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Summary and Analysis of the 2005 Highway and Nonroad Diesel Fuel Pre-Compliance Reports

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Assessment and Standards Division

and

Transportation and Regional Programs Division

Office of Transportation and Air Quality
U.S. Environmental Protection Agency

NOTICE

This Technical Report does not necessarily represent final EPA decisions or positions. It is intended to present technical analysis of issues using data that are currently available. The purpose in the release of such reports is to facilitate an exchange of technical information and to inform the public of technical developments.

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I. Executive Summary

Any refiner or importer planning to produce or import highway diesel fuel after June 1, 2006 and/or 15 ppm nonroad, locomotive, or marine (NRLM) diesel fuel after June 1, 2010 is required to submit to the U.S. Environmental Protection Agency ("EPA" or "the Agency") annual pre-compliance reports. Reports were due from 2003 through 2005 for the highway diesel rule and are due from 2005 through 2011 for the nonroad diesel rule by June 1 of each year. This report summarizes the results of the June 2005 pre-compliance reports, the final set of the highway reports and the first set of the nonroad reports. An overview of these results was presented at the 2005 ULSD Workshop, November 10-11, 2005.

Refiners' highway diesel pre-compliance reports must contain estimates of the volumes of 15 parts-per-million (ppm) sulfur highway diesel fuel and 500 ppm sulfur highway diesel fuel that will be produced at each refinery or imported by each importer from June 2006 through May 2010. Refiners' nonroad pre-compliance reports must contain estimates of total (highway + NRLM) 15 ppm diesel fuel and total (highway + NRLM) 500 ppm diesel fuel produced or imported from June 2010 through December 2014. For those refiners and importers planning on participating in the credit trading program, the reports must contain a projection of how many credits will be generated or used by each refinery or importer, under both the highway and NRLM diesel regulations. The pre-compliance reports must also contain information outlining each refinery's timeline for complying with the 15 ppm sulfur standards and provide information regarding engineering plans (e.g., design and construction), the status of obtaining any necessary permits, and capital commitments for making the necessary modifications to produce ULSD.

The 2003 and 2004 highway diesel reports indicated that refiners were on target for complying with the 15 ppm sulfur standard by June, 2006 and that 15 ppm sulfur diesel fuel would be widely available nationwide. The reports submitted for 2003 and 2004 were projections that were based on more preliminary plans and several refiners have changed their plans from those reports to 2005. The highway diesel pre-compliance reports and information received in June 2005 were all from refineries that produced highway and/or nonroad diesel fuel in 2004. The 2005 highway reports indicated that total production of ULSD will be greater than reported in 2003 and 2004, and that 90 percent of the total diesel fuel produced will be 15 ppm or less. Our conclusions here are based on the information provided in these reports, which includes projections of diesel fuel production, credit generation, and credit use plans as of June 1, 2005.

The 2005 nonroad pre-compliance reports provided a very preliminary estimate of expected NRLM diesel production beginning June 1, 2010. Many refiners are still developing plans to produce 15 ppm NRLM diesel, so no definite conclusions can be drawn from the 2005 nonroad pre-compliance reports. EPA expects the 2006 nonroad pre-compliance reports to present a clearer picture of refiners' plans to produce 15 ppm NRLM diesel.

II. Highway Diesel Pre-Compliance Reporting Requirements

The 2007 highway diesel final rule (66 FR 5002, January 18, 2001) requires that any refiner or importer planning to produce or import highway diesel fuel in 2006 must submit annual pre-compliance reports to the Agency[a]. Reports were due on June 1, 2003, June 1, 2004, and the final highway diesel pre-compliance reports were due on June 1, 2005.

The pre-compliance reports must contain the following information:

1. Any changes in the refiner's or importer's basic company or facility information since registration.
2. Estimates of the volumes of 15 parts-per-million (ppm) sulfur diesel fuel and 500 ppm sulfur (if applicable) diesel fuel to be produced from crude oil by each refinery and/or imported by each importer, as well as the volumes of each grade of highway diesel fuel produced from other sources.
3. Estimates of the numbers of credits to be generated and/or used, if at all.
4. Information regarding engineering plans (e.g., design and construction), the status of obtaining any necessary permits, and capital commitments for making the necessary modifications to produce ultra-low sulfur highway diesel fuel, and actual construction progress. Additionally, the reports summarized here, are required to provide an update of the progress in each of these areas.

We recognize that the pre-compliance reports may still contain some preliminary information and final decisions on desulfurization plans may not have been made in all cases as of the June 1 reporting deadline. Our conclusions in this summary and analysis are based on the information from the reports received for 2005, and reflect updated information from the 2003 and 2004 pre-compliance reports[1]. As the highway diesel regulations go into effect on June 1, 2006, we expect that the information in the 2005 pre-compliance reports contains refiners' finalized plans for complying with the rule, although actual operations may still vary[b].

In addition to the information listed above that is required for all refiners, small refiners and Geographic Phase-in Area (GPA) refiners are also required to provide additional information in their pre-compliance reports. For small refiners, the required information varies according to which small refiner option the refiner plans to use. The following paragraphs summarize the supplementary information required for small and GPA refiners.

[a] The primary purpose of these reports is to help facilitate the market for credit trading under the highway diesel fuel program's temporary compliance option (TCO) which is described in the preamble to the 2007 highway diesel final rule at 66 FR 5065, January 18, 2001.

[b] This report does not include the effect of any changes made to refiners' plans as a result of the hurricanes which struck the Gulf Coast in August and September of 2005. Based on subsequent conversations, the hurricanes have impacted a number of refineries. However, in all but a few cases, refiners have been able to take the necessary actions to recover to, or near to, their pre-hurricane schedules. Thus, we do not anticipate any major change from the results predicted here.

Small Refiners

In the highway diesel fuel regulations, a small refiner is defined as a refiner who 1) processes highway diesel fuel from crude oil; 2) employs no more than 1,500 people, based on the average number of employees for all pay periods for 1999; and, 3) has an average crude oil capacity less than or equal to 155,000 barrels per calendar day (bpcd).

The highway diesel final rule provided three alternative compliance options for refiners that qualify for small refiner status: 1) 500 ppm sulfur option, 2) small refiner credit option, and 3) diesel/gasoline compliance date option. A description of the additional reporting requirements for each of these options follows.

500 ppm Sulfur Option (Option a)

The 500 ppm sulfur option allows an approved small refiner to continue to produce and sell highway diesel fuel meeting the 500 ppm sulfur standard through May 31, 2010, provided that the refiner supplies information showing that sufficient alternate sources of 15 ppm sulfur highway diesel fuel will exist in the marketing area(s) that the refiner serves.

The pre-compliance report for a small refiner planning to use this option must make a showing that sufficient sources of 15 ppm sulfur highway diesel fuel will likely exist in the area.

Small Refiner Credit Option (Option b)

Under the small refiner credit option, an approved small refiner that chooses to produce 15 ppm sulfur highway diesel fuel prior to June 1, 2010, may generate and sell credits under the TCO. Since small refiners have no requirement to produce 15 ppm sulfur highway diesel fuel prior to June 1, 2010, any fuel that they produce at or below the 15 ppm sulfur standard will qualify for credits under this option. (Additionally, the small refiner could then sell its remaining highway diesel fuel under the 500 ppm sulfur option described above.)

The pre-compliance reporting requirements for small refiners choosing this option are the same as those for the 500 ppm sulfur option (that is, if the small refiner is also producing 500 ppm sulfur highway diesel fuel), with the additional requirement that the refiner must also report on any credits it expects to generate and sell.

Diesel/Gasoline Compliance Date Option (Option c)

Under the diesel/gasoline compliance date option, approved small refiners that are also subject to the Tier 2/Gasoline Sulfur program (40 CFR Part 80, Subpart H) may extend the duration of their applicable interim gasoline sulfur standards by three years (until January 1, 2011), provided that at least 95 percent of the highway diesel fuel that they produce meets the 15 ppm sulfur standard as of June 1, 2006.

Pre-compliance reports from any small refiners expecting to use this option must provide information showing that diesel desulfurization plans are on track for compliance with the 15 ppm sulfur standard by June 1, 2006. In addition to the information required above for all refiners regarding the expansion of desulfurization capacity, the pre-compliance reports for small refiners expecting to use this option need to reasonably show that the refiner will be in a position by June 1, 2006 to produce 95 percent its highway diesel fuel at the 15 ppm sulfur standard[c]. Further, the refiner must show that its total highway diesel fuel production will be at least 85 percent of its highway diesel fuel baseline volume.

GPA Refiners

The GPA refiner option in the highway diesel regulations, allows refineries in the GPA to extend the duration of their applicable interim gasoline sulfur standards by two years (until January 1, 2009), provided that 95 percent of their highway diesel fuel production meets the 15 ppm sulfur standard beginning June 1, 2006

Similar to the pre-compliance reporting requirements for small refiners that choose to use the diesel/gasoline compliance date option described above, pre-compliance reports from refiners or importers expecting to use the GPA refiner option must provide information showing that their diesel desulfurization plans are on track. In addition to the information about the expansion of desulfurization capacity required above for all refiners, the pre-compliance reports for prospective GPA refiners need to reasonably show that the refiner will be in a position by June 1, 2006 to produce 95 percent of its highway diesel fuel that is compliant with the 15 ppm sulfur standard and that its total highway diesel fuel production will be at least 85 percent of its highway diesel fuel baseline volume.

[c] In the NRLM diesel final rule, we changed the volume requirement (for small refiners and GPA refiners choosing the diesel/gasoline compliance option) from 100 percent to 95 percent to account for the change in volume determination from the point of production to the point of delivery. Consequently, refiners that were previously required to produce 100 percent of their highway diesel fuel to the 15 ppm sulfur standard are now provided with an allowance to deliver a small amount of 500 ppm sulfur diesel fuel to the next downstream party (e.g., pipeline).

III. Highway Summary Statistics

A. Nationwide Analysis

According to the Energy Information Administration (EIA), 140 refineries reported producing either high or low sulfur distillate (or both) fuels in 2003. Of these distillate-producing refineries, 115 produced highway-compliant diesel fuel (less than or equal to 500 ppm sulfur) in the year 2003. This number includes data for four refinery/importers that are located outside of the continental United States (i.e., in the U.S. Virgin Islands, Puerto Rico, and Eastern Canada) whose production is targeted to the U.S. market. We received 2005 pre-compliance reports for all of the 115 refineries that produced highway-compliant diesel fuel in 2003, and we received reports for 121 refineries in all.

As noted in the 2003 and 2004 Summary and Analysis of the pre-compliance reports, in addition to the reports that we received from current highway diesel fuel producers, we also received reports from six refineries that plan to enter the market at some point by 2010. Of these six refineries, three will be entering the market in 2006, one in 2008, and the last two will be entering the market in 2010 (which is a slight change from what these refineries reported in 2004).

The reported totals for all refineries and importers planning to produce highway diesel beginning June 1, 2006 are summarized below in Tables 1 and 2. These tables show that for 2006, 111 refineries reported that they intend to produce over 2.9 million barrels per day (bbls/day) of highway diesel fuel (both 15 ppm and 500 ppm sulfur) which is slightly higher than the total production from the 2004 pre-compliance reports[d]. Over 2.6 million bbls/day, or 90 percent of the national total, is anticipated to be 15 ppm sulfur highway diesel fuel and 300 thousand bbls/day is anticipated to be 500 ppm sulfur highway diesel fuel. This percentage is slightly less than the 95 percent 15 ppm production calculated from the 2004 pre-compliance reports, but still well above the 80% requirement for most refiners.

Over the duration of the TCO, refineries plan to generate an average 411 thousand bbls/day of credits, and plan to use an average of 98 thousand bbls/day of credits. The remaining unused credits would be available to use in case of any unplanned compliance difficulties.

The following sections discuss this information in more detail.

[d] Diesel fuel volume information was submitted in units of gallons per day pursuant to the pre-compliance reporting requirements under § 80.594. We converted volumes to barrels per day by dividing by 42 gallons per barrel. Highway diesel credits were reported in gallons per year. Since the compliance periods in 2006 and 2010 are not full years, we converted the reported values to equivalent barrels per calendar day to compare the aggregated volumes and credits on an equal basis from 2006 through 2010. Credits were converted from an annual basis to a daily basis by dividing by the number of days in each compliance period, and then converted from gallons to barrels by dividing by 42 gallons/barrel. The aggregated credits for 2006 were divided by 214 days (the 2006 compliance period is from June 1, 2006 through December 31, 2006), and the aggregated credits for 2010 were divided by 151 days (the 2010 compliance period is from January 1, 2010 through May 31, 2010).

1. Number of Refineries and Importers

In the highway diesel final rule, we evaluated compliance costs for refiners to produce 15 ppm sulfur highway diesel fuel under two scenarios: 1) all current producers of highway diesel fuel continue to do so, and 2) some refineries increase production of highway diesel fuel while some refineries shift out of the highway diesel fuel market due to relatively high desulfurization costs. To be conservative, our cost projections for the highway diesel final rule were based on the first scenario. However, we also performed a sensitivity analysis based on the second scenario. Under this scenario, some refineries that currently produce relatively small volumes of highway diesel fuel would face relatively high costs per gallon to desulfurize a given volume of diesel fuel. At the same time, other refineries that currently produce no (or a relatively small volume of) highway diesel fuel could convert their diesel production from high sulfur (i.e., greater than 500 ppm sulfur) down to 15 ppm sulfur at a relatively low cost. Consequently, in our sensitivity analysis we projected that a number of refineries would shift into, or significantly expand their presence in, the highway diesel fuel market. The pre-compliance reports appear to be supporting this projection.

As shown in Table 1, below, 111 refineries reported that they intend to produce highway diesel fuel in 2006 (up one refinery from the 110 refineries in the 2004 reports). Three refineries reported they will enter the highway diesel market in 2006, and seven refineries reported they will shift out of the market in 2006. The 2004 pre-compliance reports projected that in 2006 four refineries would enter the highway diesel fuel market and nine would shift out. The decrease in the number of refineries projected to shift out of the market in 2006 is a significant factor in the increase in total highway diesel fuel production, from 2.8 to 2.9 million bbls/day.

Of the seven refineries that anticipate shifting out of the market, four refineries noted that they are still studying options on whether or not to desulfurize their higher sulfur fuel to 15 ppm. The three remaining refineries did not state their intentions for desulfurization, though it is likely that these refineries may shift into the NRLM diesel fuel market. Lastly, it was noted in the Summary and Analysis of the 2004 reports that the Shell Bakersfield refinery would be shut down due to declining crude oil supplies for the refinery[2]. The Bakersfield refinery has been purchased by another refiner, and that refiner has indicated that it plans to produce highway diesel fuel in 2006.

While some refineries may be shifting out of the highway diesel fuel market, others are planning to shift into the market. The pre-compliance reports project that some refineries will shift into the market during the TCO (three in 2006, plus three additional refineries by 2010), resulting in a total of 114 refineries that will be producing highway diesel fuel in 2010.

Though small refiners have the option to delay desulfurization until the year 2010 (small refiner option a), the 2005 reports indicate that only four refineries owned by small refiners plan to utilize this option. The remaining small refiners will be producing diesel fuel at some point prior to 2010, as the other two small refiner options allow refiners to either generate credits

(option b) or receive a relaxation of their gasoline sulfur standard (option c) for production of 15 ppm highway diesel fuel prior to 2010.

Table 1.
U.S. Aggregated Report Information
Highway Diesel Fuel Refinery Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
# refineries producing highway diesel fuel	115	111	111	111	111	114
# refineries at 100% 15 ppm		84	87	88	91	98
# refineries at 100% 500 ppm	115	16	12	9	9	7
# refineries with 15/500 ppm mix		11	12	14	11	9
# refineries increasing production (vs. 2003)		69	72	76	76	81
# refineries shifting into the highway market		3	3	4	4	6
# refineries decreasing production (vs. 2003)		49	46	43	43	40
# refineries shifting out of the highway market		7	7	8	8	7
# refineries generating credits		57	59	61	62	
# refineries using credits		11	7	5	4	3

Figure 1 shows that approximately 60 percent of the refineries that reported data in 2005 are planning to increase their production of highway diesel fuel in 2006 compared to their 2003 production (based on EIA), nine more refineries than projected in the 2004 pre-compliance reports. Further, we expect that refiners will continue to increase their production of highway diesel fuel. The 2005 reports indicate that by 2010, approximately 70 percent of those refineries that submitted reports are planning to increase their highway diesel fuel production.

