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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

10 CFR Part 490

RIN 1904-AB67

Alternative Fuel Transportation Program; Replacement Fuel Goal Modification

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy (DOE or Department).

ACTION: Notice of proposed rulemaking (NPR) and public hearing.

SUMMARY: DOE proposes to modify the 2010 goal of 30 percent of U.S. motor fuel production to be supplied by replacement fuels, established in section 502(b)(2) of the Energy Policy Act of 1992 (EPAct 1992), because it is not achievable. The Department has authority to review the goal and to modify it, by rule, if it is not achievable, and in doing so may change the percentage level for the goal and/or the timeframe for achievement of the goal. The Department has determined through its analysis that the 30 percent replacement fuel production goal could potentially be met, not by 2010, but at a later date. The Department consequently is proposing in this notice to keep the replacement fuel goal of 30 percent originally provided in EPAct 1992 (section 502(b)(2)), but extend the date for achieving the goal to 2030.

DATES: Written comments (preferably provided electronically, but if not possible, then eight copies) on the proposed modification must be received by DOE on or before November 3, 2006; electronic copies of comments may be submitted as described below.

Oral views, data, and arguments may be presented at the public hearing, which will be held on October 3, 2006. The length of each oral presentation is limited to 10 minutes. The public hearing will be held at the U.S. Department of Energy, Room GJ-015,

Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Requests to speak at the hearing must be submitted to DOE no later than 4 p.m., September 26, 2006.

ADDRESSES: Written comments (eight copies) and requests to speak at the public hearing should be addressed to: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, EE-2G, RIN 1904-AB67, 1000 Independence Avenue, SW., Washington, DC 20585-0121. E-mails may be sent to:

regulatory_info@afdc.nrel.gov.

Comments may also be submitted through the Federal Rulemaking Portal at <http://www.regulations.gov>. DOE is currently using Microsoft Word.

Organizations are strongly encouraged to submit comments electronically, to facilitate timely receipt of comments and ease inclusion in the electronic docket.

Copies of this notice, the transcript from the hearing, and written comments will be placed at the following Web site address: http://www.eere.energy.gov/vehiclesandfuels/epact/private_fleets.shtml. Interested parties may also access these documents using a computer in DOE's Freedom of Information (FOI) Reading Room, U.S. Department of Energy, Forrestal Building, Room 1E-190, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 586-3142, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

For more information concerning public participation in this rulemaking, see the "Opportunity for Public Comment" section found in the **SUPPLEMENTARY INFORMATION** section of this notice.

FOR FURTHER INFORMATION CONTACT: To request a copy of this notice or arrange on-site access to paper copies of other information in the docket, or for further information, contact Mr. Dana V. O'Hara, Office of Energy Efficiency and Renewable Energy (EE-2G), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0121; (202) 586-9171; regulatory_info@afdc.nrel.gov; or Mr. Chris Calamita, Office of the General Counsel, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0121; (202) 586-9507.

SUPPLEMENTARY INFORMATION:

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I. Introduction

The Energy Policy Act of 1992 (EPAct 1992), Public Law 102-486, established an interim goal of developing sufficient U.S. domestic replacement fuel production capacity to replace 10 percent of projected total motor fuel use by the year 2000 and a final goal of 30 percent by the year 2010, with at least one half of such replacement fuels being domestic fuels. Pursuant to EPAct 1992, DOE is required to review these goals periodically and publish the results and provide opportunities for public comments. If DOE determines that the goals are not achievable, EPAct 1992 section 504(b) directs DOE to modify, by rule, the percentage requirements and/or dates, so that the goals are achievable. (42 U.S.C. 13254(b)) The Department believes that in order for a goal to be achievable, there must be a reasonable expectation that the desired level of replacement fuels production capacity will develop within the relevant timeframe.

The purpose of this NPR is to review the existing 2010 replacement fuel production goal; determine whether the goal is achievable; and if the goal is not achievable, propose a new replacement fuel production goal. Today's NPR also implements the March 6, 2006, order of the U.S. District Court for Northern District of California to prepare and publish a notice of proposed rulemaking to modify EPAct 1992's replacement fuel production goal for 2010. See *Center for Biological Diversity v. U.S. Department of Energy et al.*, No. C 05-01526 WHA (Order on Cross-Motions for Partial Summary Judgment).

