, locomotive and marine diesel fuel markets. Or, it may be necessary to export the higher sulfur fuel in order to sell it. This could entail transportation costs and overseas prices no higher than existed in the U.S. before the oversupply (and possibly lower due to these imports now entering these overseas markets).

We addressed this same issue during the development of 2007 highway diesel fuel program. There, the issue was whether refiners would shift some or all of their current highway diesel fuel production to either domestic or overseas markets for high sulfur diesel fuel or heating oil in order to avoid investing to meet the 15 ppm cap for highway diesel fuel. A study by Charles River Associates, *et al.*, sponsored by API projected that there could be a near-term shortfall in highway diesel fuel supply of as much as 12 percent.<sup>283</sup> However, supported by a study by Muse, Stancil, we concluded that refiners would incur greater economic loss in trying to avoid meeting the 15 ppm highway diesel fuel cap than they would by complying at current production levels even if the market did not allow them to recover their capital investment. A study by Mathpro, Inc. for AAM and EMA also criticized the conclusions of the Charles River study, particularly their assumption that compliance costs alone would drive investment decisions and that there was essentially a single highway diesel fuel market nationwide.<sup>284</sup> Mathpro demonstrated that smaller refineries located, for example, in the Rocky Mountain region, likely faced higher per

gallon compliance costs, but also had been more profitable over the past 15 years than larger refiners in other areas with lower overall costs. This was due to their market niches and the inability for lower cost refiners to ship large volumes of fuel economically to their market.

We believe that the same conclusions apply to the proposed fuel program for six reasons. One, the alternative markets for high sulfur diesel fuel and heating oil would be even more limited after the proposed sulfur caps on nonroad, locomotive and marine diesel fuel than they will be in 2006, as half of the current U.S. market for high sulfur, no. 2 distillate would disappear. We expect that high sulfur heating oil would not even be carried by common carrier pipelines except those serving the Northeast. Therefore, refiners' sale of high sulfur distillate may be limited to markets serviceable by truck. Two, the desulfurization technology to meet a 500 ppm cap has been commercially demonstrated for over a decade. The desulfurization technology to meet a 15 ppm cap will have been commercially demonstrated in mid-2006, a full four years prior to the implementation of the 15 ppm cap on nonroad diesel fuel. Three, the volume of fuel affected by the 15 ppm nonroad diesel fuel standard would be only one-seventh of that affected by the highway diesel fuel program. This dramatically reduces the required capital investment. Four, both Europe and Japan are implementing sulfur caps for highway and nonroad diesel fuel in the range of 10–15 ppm, eliminating these markets as a sink for high sulfur diesel fuel. Five, refineries outside of the U.S. and Europe are operating at a lower percentage of their capacity than U.S. refineries. Thus, U.S. refineries would not be able to obtain attractive prices for high sulfur diesel fuel overseas. Finally, refinery profit margins were much higher during the last part of 2000 and most of 2001 than over the past ten years, indicating a potential long-term improvement in profitability. Margins decreased again during most in 2002, but recovered during the last few months of that year and in early 2003.

Once refiners have made their investments to meet the proposed NRLM diesel fuel standards, or have decided to produce high sulfur heating oil, we expect that the various distillate markets would operate very similar to today's markets. When fully implemented in 2014, there will be three distillate fuels in the market, 15 ppm highway and nonroad diesel fuel, 500 ppm locomotive and marine diesel fuel and high sulfur heating oil. The

market for 500 ppm locomotive and marine diesel fuel is much smaller than the other two, particularly considering that it is nationwide and the heating oil market is geographically concentrated. Therefore, the vast majority of refiners are expected to focus on producing either 15 ppm or high sulfur distillate, which is similar to today, where there are two fuels, 500 ppm and high sulfur distillate. In this case, refiners with the capability of producing 15 ppm diesel fuel have the most flexibility, since they can sell their fuel to any of the three markets. Refiners with only 500 ppm desulfurization capability can supply two markets. Those refiners only capable of producing high sulfur distillate would not be able to participate in either the 15 or 500 ppm markets. However, this is not different from today. Generally, we do not expect one market to provide vastly different profit margins than the others, as high profit margins in one market will attract refiners from another via investment in desulfurization equipment.

*Refinery Closure:* There are a number of reasons why we do not believe that refineries would completely close down under this proposed rule. One reason is that we have included provisions to provide relief for small refiners, as well as any refiner facing unusual financial hardship. Another reason is that nonroad, locomotive and marine diesel fuel is usually the third or fourth most important product produced by the refinery from a financial perspective. A total shutdown would mean losing all the revenue and profit from these other products. Gasoline is usually the most important product, followed by highway diesel fuel and jet fuel. A few refineries do not produce either gasoline or highway diesel fuel, so jet fuel and high sulfur diesel fuel and heating oil are their most important products. The few refiners in this category likely face the biggest financial challenge in meeting the proposed requirements. However, those refiners would also presumably be in the best position to apply for special hardship provisions, presuming that they do not have readily available source of investment capital. The additional time afforded by these provisions should allow the refiner to generate sufficient cash flow to invest in the required desulfurization equipment. Investment here could also provide them the opportunity to expand into more profitable (*e.g.*, highway diesel) markets.

A quantitative evaluation of whether the cost of the proposed fuel program could cause some refineries to cease operations completely would be very difficult, if not impossible to perform. A

<sup>283</sup> "An Assessment of the Potential Impacts of Proposed Environmental Regulations on U.S. Refinery Supply of Diesel Fuel," Charles River Associates and Baker and O'Brien, for API, August 2000.

<sup>284</sup> "Prospects for Adequate Supply of Ultra Low Sulfur Diesel Fuel in the Transition Period (2006–2007), An Analysis of Technical and Economic Driving Forces for Investment in ULSD Capacity in the U.S. Refining Sector," MathPro, Inc., for AAM and EMA, December 7, 2001.