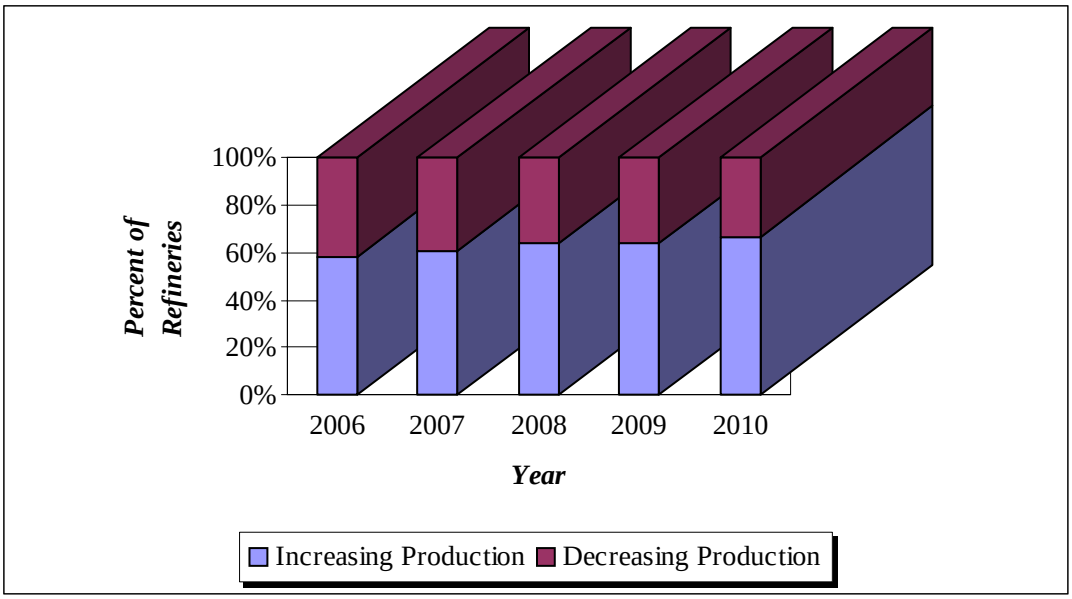


Figure 1. Number of Refineries Increasing or Decreasing Production Relative to the Year 2003

2. Availability of 15 ppm Highway Diesel Fuel

As depicted in Figure 2 below (and stated above in Table 1), 111 refineries are planning to produce highway diesel fuel in 2006; 84 of these refineries will be producing 100 percent 15 ppm highway diesel fuel. Another 11 plan to produce a mix of 15 and 500 ppm fuel, and 11 refineries will be using credits to assist their compliance (three of these will be utilizing credits until May 31, 2010 to meet the standard). Sixteen refineries are planning on producing exclusively 500 ppm fuel. These 16 refineries are in markets where 15 ppm fuel will be readily available from other sources, therefore, we do not expect that these refineries would create any 15 ppm availability problems.

As shown in Figures 3 through 5, 90 percent of the highway diesel fuel production in 2006 is expected to meet the 15 ppm sulfur standard, which is slightly lower than the 95 percent from the 2004 pre-compliance reports. However, the percentage is still greater than the 80 percent required in the highway diesel sulfur regulations. Thus, we anticipate that sufficient 15 ppm highway diesel should be available beginning in 2006. In 2007 and later, the projections return to mirror almost identically the results from the 2004 pre-compliance reports, with over 95 percent of highway diesel at 15 ppm sulfur.

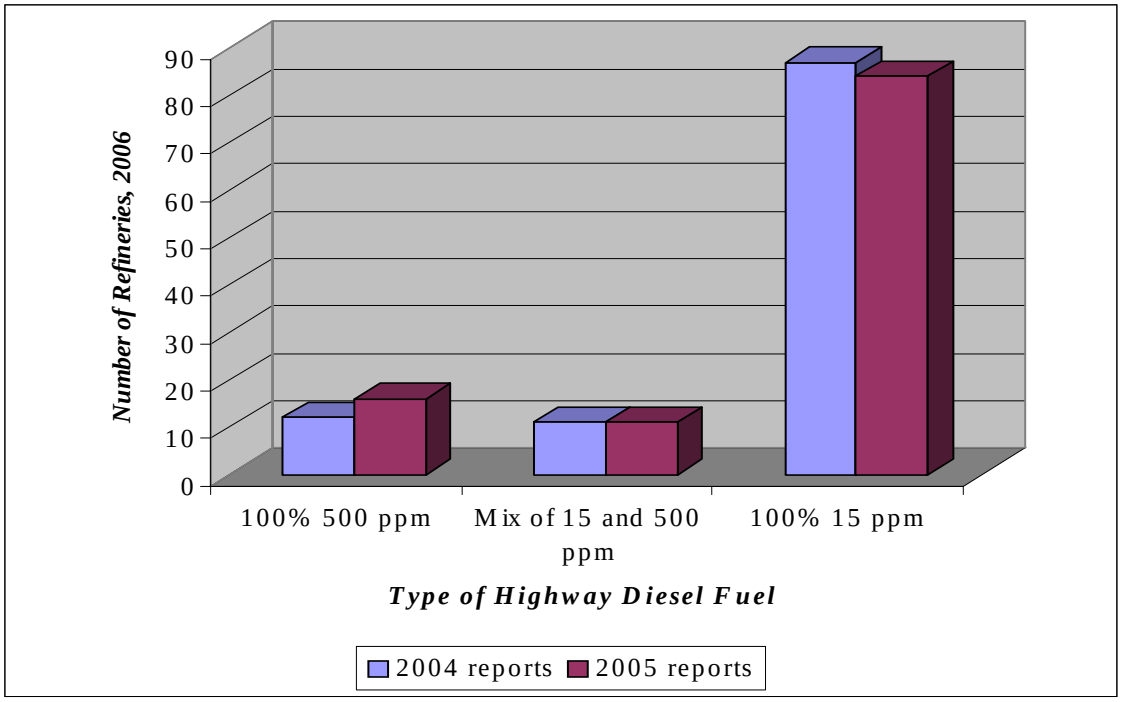


Figure 2. Number of Refineries Producing Highway Diesel Fuel in 2006

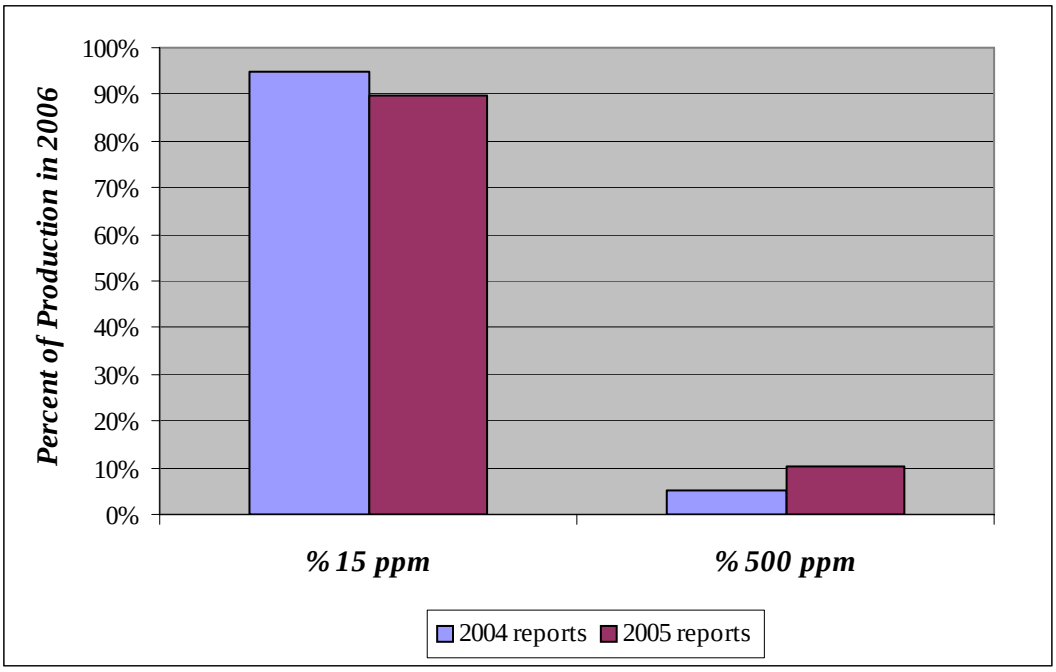


Figure 3. Highway Diesel Fuel Grades by Percent of Production Volume, 2006

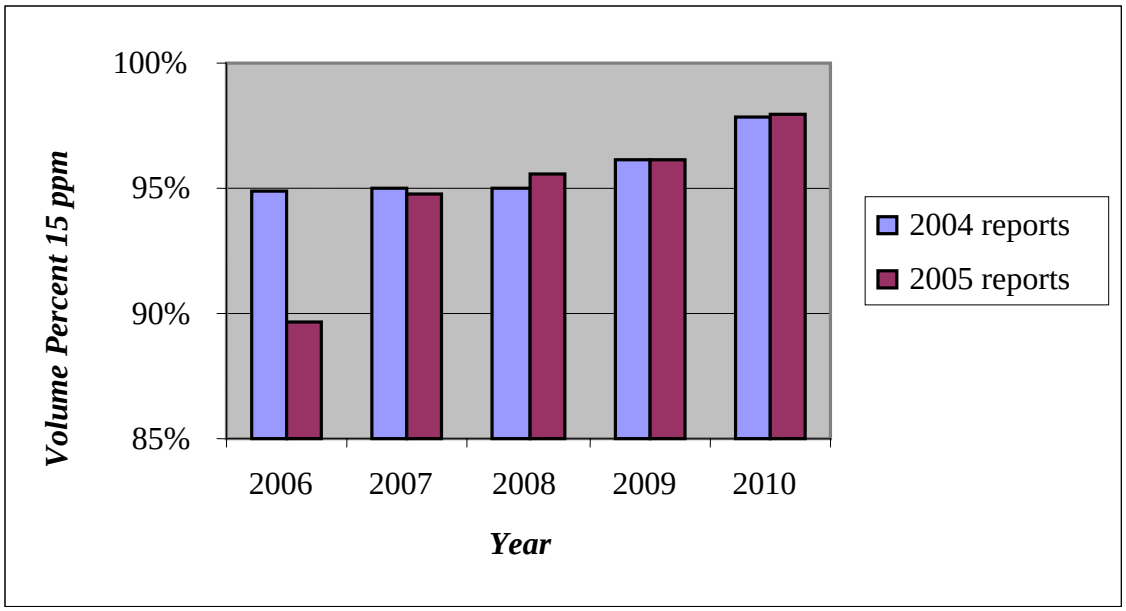


Figure 4. 15 ppm as Percentage of Total Production- 2004 vs. 2005 Refiner Reports

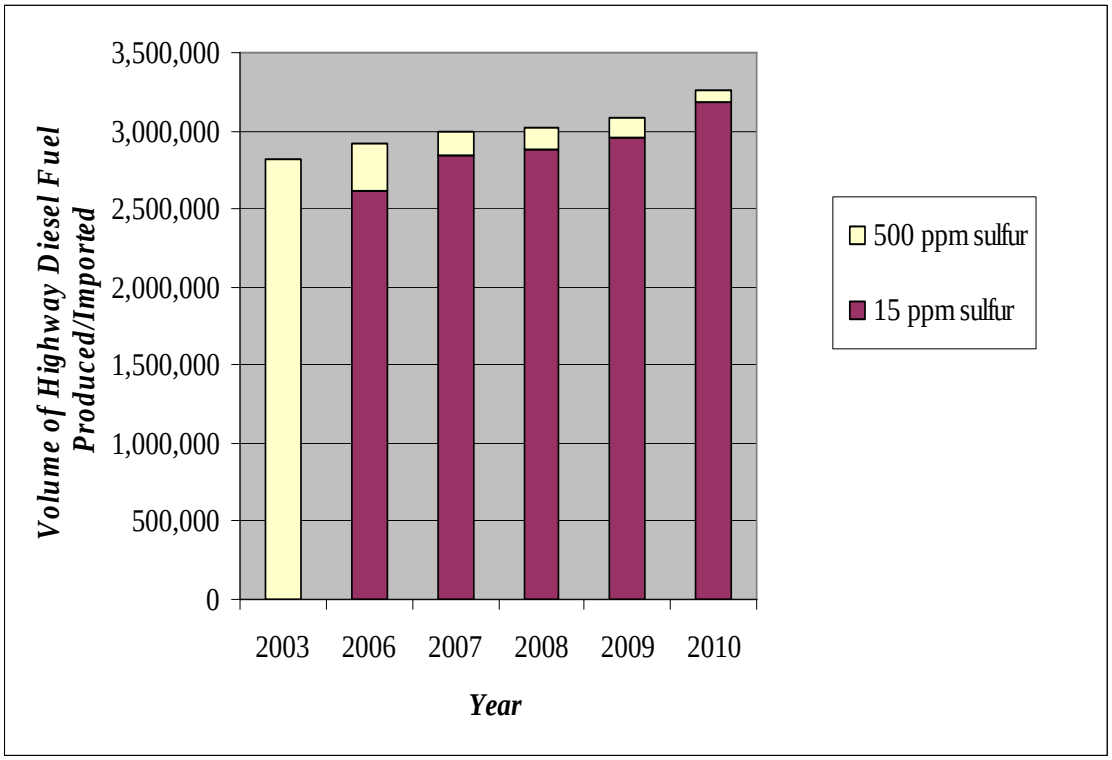


Figure 5. Projected U.S. Diesel Fuel Production, 2006-2010

3. Projected Credit Generation and Use

Given that a large majority of highway diesel fuel is anticipated to meet the 15 ppm sulfur standard, a credit surplus is expected within each PADD, as shown in Table 2 below. This credit surplus will help to accommodate off-spec distillate material and will also provide a supply "safety valve" by allowing for additional production of 500 ppm sulfur highway diesel fuel without violating the TCO requirements. In 2006, projected total credit generation is 381 thousand bbls/day, and projected credit usage is approximately 170 thousand bbls/day. Projected credit usage decreases to approximately 31 thousand bbls/day by 2010.

Table 2.
Projected Volume of Credits (average bbls/day)
Generated and Used by PADD, 2006-2010

Credits (*bbls/day*)	***PADD 1***	***PADD 2***	***PADD 3***	***PADD 4***	***PADD 5***	***Total US***
Generated	*54,409*	*108,961*	*221,516*	*8,213*	*17,971*	*411,070*
Used	*(1,000)*	*(14,510)*	*(78,603)*	*0*	*4,200*	*(98,313)*
Net	***53,409***	***94,451***	***142,914***	***8,213***	***13,771***	***312,758***

4. Production Versus Consumption

Table 3, below, shows the projected total production of highway diesel fuel for 2006 through 2010. The 2005 pre-compliance reports indicate that a total of over 2.9 million bbls/day highway diesel fuel will be produced in 2006, and that highway diesel production will increase to over 3.2 million bbls/day by 2010. Projected total production from the 2005 pre-compliance reports for 2006 through 2010 was greater than comparable production from the 2004 reports. Given the fact that the highway diesel fuel regulations begin June 1, 2006, we believe that these projections are reasonably accurate. From refiners' 2005 reports, 69 refineries anticipate increasing highway diesel fuel production and 49 refineries anticipate decreasing highway diesel fuel production compared to 2003. Corresponding changes in highway diesel fuel production are illustrated in Figure 6. Overall changes result in a projected net production increase of 111 thousand bbls/day of highway diesel fuel nationwide in 2006. Highway diesel fuel production is projected to increase by approximately 445 thousand bbls/day by 2010.