II. Replacement Fuel Production Goal

A. Statutory Requirements

Section 502(a) of EPAct 1992 requires the Secretary of Energy (Secretary) to establish a program to promote the development and use of "domestic replacement fuels" and to "promote the

replacement of petroleum fuels with replacement fuels to the maximum extent practicable” (42 U.S.C. 13252(a)). Section 502(b) establishes production goals for replacement fuels (42 U.S.C. 13252(b)). The relevant portions of 502(b) are:

(b) Development Plan and Production Goals—[T]he Secretary * * * shall review appropriate information and—

* * * * *

(2) determine the technical and economic feasibility of achieving *the goals of producing sufficient replacement fuels* to replace, on an energy equivalent basis—

(A) at least 10 percent by the year 2000; and

(B) at least 30 percent by the year 2010, of the projected consumption of motor fuel in the United States for each such year, with at least one half of such replacement fuels being domestic fuels;

42 U.S.C. 13252(b)(2) [emphasis added].

For the purposes of this NOPR, the “replacement fuel production goal” or the “goal” refers to the 30 percent production goal by 2010 (42 U.S.C. 13252(b)(2)(B)), unless otherwise noted. DOE believes the 10 percent production goal was meant to be an “interim” milestone to help gauge the progress to the 30 percent production goal. As noted elsewhere in this NOPR, DOE has evaluated the status of the 2000 interim goal and determined that it was not met. Furthermore, DOE has evaluated and proposes to determine that the 2010 goal is not achievable. Adopting a revised interim goal would not assist DOE in carrying out its obligation to revise the 2010 replacement fuel goal. Moreover, DOE notes that the Court order referenced earlier instructs DOE to “publish a Notice of Proposed Rulemaking for a revised replacement fuel goal.”¹ DOE, therefore, is proposing in this notice to focus on the final goal in section 502(b)(2). In addition, the analyses presented later in this notice nevertheless project potential replacement fuel levels for the intervening years without establishing a specific interim level or target date.

DOE will periodically evaluate the prospects for achieving the replacement fuel goal proposed in today’s notice, including tracking the levels projected for intervening years, and will publish the results of its evaluations as necessary.

Since 1992, DOE has taken a number of steps to implement EPCA’s replacement fuel programs. DOE

coordinates various aspects of the Federal fleets’ efforts to comply with the vehicle acquisition requirements established under section 303 of EPCA 1992 (42 U.S.C. 13212). DOE has promulgated and implemented regulations and guidance for alternative fuel providers and State government fleets, which are subject to the fleet provisions contained in sections 501 and 507(o) (42 U.S.C. 13251 and 13257(o), respectively). DOE has also established the Clean Cities Program, which supports public and private partnerships that deploy alternative fueled vehicles (AFVs) and build supporting infrastructure.

However, EPCA 1992 does not provide DOE the authority “to mandate marketing or pricing practices, policies or strategies for alternative fuel, or to mandate the production or delivery of such fuels.” (42 U.S.C. 13254(c)) Further, the Department’s authority to require the use of alternative fuels is limited.²

B. Definitions

The term “replacement fuel” is defined by EPCA 1992 to mean “*the portion of any motor fuel that is methanol, ethanol, or other alcohols, natural gas, liquefied petroleum gas, hydrogen, coal derived liquids, fuels (other than alcohols) derived from biological materials, electricity (including electricity from solar energy), ethers,*” or any other fuel that the Secretary determines meets certain statutory requirements. (42 U.S.C. 13211(14) (Emphasis added)).

The term “alternative fuel” is defined to include many of the same types of fuels (such as ethanol, natural gas, hydrogen, and electricity), but also includes certain “mixtures” of petroleum-based fuels and other fuels as long as the “mixture” is “substantially not petroleum.” (42 U.S.C. 13211(2) and 10 CFR 490.2).

Thus, a certain mixture might constitute an “alternative fuel,” but only the portion of the fuel that falls within the definition of “replacement fuel” would actually constitute a “replacement fuel.” For example, M85, a mixture of 85 percent methanol and 15 percent gasoline, would, in its entirety, constitute an “alternative fuel,” but only the 85 percent that was methanol would constitute “replacement fuel.” Also by way of example, gasohol (a fuel blend typically consisting of approximately 10 percent ethanol and 90 percent gasoline)

would not qualify as an “alternative fuel” because it is not “substantially not petroleum,” but the 10 percent that is ethanol would qualify as “replacement fuel.”