As with the 2003 and 2004 summary and analyses, this summary and analysis is focused on projected highway diesel fuel production values. EIA's Annual Energy Outlook (AEO), which we have used in the past to estimate projected diesel fuel demand, reports projected energy consumption values by sector and source. We used the growth rate in transportation distillate consumption (AEO reports transportation distillate consumption as a combination of the highway, locomotive and marine sectors) from AEO 2005[3] between the years 2005 and 2010, to calculate a projected demand in 2006 of just over three million bbls/day. As shown below in

Table 3, refiners reported an estimated production of 2.9 million bbls/day of highway diesel fuel for 2006. Although, some diesel fuel may not be accounted for here due to lack of reporting from spot market importers. In 2003, approximately 2.8 million bbls/day of highway-compliant (less than or equal to 500 ppm sulfur) diesel fuel were supplied in the U.S. Of that total supply, imports accounted for 135 thousand bbls/day or 4.8 percent. The refineries located outside of the U.S. from which we received pre-compliance reports produced approximately 88 thousand bbls/day, or 65 percent of the total volume of highway diesel fuel that was imported in 2003 and about three percent of the total volume of highway diesel fuel that was supplied in the U.S. in 2003. Therefore, approximately 35 percent of imports, or two percent of the total supply of highway diesel fuel, is currently unaccounted for based on the pre-compliance information received to date.

Table 3.
U.S. Aggregated Report Information
Highway Diesel Fuel Volume and Credits 2006-2010

Year	2006	2007	2008	2009	2010
Total 15 ppm, bbls/day	2,621,359	2,837,377	2,882,114	2,958,735	3,189,273
Total 500 ppm, bbls/day	302,481	157,494	135,205	119,759	68,304
Total 15 + 500 ppm, bbls/day	2,923,841	2,994,871	3,017,319	3,078,494	3,257,577
Net volume change vs. 2003 bbls/day	111,238	182,269	204,717	265,892	444,974
% change from 2003 highway volume	4.0	6.5	7.3	9.5	15.8
% 500 of total 15 + 500 ppm	10.3	5.3	4.5	3.9	2.1
Credit generation, bbls/day	381,031	414,123	410,603	432,108	
Credit usage, bbls/day	170,539	81,930	57,255	52,235	31,292

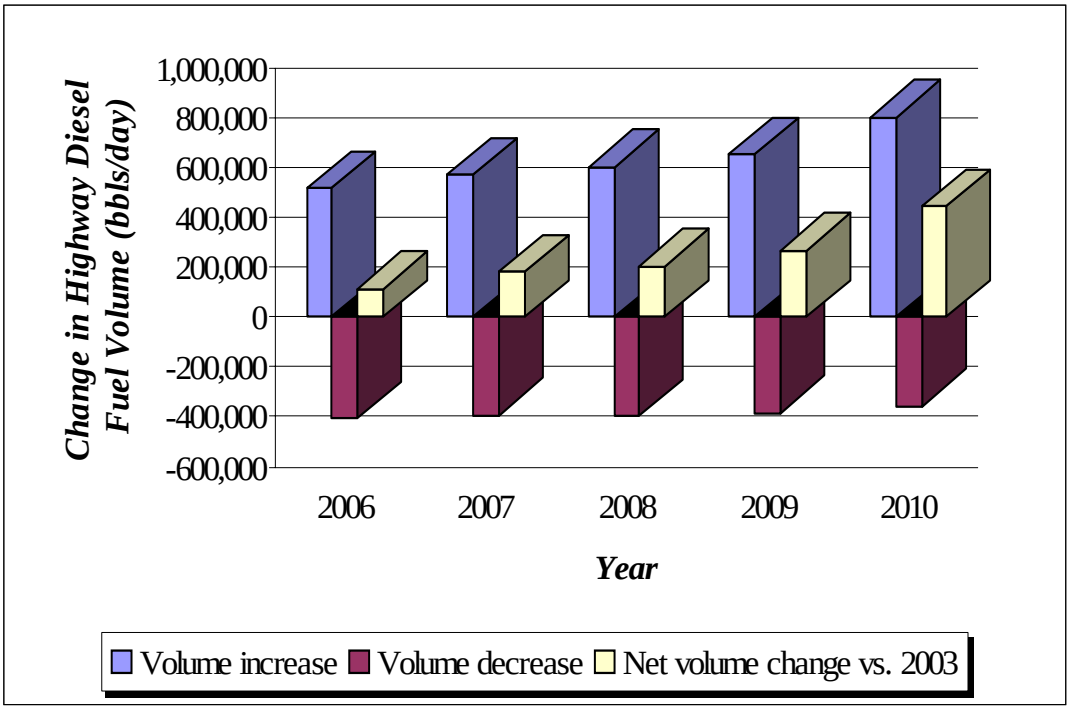


Figure 6. Nationwide Highway Diesel Fuel Volume Change vs. 2003

5. Project Timing

In addition to providing highway diesel fuel volume and credit projections, refineries must also include information outlining both their timeline for compliance with the 15 ppm sulfur standard and their engineering plans (e.g., design and construction) in their pre-compliance reports. The 2003 pre-compliance reports indicated that most companies were in the planning stage and expected to make final decisions before the first quarter of 2004.

For the 2004 pre-compliance reports we requested that refineries report more specific information to us on the status of their highway diesel fuel compliance plans, and we again asked for this information for the 2005 reports. We provided refineries with the following five stages on which to report: 1) strategic planning, 2) planning and front-end engineering, 3) detailed engineering and permitting, 4) procurement and construction, and 5) commissioning and start-up. As this new reporting requirement was not requested until May 2004 (via the Nonroad Diesel final rule), not all refineries were able to report their data according to these five stages in last year's pre-compliance reports. While some refineries had reported that they were still in the planning stages or had completed all work, the majority of refineries were either in, or beginning, the planning and front-end engineering stage or engineering and permitting state.

In the 2005 reports, some refineries that submitted reports still did not provide information on the five stages of their compliance plans. However, the majority of the refineries

did report information on when their engineering and construction was expected to be completed, and their projected unit start up date. Eighty-three refineries indicated that their engineering either was complete or would be completed by the end of the year. Seventy-five refineries have completed engineering, and an additional 8 refineries indicated that they expected engineering to be completed by December 2005. Eighty-eight refineries reported that they will have either completed construction, or anticipated completion by May 2006. Eight refineries reported that their construction would not be completed until after the June 1, 2006 program start date.

The majority of the refineries that sent in pre-compliance reports reported some information on their project timing. Most of these indicated that they were nearing completion, and would be done prior to the June 1, 2006 program start date. However, some refineries reported that they would not be done prior to June 1, 2006 or that they were still evaluating options for meeting the highway diesel fuel sulfur standards. These refineries were either using credits to comply or were using the small refiner delay option.

Figure 7, below, shows projected start-up dates by quarter for each PADD. Eighteen refineries projected a unit start-up date prior to September 2005, and another six refineries projected that they would have desulfurization units capable of producing 15 ppm sulfur highway diesel fuel in operation by January 2006.

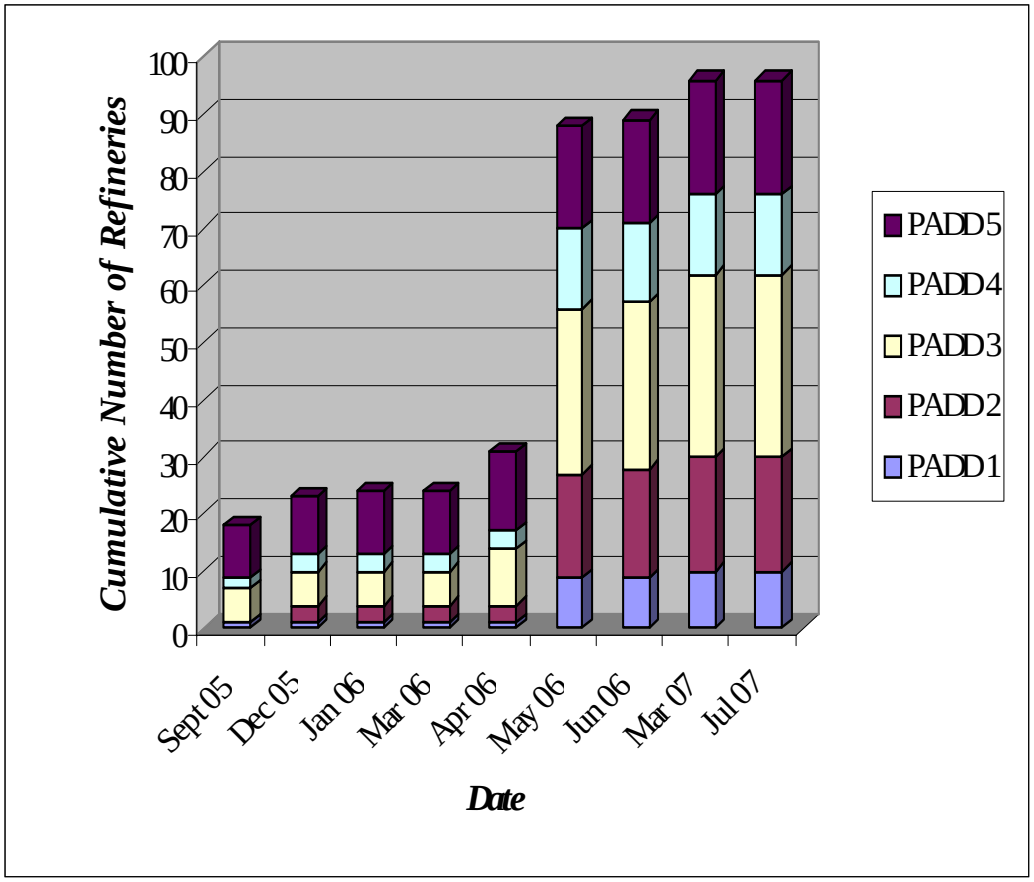


Figure 7. Projected Start-up Dates for Producing 15 ppm Highway Diesel Fuel[e]

6. Revamp Versus Grassroots Projects

In the final highway diesel rule, we projected that, in order to meet the 15 ppm sulfur standard, refiners would use similar hydrotreating technology to that which is currently being used to meet the 500 ppm sulfur standard. In doing so, refiners would either need to install new hydrotreating equipment or revamp their current hydrotreaters/desulfurization equipment.

Eighty-two refineries reported that they would either be revamping existing equipment or constructing new facilities to produce 15 ppm highway diesel fuel. Fifty-four of these refineries reported plans for revamping existing equipment, 18 refineries reported that they would be installing new equipment, and 10 refineries reported they would be doing both. This is similar to plans that refiners reported last year. In the 2004 pre-compliance reports, 50 refineries reported

[e] While some refineries reported their projected start-up date on a monthly basis, others reported on a quarterly basis. For those that reported on a quarterly basis, we assumed the month that would correspond with the end of the quarter to be conservative.

plans for revamping existing equipment, 19 refineries reported plans to install a new unit, and 10 refineries reported that they would be doing both.

Eleven refineries indicated they did not need to do any additional work to produce 15 ppm highway diesel. Also, 22 refineries reported they would be producing 15 ppm highway diesel by 2010, but did not report specific information on their project scope.

7. Small and GPA Refiner Options

Small Refiners

As discussed in greater detail above, the highway diesel fuel regulations contain three options which provide qualified small refiners with additional flexibilities to the TCO. Option A, the 500 ppm Sulfur Option, allows a refinery owned by an approved small refiner to delay production of 15 ppm sulfur fuel until May 31, 2006. This option would enable a refinery to continue to produce all of its highway diesel fuel at the 500 ppm sulfur level until the end of the TCO, provided the refiner shows in its pre-compliance report that adequate supplies of 15 ppm sulfur highway diesel fuel will be available in the refinery's marketing area. Option A was chosen by four refineries. Based on the reports received from these refineries, it is expected that their total production for 2006 will be seven thousand bbls/day of 500 ppm highway diesel fuel.

Option B, the Small Refiner Credit Option, allows a small refiner to generate credits for any 'early' (since small refiners have until 2010 to comply with the 15 ppm standards under the highway diesel rule) production of 15 ppm sulfur highway diesel fuel. This option was chosen by six refineries. Refineries using this option will likely have a mix of 500 ppm and 15 ppm highway diesel fuel in 2006. Based on reported data, it is anticipated that in 2006 the six refineries choosing this option will produce a total of 19 thousand bbls/day.

Lastly, option C, the Diesel/Gasoline Compliance Date Option, allows a refinery owned by a small refiner the ability to delay its compliance date for the Tier 2 gasoline sulfur standards for up to three years if the refinery produces 95 percent of its highway diesel fuel (above a minimum volume limit tied to the refinery's baseline volume) at 15 ppm or less by June 1, 2006. In the 2004 pre-compliance reports, nine refineries anticipated using option C, with a total production of 99 thousand bbls/day of 15 ppm highway diesel fuel beginning in 2006. The 2005 reports indicated that eleven refineries anticipate using option C. These eleven refineries reported that they expect to produce 158 thousand bbls/day of 15 ppm sulfur highway diesel fuel beginning June 1, 2006.

The volumes reported by refineries regarding the small refiner options, and the number of refineries by option chosen, are shown in Table 4 below.

Table 4.
Intended Small Refiner Compliance Options by Number of Refineries and Highway Diesel Fuel Production Capacity

Option	Description	Number of Refineries	2006 Highway Diesel Fuel Production Capacity (thousand bbls/day)
A.	500 ppm sulfur Option	4	7
B.	Credit Option	6	19
C.	Diesel/Gasoline Compliance Date Option	11	158
	Total	21	184

GPA Refiners

The highway diesel fuel regulations also contain an option that allows a refinery in the GPA to delay its compliance date for the final Tier 2 gasoline sulfur standards by two years provided that the refinery produces 95 percent of its highway diesel fuel (above a minimum volume threshold tied to the refinery's baseline volume) at the 15 ppm sulfur standard by June 1, 2006. Ten refineries in the GPA reported that they would be using this option, with an anticipated total production of approximately 96 thousand bbls/day of 15 ppm sulfur highway diesel fuel beginning June 1, 2006.

B. PADD Analysis

This section presents information specific to each PADD. Tables 5 through 8 below show the reported number of refineries producing highway diesel fuel and highway diesel fuel production for each PADD for 2006 and 2010, and Figures 7 and 8 illustrate changes in highway diesel fuel production by PADD in 2006 and 2010, compared to 2003. Please note that all volumes from the 2005 pre-compliance reports are now being compared to volumes from 2003. Highway diesel production in the 2003 and 2004 Summary and Analyses were compared to refiners' production values from 2000.

As shown in Table 6, PADD 1 highway diesel production in 2006 is anticipated to decrease by 41 thousand bbls/day compared to 2003. However, production increases in PADDs 2 through 5 result in a national production increase of over 111 thousand bbls/day of highway diesel fuel in 2006. Table 8 shows projected highway diesel fuel production for 2010. In 2010, PADD 1 highway diesel production is still less than 2003 production, by approximately 21 thousand bbls/day. However, production increases in PADDs 2 through 5 result in a national production increase of 445 thousand bbls/day in 2010. At the start of the program in 2006, 57 refineries expect to generate 381 thousand bbls/day of credits, and 11 refineries expect to use 170 thousand bbls/day of credits. By 2010, only 31 thousand bbls/day of credits are expected to be used by three refineries.

More detailed information by PADD is shown below in Tables 9 through 18.

Table 5.
Projected Number of Highway Diesel Fuel Refineries by PADD for 2006

PADD	1	2	3	4	5	Total U.S.
# refineries producing highway diesel fuel	12	24	40	15	20	111
# refineries at 100% 15 ppm	9	17	29	13	16	84
# refineries at 100% 500 ppm	2	4	8	1	1	16
# refineries with 15/500 ppm mix	1	3	3	1	3	11
# refineries increasing production (vs. EIA 2003)	7	16	26	8	12	69
# refineries shifting into the highway market	1	1	0	0	1	3
# refineries decreasing production (vs. EIA 2003)	7	9	16	7	10	49
# refineries shifting out of the highway market	2	1	2	0	2	7
# refineries generating credits	9	14	24	4	6	57
# refineries using credits	1	2	6	0	1	10

Table 6.
Projected Volumes of Highway Diesel Fuel Production by PADD for 2006

PADD	1*	2	3	4	5	Total U.S.
Total 15 ppm (bbls/day)	274,154	662,212	1,155,006	135,726	394,261	2,621,359
Total 500 ppm (bbls/day)	4,095	102,096	158,202	2,505	35,583	302,481
Total 15 + 500 ppm (bbls/day)	278,249	764,308	1,313,208	138,231	429,844	2,923,841
Net volume change vs. 2003 (bbls/day)	-41,443	96,322	33,666	4,869	17,825	111,238
% change from 2003 highway volume	-13.0	14.4	2.6	3.7	4.3	3.8
% 500 of total 15 + 500 ppm	1.5	13.4	12.0	1.8	8.3	10.3
Credit generation (bbls/day)	52,130	106,482	197,182	7,329	17,907	381,031
Credit usage (bbls/day)	2,000	34,120	117,619	0	16,800	170,539

** We expect that the change that is projected for PADD 1 will be offset by imports and inter-PADD transfers. As discussed previously, our reports do not capture all imports, much of which come into PADD 1. Furthermore, PADD 3 has historically transferred fuel to PADD 1 in relatively large quantities.*

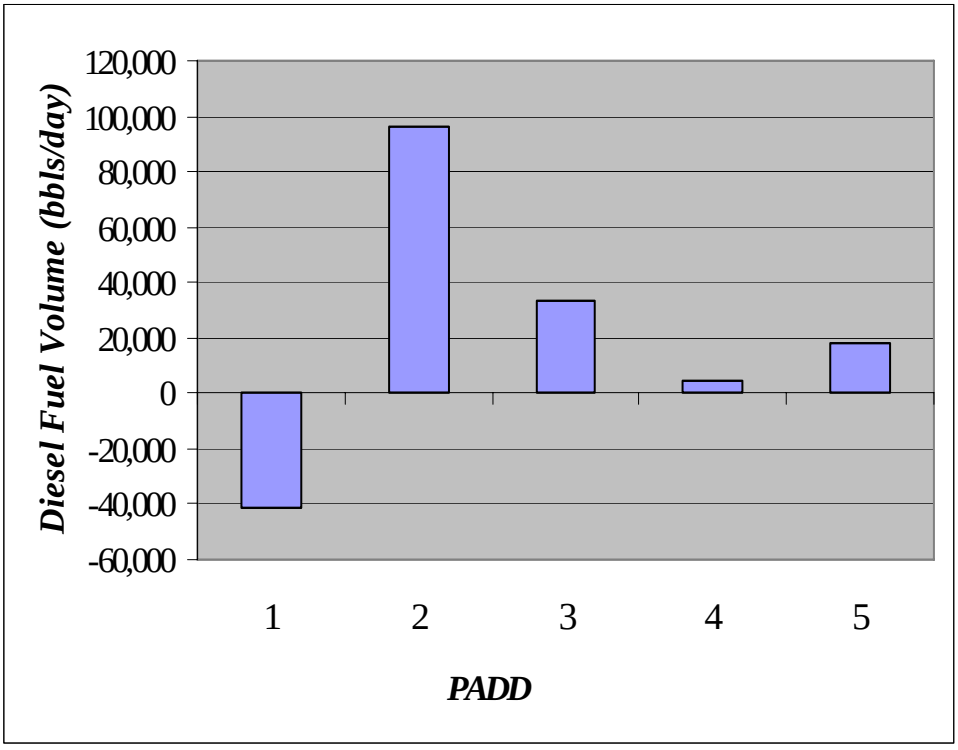


Figure 7. Highway Diesel Fuel Production Change 2006 vs. 2003 (by PADD)

Table 7.
Projected Number of Highway Diesel Fuel Refineries by PADD for 2010

PADD	1	2	3	4	5	Total U.S.
# refineries producing highway diesel fuel	12	25	41	15	21	114
# refineries at 100% 15 ppm	10	19	35	14	20	98
# refineries at 100% 500 ppm	0	2	4	1	0	7
# refineries with 15/500 ppm mix	2	4	2	0	1	9
# refineries increasing production (vs. 2003)	7	20	33	8	13	81
# refineries shifting into the highway market	1	1	2	0	2	6
# refineries decreasing production (vs. 2003)	7	5	11	7	10	40
# refineries shifting out of the highway market	2	0	3	0	2	7
# refineries generating credits						
# refineries using credits	0	1	2	0	0	3

Table 8.
Projected Volume of Highway Diesel Fuel by PADD for 2010

PADD	1*	2	3	4	5	Total U.S.
Total 15 ppm (*bbls/day*)	297,848	810,907	1,485,729	136,191	458,597	3,189,273
Total 500 ppm (*bbls/day*)	452	27,740	37,327	1,534	1,250	68,303
Total 15 + 500 ppm (*bbls/day*)	298,300	838,647	1,523,056	137,726	459,847	3,257,576
Net volume change vs. 2003 (*bbls/day*)	-21,392	170,661	243,514	4,364	47,828	444,975
% change from 2003 highway volume	-6.7	25.5	19.0	3.3	11.6	15.8
% 500 of total 15 + 500 ppm	0.2	3.3	2.5	1.1	0.3	2.1
Credit generation (*bbls/day*)						
Credit usage (*bbls/day*)	0	6,120	25,172	0	0	31,292

** The change that is projected for PADD 1 will be offset by imports and inter-PADD transfers. Historically, PADD 3 has transferred fuel to PADD 1 in relatively large quantities.*

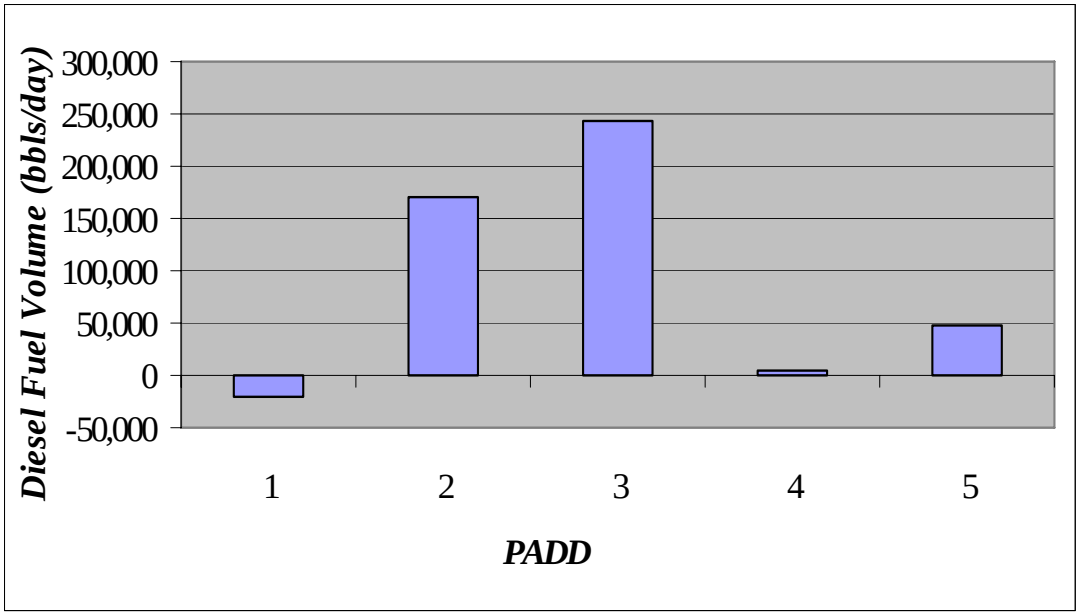


Figure 8. Highway Diesel Fuel Production Change 2010 vs. 2003 (by PADD)

1. PADD 1

Number of Refineries

Reported totals for all PADD 1 refineries and importers are summarized below in Tables 9 and 10. These tables show that for 2006, 12 refineries anticipate producing 274 thousand bbls/day total (15 ppm sulfur + 500 ppm sulfur) highway diesel fuel. This is a slight increase compared to the 269 thousand bbls/day production from the 2004 reports. Nine refineries reported that they intend to produce 100 percent of their highway diesel fuel at 15 ppm or less of sulfur in 2006, two refineries intend to produce 100 percent of their highway diesel fuel at the 500 ppm sulfur level, and one refinery reported that it intends to produce a mix of 15 ppm and 500 ppm sulfur highway diesel fuel. By 2010, ten refineries anticipate that they will be producing 100 percent of their highway diesel fuel at or below 15 ppm and two refineries will be producing a mixture of 15 ppm and 500 ppm fuel.

As shown in Table 9, seven refineries reported that they intend to produce more highway diesel fuel than they did in 2003, and another seven refineries intend to produce less highway diesel fuel than they did in 2003. Two refineries reported they will shift out of the highway diesel fuel market in 2006 and one refinery reported they will enter the market in 2006.

Highway Diesel Fuel Production

As shown in Figure 9, the seven refineries planning to increase their highway diesel fuel production reported a cumulative increase of over 77 thousand bbls/day and the seven refineries planning to decrease production reported a cumulative decrease in production of nearly 119 thousand bbls/day. This results in a projected total net decrease of just over 41 thousand bbls/day, or 13 percent, for 2006. This net reduction is expected to decrease to 21 thousand bbls/day by 2010.

There are three potential sources of additional highway diesel supply outside of PADD 1 that can help compensate for the decreased production in PADD 1. Additional imports of 15 ppm diesel could be brought in. As noted previously, we do not capture all importers in our pre-compliance reports, and much of the diesel fuel imported into the U.S. comes in to PADD 1. Second, 500 ppm diesel could be brought into PADD 1 from outside the United States, and the importer could use highway diesel credits to meet the requirement that 80 percent of his highway diesel imports are 15 ppm diesel. This is discussed in more detail in the following section on credit generation and use.

PADD 3 is a third potential source of additional highway diesel supply to PADD 1. PADD 3 highway diesel production is projected to increase compared to 2003, however, the projected PADD 3 production increase is less than the projected PADD 1 production decrease. To supply more highway diesel to PADD 1, some of the highway diesel that PADD 3 has historically supplied to PADD 2 could instead be diverted to PADD 1. PADD 3 has historically transferred large volumes of highway diesel to both PADD 1 and PADD 2, and the pre-compliance reports indicate that highway diesel production will increase significantly in PADD 2. Thus, the volume of highway diesel transferred from PADD 3 to PADD 2 could be reduced without affecting total highway diesel supply to PADD 2.

Availability of 15 ppm Sulfur Highway Diesel Fuel

As shown below in Figure 10, nearly all of the highway diesel fuel produced in PADD 1 will meet the 15 ppm sulfur standard. Refiners have projected for 2006 that 99 percent (over 274 thousand bbls/day) of the highway diesel fuel produced or imported will be 15 ppm sulfur fuel. In 2010, almost 100 percent of the highway diesel fuel produced or imported will be 15 ppm. These percentages are similar to the percentages from the 2004 pre-compliance reports.

Credit Generation and Use

In 2006, PADD 1 refineries projected generating approximately 52 thousand bbls/day credits, and using approximately 2 thousand bbls/day of credits. As previously stated, we believe that importers could use some of this surplus in credits to offset the expected decrease in highway diesel fuel production in PADD 1. Similarly, two PADD 1 refineries which reported that they would be exiting the highway market in 2006 could continue to produce some volume of 500 ppm highway diesel, and use credits to meet the requirement that 80 percent of their highway diesel fuel production be 15 ppm.

Table 9
PADD 1 Highway Diesel Fuel Refinery Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
# refineries producing highway diesel fuel	13	12	12	12	12	12
# refineries at 100% 15 ppm		9	9	8	9	10
# refineries at 100% 500 ppm	13	2	1	0	0	0
# refineries with 15/500 ppm mix		1	2	4	3	2
# refineries increasing production (vs. 2003)		7	7	8	8	7
# refineries shifting into the highway market		1	1	1	1	1
# refineries decreasing production (vs. 2003)		7	7	6	6	7
# refineries shifting out of the highway market		2	2	2	2	2
# refineries generating credits		9	10	11	11	
# refineries using credits		1	1	0	0	0

Table 10.
PADD 1 Highway Diesel Fuel Volume and Credit Statistics 2006-2010 *

Year	2003	2006	2007	2008	2009	2010
Total 15 ppm (bbls/day)		274,154	276,340	291,710	303,208	297,848
Total 500 ppm (bbls/day)	319,693	4,095	2,952	3,147	2,108	452
Total 15 + 500 ppm (bbls/day)	319,693	278,249	279,292	294,856	305,316	298,300
Net volume change vs. 2003 (bbls/day)		-41,443	-40,401	-24,836	-14,377	-21,392
% change from 2003 highway volume		-13.0	-12.6	-7.8	-4.5	-6.7
% 500 of total 15 + 500 ppm	100.0	1.5	1.1	1.1	0.7	0.2
Credit generation (bbls/day)		52,130	53,509	54,440	57,558	
Credit usage (bbls/day)		2,000	2,000	0	0	0

** The change that is projected for PADD 1 will be offset by imports and inter-PADD transfers. Historically, PADD 3 has transferred fuel to PADD 1 in relatively large quantities.*

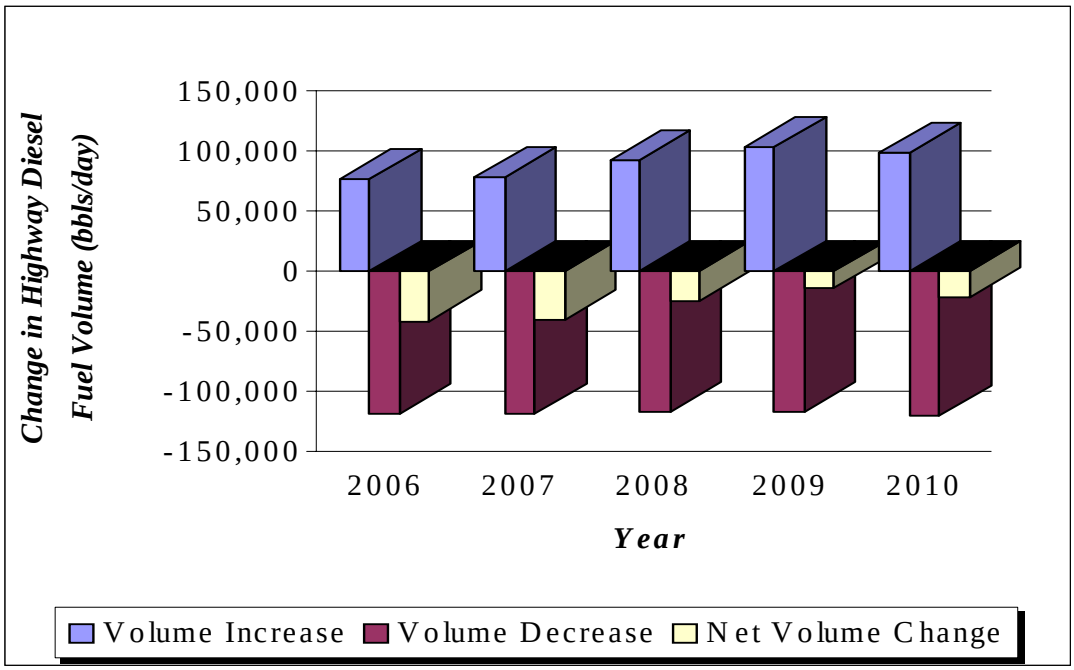


Figure 9. PADD 1 Highway Diesel Fuel Volume Change vs. 2003

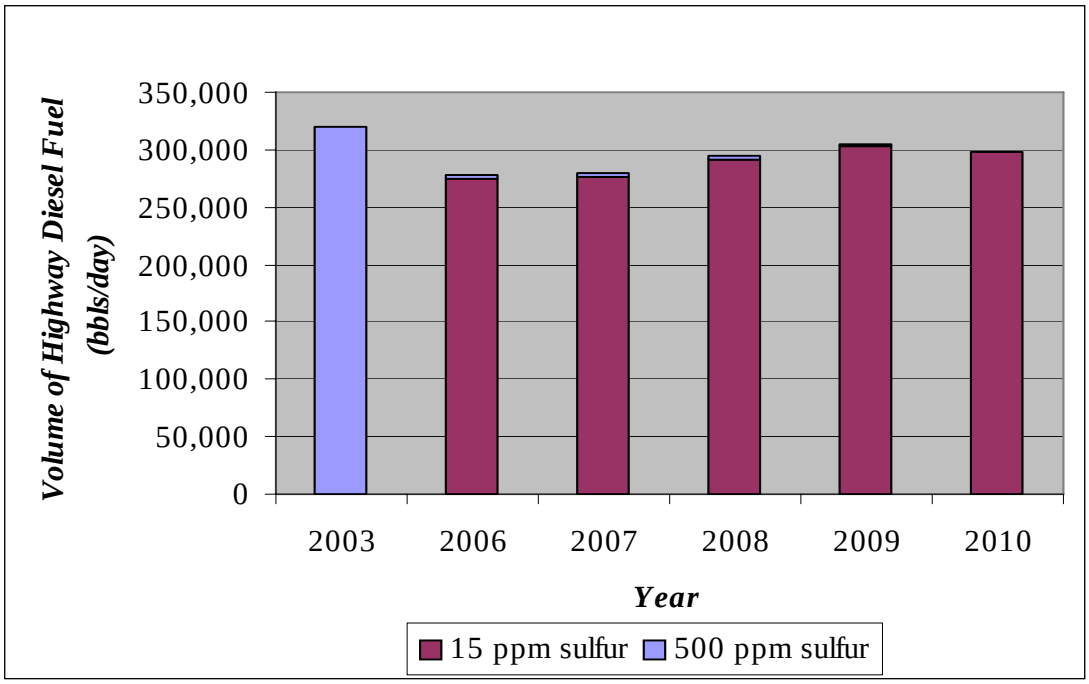
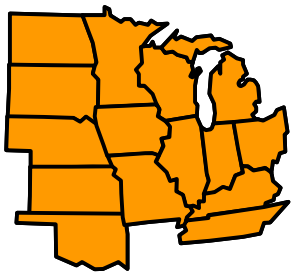


Figure 10. PADD 1 Projected Highway Diesel Fuel Production, 2006-2010



2. PADD 2

Number of Refineries

The reported totals for all PADD 2 refineries are summarized in Tables 11 and 12, below. These tables show that for 2006, 24 refineries reported a total production of approximately 764 thousand bbls/day total (15 ppm sulfur + 500 ppm sulfur) highway diesel fuel. This is greater than the 718 thousand bbls/day total from the 2004 pre-compliance reports. Seventeen refineries reported that they intend to produce 100 percent of their highway diesel fuel at or below 15 ppm sulfur. Additionally, four refineries intend to produce 100 percent of their highway diesel fuel at the 500 ppm sulfur level, and three refineries intend to produce a mix of 15 ppm sulfur and 500 ppm sulfur highway diesel fuel. Sixteen refineries reported that they intend to produce more highway diesel fuel than they did in 2003 (including one refinery that produced no highway diesel fuel in 2003), and nine refineries reported that they intend to produce less highway diesel fuel than they did in 2003 (including one refinery that intends to temporarily shift out of the highway diesel fuel market).

The refinery that reported it will be shifting out of the highway diesel fuel market in 2006 expects to shift back into the highway diesel fuel market in 2010, and reported that it will produce all of its highway diesel fuel in 2010 to meet the 15 ppm sulfur standard.

Highway Diesel Fuel Production

As shown in Figure 11 below, the 16 refineries planning to produce more highway diesel fuel in 2006 than they did in 2003 reported a cumulative increase in their highway diesel fuel production volume of over 151 thousand bbls/day, and the nine refineries planning to produce less highway diesel fuel than they did in 2003 reported a cumulative decrease in their highway diesel fuel production volume of just over 55 thousand bbls/day. This results in a net increase of over 96 thousand bbls/day of highway diesel fuel production. By 2010, the net increase rises to over 170 thousand bbls/day.

Availability of 15 ppm Sulfur Highway Diesel Fuel

As shown in Figure 12, below, it is expected that over 662 thousand bbls/day highway diesel production, approximately 87 percent of PADD 2 total production, will meet the 15 ppm sulfur standard for highway diesel fuel in 2006. The remaining 13 percent (102 thousand bbls/day) is anticipated to be 500 ppm sulfur highway diesel fuel. While the projected

production of 15 ppm highway diesel fuel in PADD 2 has decreased from 679 thousand bbls/day in the 2004 pre-compliance reports, refiners projected in the 2005 reports that they will produce nearly 811 thousand bbls/day of 15 ppm highway diesel fuel by 2010, slightly greater than the projected production of 804 thousand bbls/day of 15 ppm highway diesel fuel from the 2004 reports.

Projected Credit Generation and Use

Over 106 thousand bbls/day of credits are anticipated to be generated for 2006 in PADD 2. Just over 34 thousand bbls/day of credits are expected to be used in 2006. This results in a net generation of 72 thousand bbls/day credits in 2006. In 2007 through 2010, credit usage decreases to 6 thousand bbls/day, and net credit generation from 2007 through 2009 increases to approximately 100 thousand bbls/day. This is an increase in predicted credit use for 2006 compared to the 2004 reports, due to the fact that one refiner reported that it now plans to produce more 500 ppm highway diesel fuel than it predicted in its 2004 reports (and thus it will need to use credits to meet its 80/20 production requirement for 2006).

Table 11.
PADD 2 Highway Diesel Fuel Refinery Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
# refineries producing highway diesel fuel	24	24	24	24	24	25
# refineries at 100% 15 ppm		17	18	18	18	19
# refineries at 100% 500 ppm	24	4	3	3	3	2
# refineries with 15/500 ppm mix		3	3	3	3	4
# refineries increasing production (vs. 2003)		16	19	18	19	20
# refineries shifting into the highway market		1	1	1	1	1
# refineries decreasing production (vs. 2003)		9	6	7	6	5
# refineries shifting out of the highway market		1	1	1	1	0
# refineries generating credits		14	14	14	14	
# refineries using credits		2	1	1	1	1

Table 12.
PADD 2 Highway Diesel Fuel Volume and Credit Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
Total 15 ppm (bbls/day)		662,212	746,222	733,914	755,577	810,907
Total 500 ppm (bbls/day)	667,986	102,096	37,737	37,726	36,803	27,740
Total 15 + 500 ppm (bbls/day)	667,986	764,308	783,959	771,640	792,380	838,647
Net volume change vs. 2003 (bbls/day)		96,322	115,973	103,654	124,394	170,661
% change from 2003 highway volume		14.4	17.4	15.5	18.6	25.5
% 500 of total 15 + 500 ppm	100.0	13.4	4.8	4.9	4.6	3.3
Credit generation (bbls/day)		106,482	110,242	107,271	111,850	
Credit usage (bbls/day)		34,120	6,120	6,112	5,568	6,120

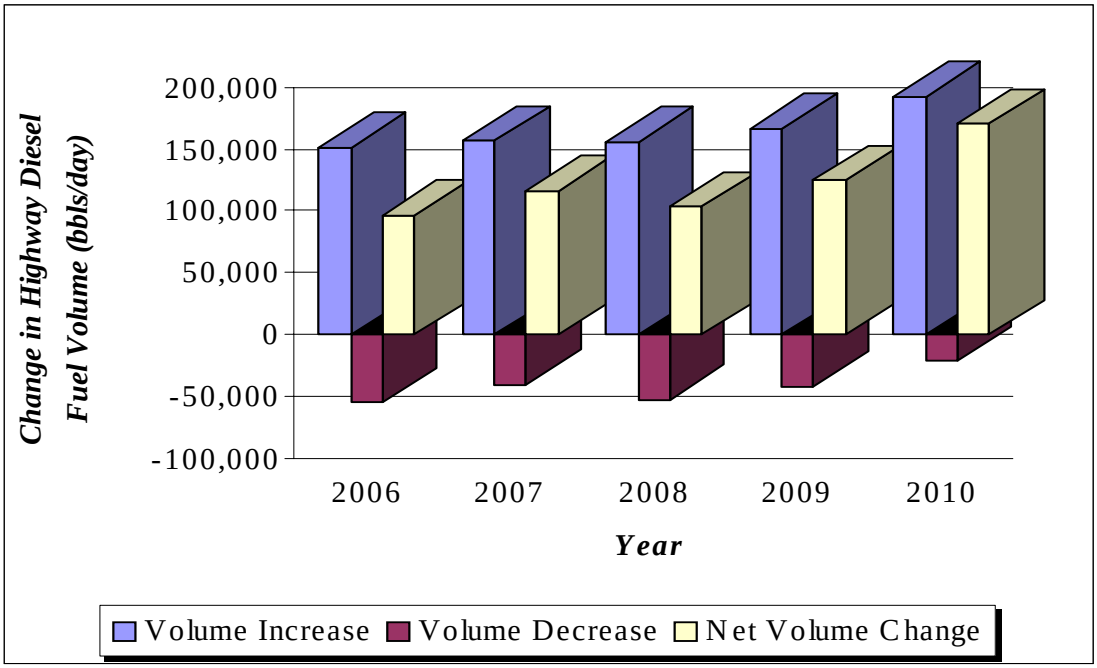


Figure 11. PADD 2 Highway Diesel Fuel Volume Change vs. 2003

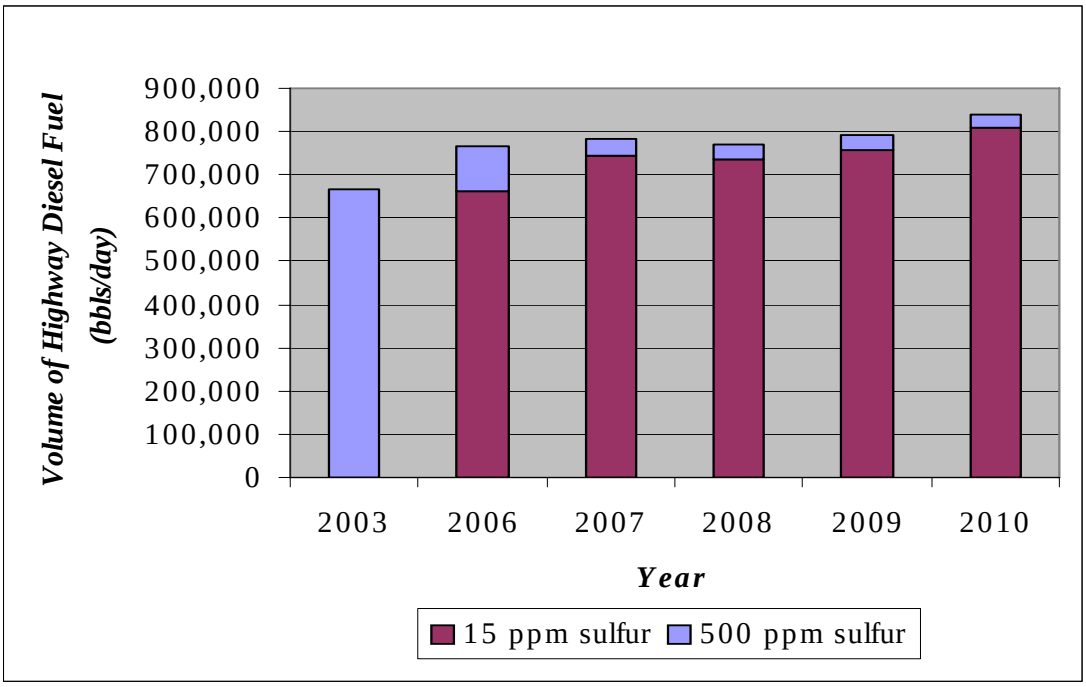
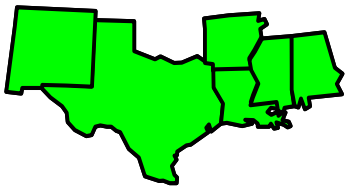


Figure 12. PADD 2 Projected Highway Diesel Fuel Production, 2006-2010



3. PADD 3

Number of Refineries

Reported totals for all PADD 3 refineries are summarized in Tables 13 and 14, below. These tables show that 40 refineries reported a total production of over 1.3 million bbls/day total (15 ppm sulfur + 500 ppm sulfur) highway diesel fuel in 2006. In the 2004 reports, 39 refineries reported that they would be producing highway diesel fuel in 2006. However, one of the three refineries that reported it would shift out of the highway market in 2006 is now planning to remain in the highway diesel market in 2006.

The 2005 reports show that 29 of the 40 refineries that will be producing highway diesel fuel in 2006 intend to produce 100 percent of their highway diesel fuel to meet the 15 ppm sulfur standard. Eight refineries intend to produce 100 percent of their highway diesel fuel at the 500 ppm sulfur level (up from six reported in 2004), and three refineries again reported that they intend to produce a mix of 15 ppm sulfur and 500 ppm sulfur highway diesel fuel. No refineries reported that they will be shifting into the highway diesel market between 2006 and 2009, however, two refineries indicated that they do plan to enter the highway diesel market in 2010.

Highway Diesel Fuel Production

As shown in Figure 13, the 26 refineries planning to produce more highway diesel fuel than they did in 2003 reported a cumulative increase in their highway diesel fuel production volume of approximately 223 thousand bbls/day, and the 16 refineries planning to produce less highway diesel fuel than they did in 2003 reported a cumulative decrease in their highway diesel fuel production of approximately 189 thousand bbls/day. This results in a net increase of over 33 thousand bbls/day. By 2010, the projected net increase in highway diesel fuel production rises to approximately 243 thousand bbls/day.

Availability of 15 ppm Sulfur Highway Diesel Fuel

Figure 14 shows that 1.3 million bbls/day of highway diesel fuel is expected to be produced in 2006, and over 1.1 million bbls/day of this fuel (88 percent) is anticipated to be 15 ppm sulfur highway diesel fuel. The remaining 158 thousand bbls/day is anticipated to be 500 ppm sulfur highway diesel fuel.

Credit Generation and Use

In 2006, anticipated credit generation is approximately 197 thousand bbls/day. Projected credit usage is approximately 117 thousand bbls/day, yielding a net credit generation of nearly 80 thousand bbls/day.

Table 13.
PADD 3 Highway Diesel Fuel Refinery Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
# refineries producing highway diesel fuel	42	40	40	39	39	41
# refineries at 100% 15 ppm		29	30	29	31	35
# refineries at 100% 500 ppm	42	8	7	5	5	4
# refineries with 15/500 ppm mix		3	3	5	3	2
# refineries increasing production (vs. 2003)		26	27	29	28	33
# refineries shifting into the highway market		0	0	0	0	2
# refineries decreasing production (vs. 2003)		16	15	13	14	11
# refineries shifting out of the highway market		2	2	3	3	3
# refineries generating credits		24	25	25	26	
# refineries using credits		6	5	4	3	2

Table 14.
PADD 3 Highway Diesel Fuel Volume and Credit Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
Total 15 ppm (bbls/day)		1,155,006	1,259,183	1,281,168	1,319,695	1,485,729
Total 500 ppm (bbls/day)	1,279,542	158,202	103,489	83,068	69,701	37,327
Total 15 + 500 ppm (bbls/day)	1,279,542	1,313,208	1,362,671	1,364,236	1,389,396	1,523,056
Net volume change vs. 2003 (bbls/day)		33,666	83,129	84,694	109,853	243,514
% change from 2003 highway volume		2.6	6.5	6.6	8.6	19.0
% 500 of total 15 + 500 ppm	100.0	12.0	7.6	6.1	5.0	2.5
Credit generation (bbls/day)		197,182	223,963	222,338	236,166	
Credit usage (bbls/day)		117,619	73,810	51,142	46,668	25,172

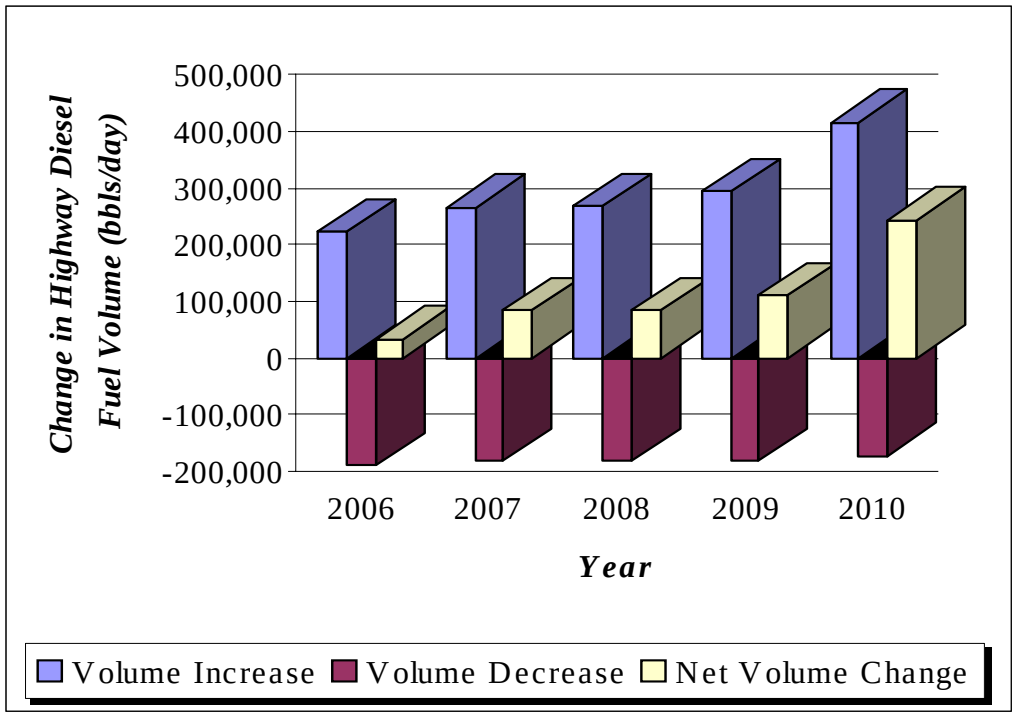


Figure 13. PADD 3 Highway Diesel Fuel Volume Change vs. 2003

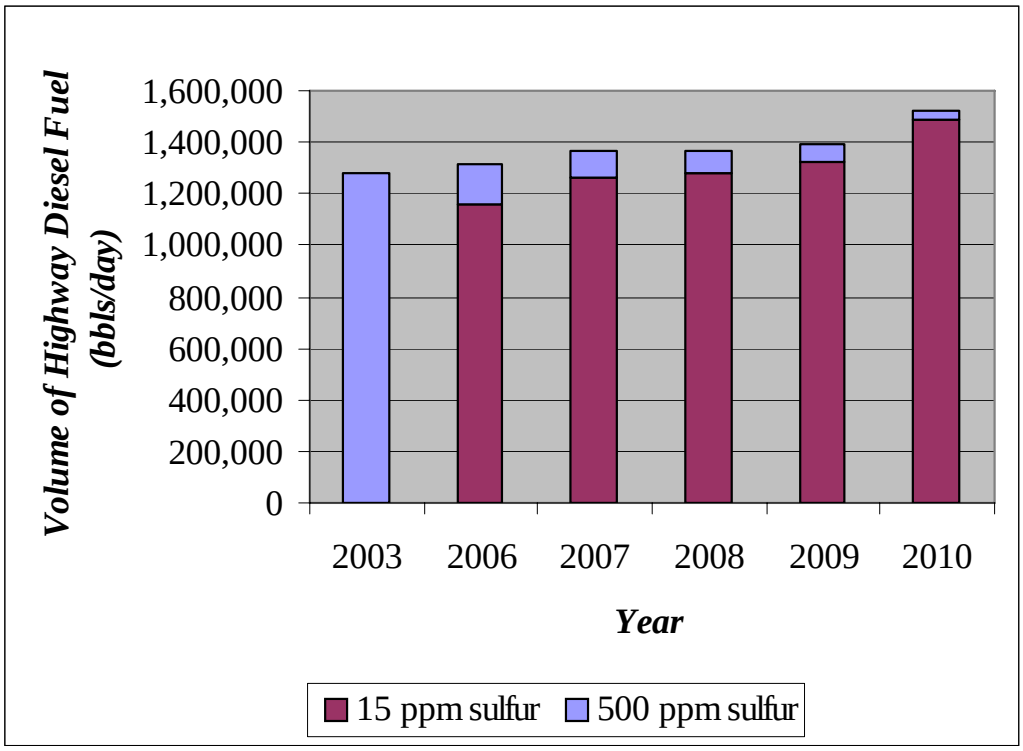
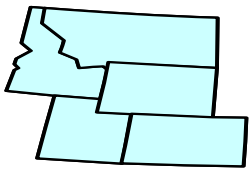


Figure 14. PADD 3 Projected Highway Diesel Fuel Production, 2006-2010



4. PADD 4

Number of Refineries

Reported totals for all PADD 4 refineries are summarized below in Tables 15 and 16. These tables show that for 2006, 15 refineries reported a total production of over 138 thousand bbls/day total (15 ppm sulfur + 500 ppm sulfur) highway diesel fuel. Thirteen refineries intend to produce 100 percent of their highway diesel fuel with 15 ppm or less of sulfur (up from 12 refineries in the 2004 pre-compliance reports) and one refinery still intends to produce a mix of 15 ppm sulfur and 500 ppm sulfur highway diesel fuel. Similar to the 2004 reports, the 2005 reports indicated that for 2006 eight refineries anticipate an increase in their production of highway diesel fuel, and seven refineries anticipate a decrease in their production of highway diesel fuel relative to 2003.

Highway Diesel Fuel Production

Total projected highway diesel production from the 2005 pre-compliance reports is 138 thousand bbls/day in 2006, approximately 20 thousand bbls/day greater than total 2006 production from the 2004 pre-compliance reports. Total highway diesel fuel production remains essentially constant in PADD 4 from 2006 to 2010, similar to the 2004 pre-compliance reports.

Figure 15 below shows that the eight refineries planning to produce more highway diesel fuel in 2006 than they did in 2003 reported a cumulative increase in their highway diesel fuel production volume of nearly 18 thousand bbls/day, and the seven refineries planning to produce less highway diesel fuel in 2006 than 2003 reported a cumulative decrease in their highway diesel fuel production volume of 13 thousand bbls/day. This results in a net increase of approximately 5 thousand bbls/day, which stays essentially constant through 2010.

Availability of 15 ppm Sulfur Highway Diesel Fuel

As shown in Figure 16, below, in 2006, nearly 136 thousand bbls/day, or 98 percent of the PADD 4 total highway diesel production, is anticipated to contain 15 ppm sulfur or less. The portion of total highway diesel fuel in PADD 4 that is expected to be 15 ppm increases to 99 percent by 2010.

Credit Generation and Use

Refiners' reports indicate that approximately 7 thousand bbls/day of credits will be generated in PADD 4 in 2006. No credits are anticipated to be used in PADD 4, similar to the 2004 pre-compliance reports. One refinery will be producing 100 percent of its highway diesel fuel at 500 ppm. However, this refinery is owned by a small refiner that will be using small refiner option a. Thus, this refinery will not need to use credits during the period that it plans to continue producing all of its fuel at the 500 ppm sulfur level.

Table 15.
PADD 4 Highway Diesel Fuel Refinery Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
# refineries producing highway diesel fuel	15	15	15	15	15	15
# refineries at 100% 15 ppm		13	14	14	14	14
# refineries at 100% 500 ppm	15	1	1	1	1	1
# refineries with 15/500 ppm mix		1	0	0	0	0
# refineries increasing production (vs. 2003)		8	8	8	8	8
# refineries shifting into the highway market		0	0	0	0	0
# refineries decreasing production (vs. 2003)		7	7	7	7	7
# refineries shifting out of the highway market		0	0	0	0	0
# refineries generating credits		4	4	4	4	
# refineries using credits		0	0	0	0	0

Table 16.
PADD 4 Highway Diesel Fuel Volume and Credit Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
Total 15 ppm (bbls/day)		135,726	137,670	135,952	135,494	136,191
Total 500 ppm (bbls/day)	133,362	2,505	1,534	1,534	1,534	1,534
Total 15 + 500 ppm (bbls/day)	133,362	138,231	139,204	137,486	137,028	137,726
Net volume change vs. 2003 (bbls/day)		4,869	5,842	4,124	3,666	4,364
% change from 2003 highway volume		3.7	4.4	3.1	2.7	3.3
% 500 of total 15 + 500 ppm	100.0	1.8	1.1	1.1	1.1	1.1
Credit generation (bbls/day)		7,329	8,502	8,513	8,507	
Credit usage (bbls/day)		0	0	0	0	0

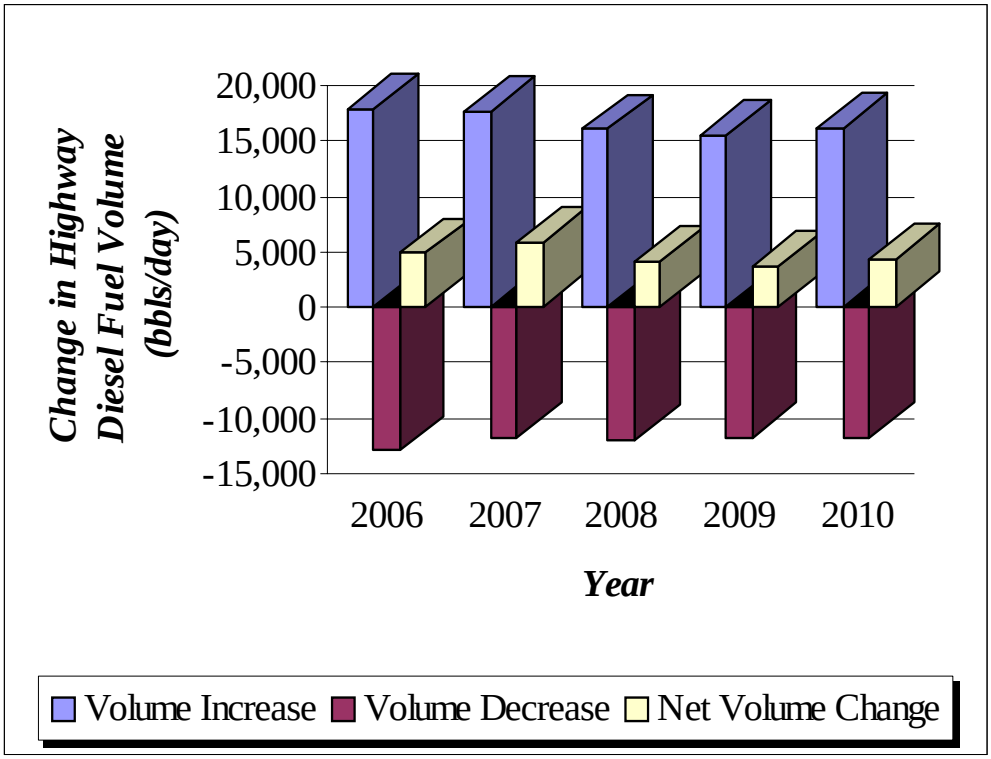


Figure 15. PADD 4 Highway Diesel Fuel Volume Change vs. 2003

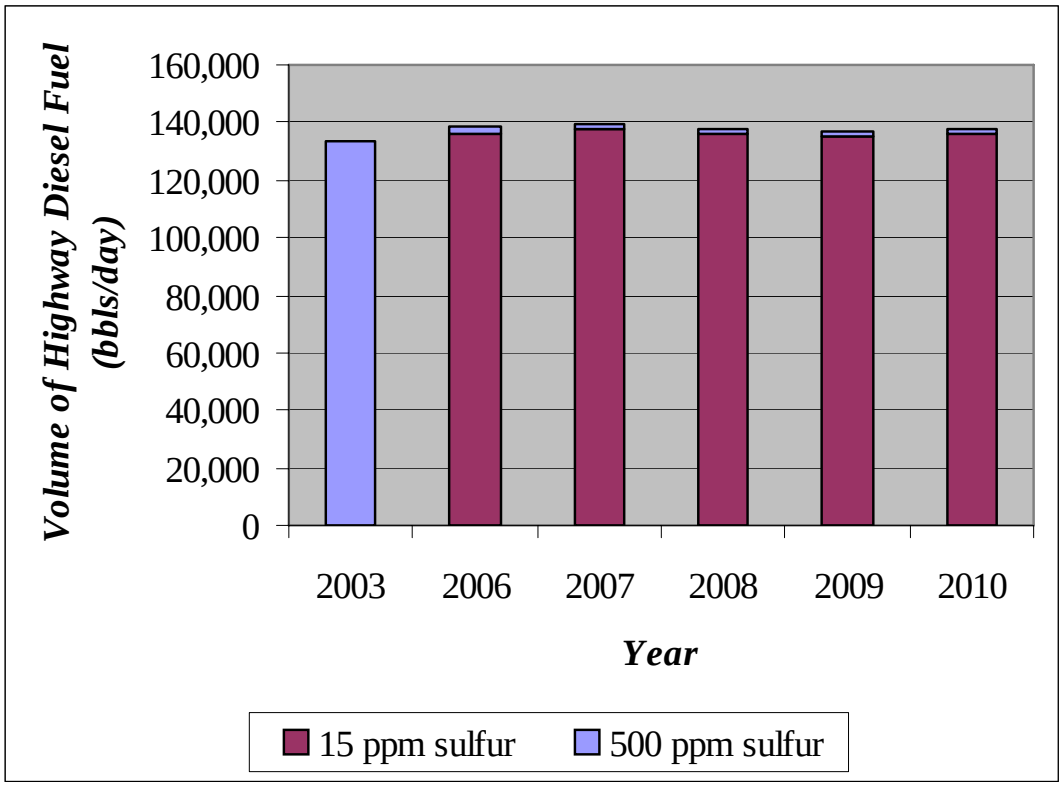
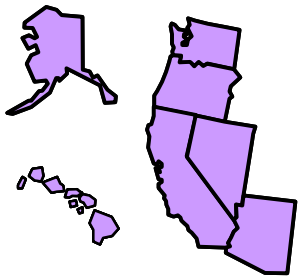


Figure 16. PADD 4 Projected Highway Diesel Fuel Production, 2006-2010



5. PADD 5[f]

Number of Refineries[g]

Reported totals for the refineries in PADD 5 are summarized in Tables 17 and 18, below. These tables show that 20 refineries reported an anticipated production of 430 thousand bbls/day of total highway diesel fuel in 2006. Sixteen of these refineries indicated that they expect to produce 100 percent of their highway diesel fuel at the 15 ppm sulfur standard in 2006. In 2006, two refineries anticipate that they will be shifting out of the highway diesel market and one refinery expects to enter the highway diesel market. A second refinery intends to enter the highway diesel market in 2008.

Highway Diesel Fuel Production

Twelve refineries reported that they intend to produce more highway diesel fuel for 2006 than they did in 2003. Ten refineries indicated they will be producing less highway diesel fuel from 2006 to 2010 than they did in 2003, including two refineries that intend to shift out of the highway diesel fuel market. As shown in Figure 17 below, the 12 refineries planning to increase their highway diesel fuel production in 2006 reported a cumulative increase in their highway diesel fuel production volume of nearly 49 thousand bbls/day, and the ten refineries planning to produce less highway diesel fuel in 2006 than they did in 2003 reported a cumulative decrease in their highway diesel fuel production volume of 31 thousand bbls/day. This results in a net increase in production of nearly 18 thousand bbls/day in 2006, which rises to nearly 48 thousand bbls/day by 2010.

Availability of 15 ppm Sulfur Highway Diesel Fuel

As shown in Figure 18, below, in 2006, approximately 394 thousand bbls/day, or 92 percent of the PADD 5 total highway diesel production, is anticipated to be 15 ppm sulfur highway diesel fuel, and approximately 35 thousand bbls/day is expected to be 500 ppm sulfur highway diesel fuel. By 2010, the percentage of highway diesel fuel at the 15 ppm sulfur standard is expected to increase to over 99 percent of the total volume of highway diesel fuel produced in PADD 5.

[f] Alaska refineries are included in this analysis

[g] The 2004 Summary and Analysis erroneously showed that 22 refineries in PADD 5 produced highway diesel fuel in 2003. The correct number of refineries, 21, is reflected in the discussion of PADD 5 refineries in this Summary and Analysis document.

Credit Generation and Use

The reports for PADD 5 projected that for 2006, credit generation will total nearly 18 thousand bbls/day. The 2004 pre-compliance reports indicated that no credits were expected to be used in PADD 5 during the TCO. However, two refineries reported in 2005 that they will be producing mostly 500 ppm highway diesel fuel in 2006, and will be using credits to comply with the highway diesel standards. These two refineries will both be producing more than 80 percent of their highway diesel at 15 ppm or less from 2007 to 2010, so projected credit usage in PADD 5 drops to zero after 2006.

Table 17.
PADD 5 Highway Diesel Fuel Refinery Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
# refineries producing highway diesel fuel	21	20	20	21	21	21
# refineries at 100% 15 ppm		16	16	19	19	20
# refineries at 100% 500 ppm	21	1	0	0	0	0
# refineries with 15/500 ppm mix		3	4	2	2	1
# refineries increasing production (vs. 2003)		12	11	13	13	13
# refineries shifting into the highway market		1	1	2	2	2
# refineries decreasing production (vs. 2003)		10	11	10	10	10
# refineries shifting out of the highway market		2	2	2	2	2
# refineries generating credits		6	6	7	7	
# refineries using credits		1	0	0	0	0

Table 18.
PADD 5 Highway Diesel Fuel Volume and Credit Statistics 2006-2010

Year	2003	2006	2007	2008	2009	2010
Total 15 ppm (bbls/day)		394,261	417,963	439,370	444,762	458,597
Total 500 ppm (bbls/day)	412,019	35,583	11,782	9,730	9,613	1,250
Total 15 + 500 ppm (bbls/day)	412,019	429,844	429,745	449,100	454,375	459,847
Net volume change vs. 2003 (bbls/day)		17,825	17,725	37,081	42,356	47,828
% change from 2003 highway volume		4.3	4.3	9.0	10.3	11.6
% 500 of total 15 + 500 ppm	100.0	8.3	2.7	2.2	2.1	0.3
Credit generation (bbls/day)		17,907	17,907	18,042	18,027	
Credit usage (bbls/day)		16,800	0	0	0	0

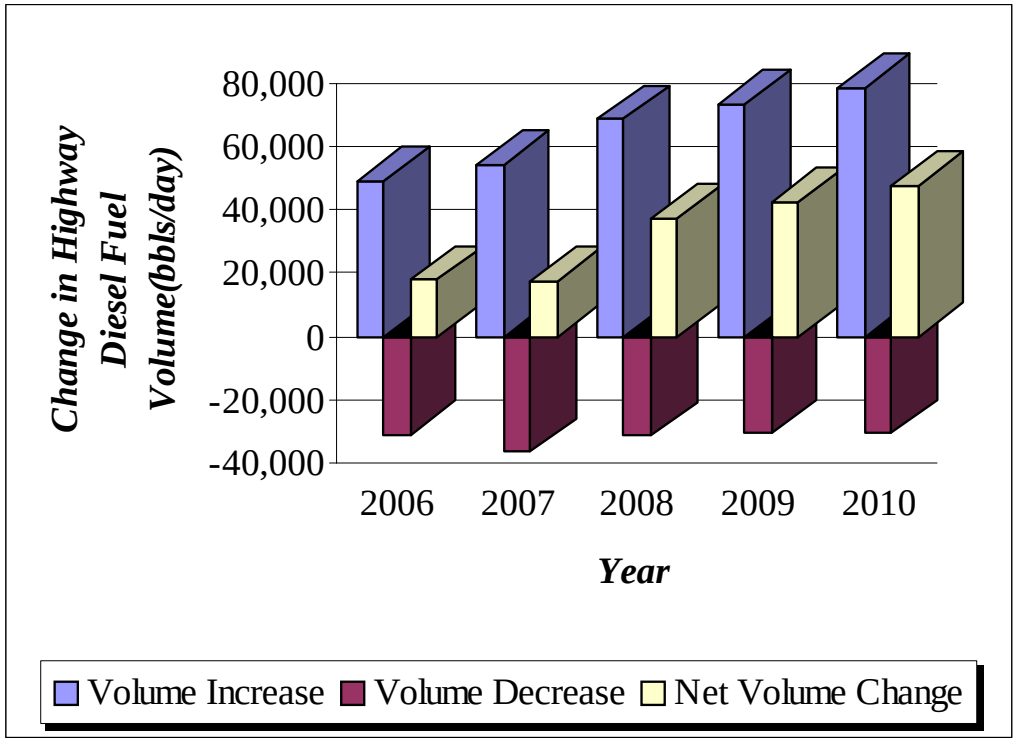


Figure 17. PADD 5 Highway Diesel Fuel Volume Change vs. 2003

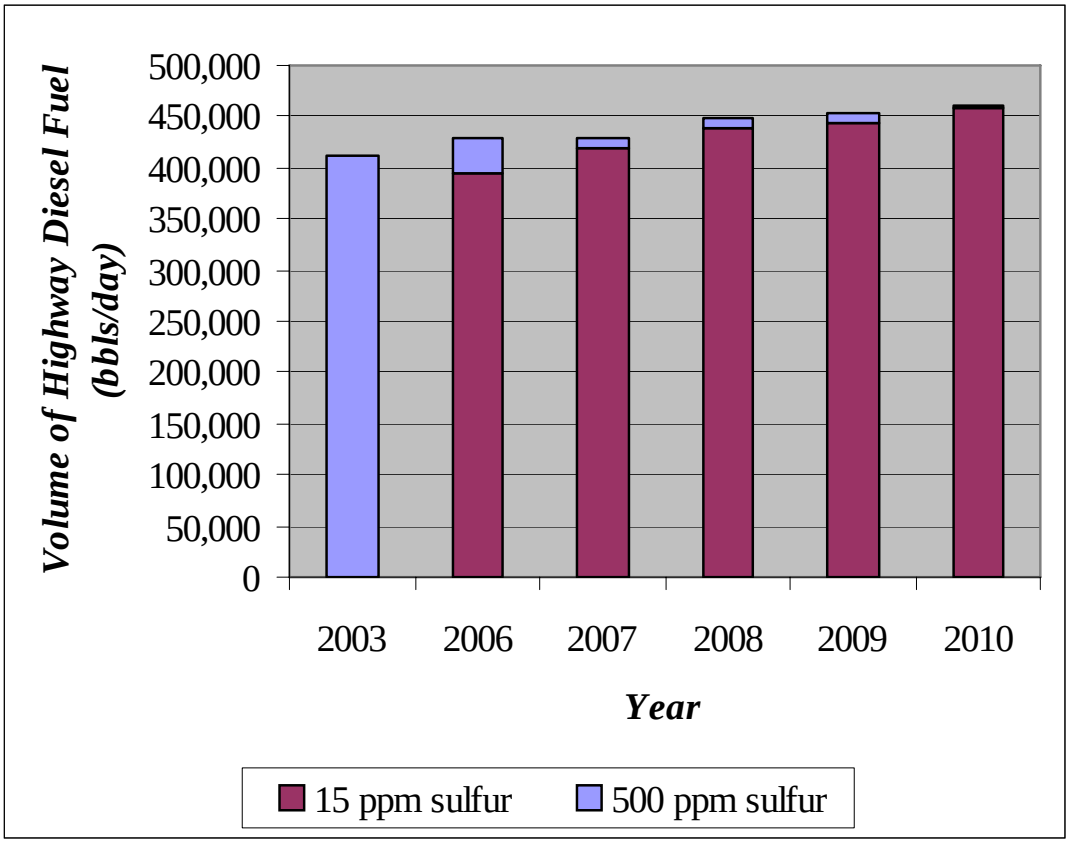


Figure 18. PADD 5 Projected Highway Diesel Fuel Production, 2006-2010

IV. Nonroad Diesel Program Overview

The nonroad diesel final rule (69 FR 38958, June 29, 2004) contains a two-step approach to reducing the sulfur content of nonroad, locomotive, and marine (NRLM) diesel fuel from uncontrolled levels down to 15 ppm. Beginning June 1, 2007, refiners and importers are required to produce or import NRLM diesel fuel with a maximum sulfur content of 500 ppm. Beginning June 1, 2010, refiners and importers are required to produce or import nonroad (NR) diesel fuel with a maximum sulfur content of 15 ppm. Beginning June 1, 2012, refiners and importers are required to produce or import locomotive and marine (LM) diesel fuel with a maximum sulfur content of 15 ppm.

This rule includes provisions for refiners and importers to generate credits for early NRLM diesel sulfur reduction efforts. "High Sulfur" credits may be generated for early production of 500 ppm NRLM diesel fuel between June 1, 2006 and June 1, 2007. Similarly, "500 ppm" credits may be generated for early production of 15 ppm NRLM diesel fuel between June 1, 2009 and June 1, 2010. "High Sulfur" credits could be used to comply with the 500 ppm NRLM standard beginning June 1, 2007, while "500 ppm" credits could be used to comply with the 15 ppm NR standard beginning June 1, 2010 and the 15 ppm LM standard that begins June 1, 2012. Under this program, sulfur credits may be transferred nationwide. No credit trading area restrictions exist such as those found in the Highway Diesel rulemaking.

Small Refiner Flexibilities

Additional compliance flexibilities are provided for small refiners in the nonroad diesel sulfur regulations. The definition of a small refiner in this rule is similar to the definition under the Tier 2/Gasoline Sulfur and Highway Diesel rules. A small refiner is defined as a refiner who: 1) processes NRLM diesel fuel from crude oil; 2) employs no more than 1,500 people corporate-wide, based on the average number of employees for all pay periods from January 1, 2002 to January 1, 2003; and, 3) has a corporate crude oil capacity less than or equal to 155,000 bpcd for 2002.

The small refiner relief options provide additional time for compliance and, for small refiners that choose to comply earlier than required with the NRLM requirements, the option of either generating diesel fuel sulfur credits or receiving a limited relaxation of their Tier 2/Gasoline Sulfur standards. These small refiner options are described in more detail below.

NRLM Delay Option

This option allows approved small refiners to delay compliance with the NRLM diesel fuel sulfur standards as follows. Instead of a 500 ppm NRLM compliance date of June 1, 2007, small refiners would have a compliance date of June 1, 2010. Instead of separate 15 ppm NR and LM compliance dates of June 1, 2010 and June 1, 2012, respectively, small refiners would have a single 15 ppm NRLM compliance date of June 1, 2014.

NRLM Credit Option

An approved small refiner may choose to use the NRLM Credit Option in combination with the NRLM Delay Option. The NRLM Credit Option allows approved small refiners the opportunity to generate nonroad diesel sulfur credits for early production of compliant NRLM diesel fuel. These credits can be banked for future use or traded to another refiner. Small refiners could generate "High Sulfur" credits for producing any volume of 500 ppm NRLM diesel prior to June 1, 2010. Small refiners could also generate "500 ppm" credits for producing any volume of 15 ppm NRLM diesel prior to June 1, 2014.

NRLM Diesel/Gasoline Compliance Option

This option is available to small refiners that produce greater than 95% of their NRLM diesel fuel at the 15 ppm sulfur standard by June 1, 2006 and elect not to use the NRLM Credit Option described above. Refiners choosing this option will receive a modest relaxation in their interim gasoline sulfur standards beginning January 1, 2004. Specifically, the applicable small refiner annual average and per-gallon cap would be increased by 20 percent for the duration of the interim program. The interim program is through either 2007 or 2010 depending on whether the refiner elected to extend the duration of its interim gasoline sulfur standards by producing 15 ppm highway diesel fuel by June 1, 2006. However, in no case may the per-gallon gasoline sulfur cap exceed 450 ppm.

Other Flexibilities

Unlike the Highway Diesel rulemaking, the nonroad diesel sulfur regulations do not provide any specific flexibilities for refineries located in the Geographic Phase-in Area. Refiners located in the Rocky Mountain states (ID, MT, ND, WY, UT, CO and NM) must comply with the 500 ppm and 15 ppm NRLM sulfur standards within the compliance deadlines discussed above. However, diesel fuel in rural areas of the state of Alaska (a GPA state in past rulemakings) is exempt from the NRLM fuel sulfur standards[h]. This fuel will be regulated under a special Alaska Rule that will be finalized in late May 2006.

Transmix processors distill off-specification interface mixtures of petroleum products from pipeline systems into gasoline and distillate fuel and are considered refiners by EPA. Their simple refinery configuration does not make it cost effective for them install and operate a hydrotreater to reduce distillate fuel sulfur content. As a result, they have been provided with additional flexibility to comply with the diesel sulfur standards. Transmix processors may choose to continue to produce all of their highway diesel fuel to the 500 ppm sulfur standard until 2010. They may further choose to continue to produce all of their NRLM diesel fuel as high sulfur diesel fuel until June 1, 2010, all their NRLM diesel fuel to the 500 ppm sulfur standard until June 1, 2014, and all of their LM diesel fuel to a 500 ppm sulfur limit indefinitely.

[h] Rural areas are defined as areas of Alaska not served by the federal aid highway system (FAHS)

V. Nonroad Pre-Compliance Reporting Requirements

The nonroad rule requires that any refiner or importer planning to produce or import 15 ppm NRLM diesel fuel after June 1, 2010 must submit annual pre-compliance reports to EPA. The first pre-compliance report was due on June 1, 2005 and subsequent reports are due annually through 2011, or until the production of 15 ppm sulfur NR and LM diesel fuel commences, whichever is later.

The pre-compliance reports must contain the following information:

1. Any changes in the refiner's or importer's basic company or facility information since registration.
2. Estimates of the average daily volumes (gallons) of each sulfur grade of highway and NRLM diesel fuel produced (or imported) at each refinery (facility). The volume estimates must include both fuel produced from crude oil and other sources for the periods of June 1, 2010 through December 31, 2010, calendar years 2011-2013, January 1, 2014 through May 31, 2014, and June 1, 2014 through December 31, 2014.
3. For refiners or importers expecting to participate in the credit program, estimates of the number of credits generated and/or used during the periods above.
4. Information on project schedule by known or projected completion date (by quarter) for each stage of the project. For example strategic planning, front-end engineering, detailed engineering and permitting, procurement and construction, and commissioning and startup.
5. Basic information regarding the selected technology pathway for compliance, e.g. conventional hydrotreating versus other technologies, revamp versus grassroots, etc.
6. Whether capital investments have been made or are projected to be made.
7. The pre-compliance reports due in 2006 and later years must provide an update of the progress in each of these areas.

We recognize that the pre-compliance reports contain preliminary information and that final decisions on desulfurization plans may not have been made in all cases as of the reporting deadline. Accordingly, our conclusions in this summary and analysis are based on the best available refinery information as June 1, 2005. The information presented here will be updated with more current analyses as subsequent pre-compliance reports are received annually in 2006 through 2011.

VI. NRLM Summary Statistics

A. Nationwide Analysis

Many refiners are still in the process of developing their plans to produce 15 ppm NRLM diesel, so our overall assessment of supply after June 1, 2010 is in large part incomplete. In many cases we did not receive reports, or we received reports stating that decisions had not yet been made. Table 19 shows the number of refineries that reported that they intend to produce 15 ppm and/or 500 ppm diesel fuel beginning June 1, 2010, and the number of refineries that intend to generate or use credits under the nonroad diesel sulfur regulations. A total of 116 refineries reported they anticipate producing 15 and/or 500 ppm diesel fuel beginning June 1, 2010, two more than the 114 total refineries from the highway diesel pre-compliance reports. Beginning June 1, 2012, when the LM diesel fuel sulfur standard decreases to 15 ppm, the total decreases to 115 refineries, as one refinery exits the LM diesel fuel market.

Table 19.
U.S. Aggregated Report Information
Highway and NRLM Diesel Fuel Refinery Statistics 2010-2014

Year	2010	2011	2012	2013	2014
# refineries producing diesel fuel	116	116	116	115	115
# refineries at 100% 15 ppm	103	104	104	110	110
# refineries at 100% 500 ppm	3	3	3	2	2
# refineries with 15/500 ppm mix	10	9	9	3	3

The 2005 nonroad pre-compliance reports indicated that production of total (highway + NRLM) 15 ppm and 500 ppm diesel fuel beginning June 1, 2010 would be approximately 3.7 million bbls/day, as shown in Table 20 below. In comparison, total production of 15 ppm and 500 ppm highway diesel fuel from January 1, 2010 through May 31, 2010 from the highway diesel pre-compliance reports was approximately 3.3 million bbls/day. Thus, by difference, the 2005 nonroad pre-compliance reports indicate that for those refiners that reported, they are planning to produce approximately 400 thousand bbls/day of 15 ppm and 500 ppm NRLM diesel fuel beginning June 1, 2010.

Table 20 and Figure 19 illustrate that production of total (highway + NRLM) 15 ppm diesel increases by approximately 100 thousand bbls/day from 2010 to 2014. However, this increase is offset by a decrease in the production of 500 ppm NRLM diesel by approximately 150 thousand bbls/day from 2010 to 2013. This decrease in 500 ppm production occurs when the 15 ppm sulfur standard for LM diesel takes effect on June 1, 2012, as some refiners that are planning to produce 500 ppm LM diesel prior to June 1, 2012 shift out of the LM diesel market. These refiners have indicated that they may produce 15 ppm diesel for the LM market by June 1, 2012, but that their production plans for 15 ppm LM diesel are still uncertain.

As mentioned previously in the highway diesel fuel summary statistics, 140 refineries reported to EIA that they produced low and/or high sulfur distillate fuel in 2003. Twenty four of these refineries either reported that they are still developing plans to produce 15 ppm diesel fuel, or did not send an NRLM pre-compliance report to EPA in 2005. In 2003, these 24 refineries produced a total of approximately 109 thousand barrels/day of diesel fuel containing less than 500 ppm sulfur, and approximately 194 thousand barrels/day of distillate fuel containing more than 500 ppm sulfur. We cannot tell at this time whether these refineries will choose to produce 15 ppm NRLM diesel fuel, or whether they will choose to produce only heating oil.

We did not receive any specific information from refiners on their project plans (technology, scope, timeline, etc.) to produce 15 ppm NRLM diesel. We expect that future nonroad pre-compliance reports will contain more detail on project plans, as refiners further develop their plans to meet the June 1, 2010 compliance date for the 15 ppm NR diesel standard.

Table 20.
U.S. Aggregated Report Information
Diesel Fuel Volume 2010-2014

Year	2010	2011	2012	2013	2014
Total 15 ppm (highway + NRLM), bbls/day	3,488,134	3,492,571	3,509,981	3,520,943	3,593,954
Total 500 ppm NRLM, bbls/day	189,029	186,136	95,120	28,399	28,399
15 + 500 ppm total (highway + NRLM), bbls/day	3,677,163	3,678,707	3,605,101	3,549,342	3,622,353

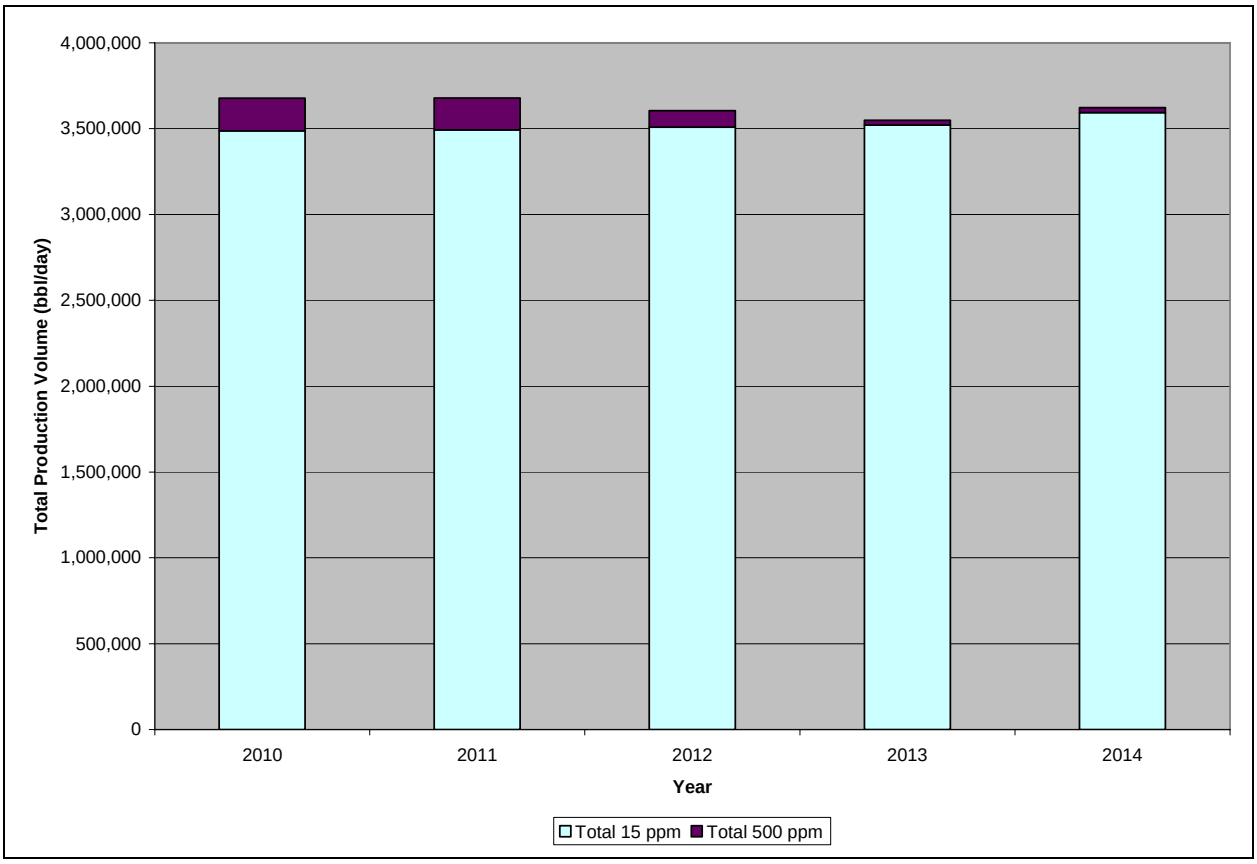


Figure 19. Projected (Highway + NRLM) Diesel Fuel Production by Type, 2010-2014

Table 21 shows total reported nonroad diesel sulfur credits generated and used for each year of the nonroad diesel sulfur credit program. High sulfur credits are shown in equivalent barrels/day for the last 7 months of 2006, and the full calendar years 2007 through 2010. 500 ppm credits are shown for the last 7 months of 2009 and the full calendar years 2010 through 2014. Five refineries indicated they plan to generate approximately 104 thousand barrels/day of high sulfur credits during the credit generation period from June 1, 2006 through May 31, 2007, including a refinery owned by a small refiner who plans to generate approximately 7 thousand barrels/day of high sulfur credits from June 1, 2006 through May 31, 2010. Four refineries indicated they plan to generate approximately 55 thousand barrels/day of 500 ppm credits during the credit generation period from June 1, 2009 through May 31, 2010.

Table 21. U.S. Aggregated Report Information Nonroad Diesel Fuel Credits 2006-2014						
Year		**2006**	**2007**	**2008**	**2009**	**2010**
# refineries generating high sulfur credits		5	5	1	1	1
# refineries using high sulfur credits			2	2	2	1
High sulfur credit generation, bbls/day		104,178	47,236	6,884	6,884	6,884
High sulfur credit usage, bbls/day			23,703	23,742	23,742	16,000
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
# refineries generating 500 ppm credits	4	4	0	0	0	
# refineries using 500 ppm credits		0	0	0	0	0
500 ppm credit generation, bbls/day	55,336	22,892	0	0	0	
500 ppm credit usage, bbls/day		0	0	0	0	0

B. PADD Analysis

Tables 22 and 23 show, by PADD, the number of refineries producing 15 and/or 500 ppm diesel fuel for 2010 (from June 1 through December 31) and 2014 (from January 1 through May 31). The total number of refineries decreases slightly from 2010 to 2014, as one refinery exits the NRLM market in 2012. Also, the number of refineries producing 100 percent 15 ppm diesel increases by seven from 2010 to 2014, and the number of refineries producing some amount of 500 ppm diesel decreases by eight from 2010 to 2014.

Table 22. Projected Number of Highway and NRLM Diesel Fuel Refineries by PADD for 2010						
PADD	**1**	**2**	**3**	**4**	**5**	**total U.S.**
# refineries producing diesel fuel	13	24	42	15	22	116
# refineries at 100% 15 ppm	12	23	36	12	20	103
# refineries at 100% 500 ppm	0	0	2	0	1	3
# refineries with 15/500 ppm mix	1	1	4	3	1	10

Table 23.
Projected Number of Highway and NRLM Diesel Fuel Refineries by PADD for 2014

PADD	1	2	3	4	5	total U.S.
# refineries producing diesel fuel	13	24	41	15	22	115
# refineries at 100% 15 ppm	12	24	39	14	21	110
# refineries at 100% 500 ppm	0	0	1	0	1	2
# refineries with 15/500 ppm mix	1	0	1	1	0	3

Tables 24 and 25 show, by PADD, production rates of total (highway + NRLM) 15 and 500 ppm diesel fuel for 2010 (from June 1 through December 31) and 2014 (from January 1 through May 31), and Figure 20 illustrates the annual average production of total (highway + NRLM) diesel by PADD beginning June 1, 2010 through May 31, 2014. Tables 24 and 25 show that the most significant increase in diesel fuel production is in PADD 1, an increase of approximately 64 thousand bbls/day. Production of total (highway + NRLM) diesel fuel also increases slightly in PADDs 2, 4 and 5. However, production of total (highway + NRLM) diesel fuel in PADD 3 decreases by approximately 146 thousand bbls/day, due primarily to a significant decrease in 500 ppm diesel fuel production as some refineries shift out of the LM market in 2012.

Table 24.
Projected Volumes of (Highway + NRLM) Diesel Fuel by PADD for 2010

PADD	1	2	3	4	5	total U.S.
Total 15 ppm (highway + NRLM), bbls/day	300,822	866,782	1,700,533	149,822	470,176	3,488,134
Total 500 ppm (highway + NRLM), bbls/day	71	1,083	173,265	11,510	3,100	189,029
15 + 500 ppm total (highway + NRLM), bbls/day	300,893	867,865	1,873,798	161,331	473,276	3,677,163

Table 25.
Projected Volumes of (Highway + NRLM) Diesel Fuel by PADD for 2014

PADD	1	2	3	4	5	total U.S.
total 15 ppm (highway + NRLM), bbls/day	364,589	875,424	1,709,876	158,889	485,176	3,593,954
total 500 ppm (highway + NRLM), bbls/day	71	0	27,461	767	100	28,399
15 + 500 ppm total (highway + NRLM), bbls/day	364,661	875,424	1,737,338	159,655	485,276	3,622,353

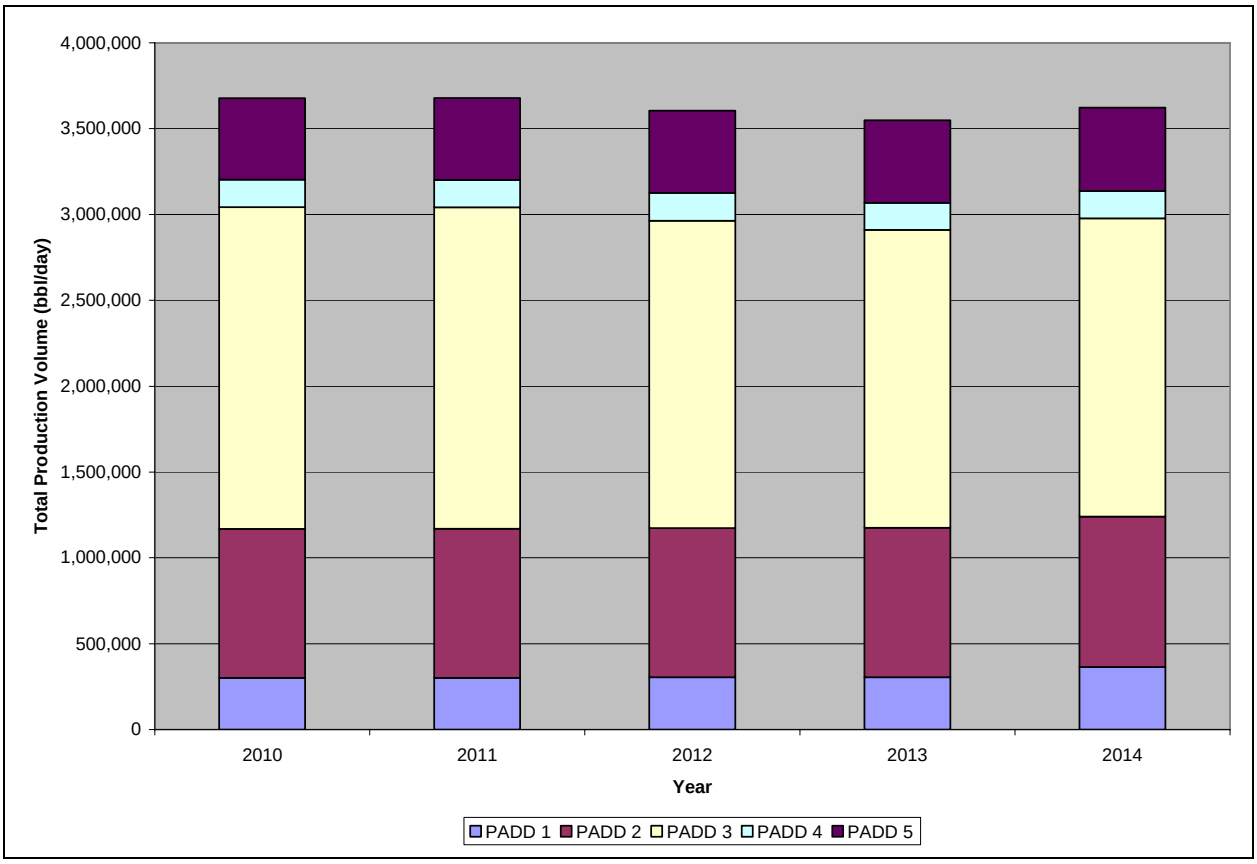


Figure 20. Projected (Highway + NRLM) Diesel Fuel Production by PADD, 2010-2014

VII. Appendix

A. List of Acronyms

AEO	*Annual Energy Outlook*
bbls/day	*barrels per day*
bpcd	*barrels per calendar day*
CTA	*Credit Trading Area*
EIA	*Energy Information Administration*
EPA (or, "the Agency")	*U.S. Environmental Protection Agency*
FR	*Federal Register*
GPA	*Geographic Phase-in Area*
LM	*Locomotive and Marine*
NR	*Nonroad*
NRLM	*Nonroad, Locomotive, and Marine*
PADD	*Petroleum Administrative Districts for Defense*
ppm	*parts-per-million*
TCO	*Temporary Compliance Option*
ULSD	*Ultra Low Sulfur Diesel*

B. References

[1] Summary and Analysis of the Highway Diesel Fuel 2003 Pre-compliance Reports, U.S. Environmental Protection Agency, EPA420-R-03-013, October 2003, http://www.epa.gov/otaq/regs/hd2007/420r03013.pdf.
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[2] Article: "Shell Reaches Agreement to Sell Bakersfield Refinery" http://www.shell.com/home/Framework?siteId=us-en&FC2=&FC3=/us-en/html/iwgen/news_and_library/press_releases/2005/bakersfield_update_3_10012005.html

[3] Energy Information Administration, *Annual Energy Outlook 2003*, DOE/EIA-0383(2003), January 2003.