Section 301(12) of EPCA 1992 defines “motor fuel” as “any substance suitable as fuel for a motor vehicle.” The goals established in section 502(b)(2) require that DOE evaluate the capacity of producing sufficient replacement fuels to offset a certain percentage of U.S. “motor fuel” consumption. Moreover, the term motor vehicle is defined in EPCA 1992 section 301(13), through reference to 42 U.S.C. 7550(2), as a self-propelled vehicle that is designed for transporting persons or property on a street or highway. Therefore, DOE, for the purposes of Title V of EPCA 1992, has interpreted the term motor fuel to include all fuels that are used in on-road vehicles. This includes fuels used in light-, medium-, and heavy-duty on-road vehicles. (See Private and Local Government Fleet Determination; Final Rule, 69 FR 4219, 4226 (January 29, 2004).)

C. Quantifying the Replacement Fuel Production Goals

The replacement fuel production goals contained in EPCA 1992 would require significant increases in the production of replacement fuels, which if used, would represent a substantial reduction in petroleum motor fuel usage. The 2000 on-road motor fuel consumption in the U.S. was about 10 million barrels per day (mbpd). Thus the 2000 goal of producing sufficient fuel to replace 10 percent of total motor fuel demand would have required the supply of 1 million barrels oil equivalent per day of replacement fuels. The current U.S. production capacity for ethanol, which currently is the most prevalent replacement fuel, is roughly 0.16 million barrels of oil equivalent per day and considerably less than the level of the 2000 goal. In 2010, the U.S. is projected to consume over 12 mbpd of motor fuels and, therefore, the production of 3.7 mbpd in replacement fuels would be required to satisfy the goal of 30 percent replacement fuel.

To further put these figures in perspective, it is helpful to consider the goals in relation to other energy sectors. For example, in 2010, achieving the EPCA 1992 goal would require the replacement of over 3.7 million barrels of oil per day (7.3 quads³ of energy), equivalent to 9 percent of the total projected domestic energy consumption. (See the Energy Information

¹ The order issued on March 6, 2006, by the U.S. District Court for Northern California instructs DOE to issue a revised replacement fuel goal, not goals. See *Center for Biological Diversity v. U.S. Department of Energy et al.*, No. C 05–01526 WHA (Order Re Timing of Relief).

² Fleets are not required to use alternative or replacement fuel in their AFVs (except for alternative fuel providers, which are required by section 501(a)(4) of EPCA to use alternative fuel in their AFVs.)

³ One quad equals one quadrillion BTU, which is equivalent to 172.414 million barrels of crude oil.

Administration's (EIA) Annual Energy Outlook (AEO) 2006,⁴ Tables A2 and A7.)

Moreover, the 2010 replacement fuel goal for motor fuels set forth in EAct 1992 is almost equivalent to the total energy demand for the entire commercial sector (service-providing facilities and equipment of business; Federal, State, and local governments; and other public and private organizations), which is projected to account for 11.5 percent of total energy consumption in 2010. The 30 percent goal also represents the equivalent of twice as much energy as is projected to be supplied by all renewable fuels across all sectors, and roughly the equivalent to the total energy currently supplied by U.S. nuclear power generating facilities. Achieving the existing statutory replacement fuel goal also becomes more difficult each year as more vehicles are placed in service and vehicle miles traveled increases. In this decade alone, motor fuel demand is expected to increase by nearly 2.5 million barrels per day (from 2000 to 2010).

Seen another way, in order to meet the existing 2010 goal, the U.S. would need to replace, in the next three years, over 90 million of the 130 million light-duty passenger cars on the road today with AFVs running 100 percent of the time on alternative fuels. Since there are currently about six million AFVs in the U.S., meeting this goal would require a 15-fold increase in AFVs within the next three years—basically requiring nearly five years' worth of vehicle sales in only three years, and every vehicle sold would have to be an AFV.

In discussing the United States' transportation energy issues, Brazil is often suggested as a potential model to follow for petroleum replacement. In 2004, Brazil was able to replace approximately 44 percent of its gasoline consumption (on a volume basis), or 34 percent on an energy-adjusted basis, with ethanol. Brazil's transition to ethanol began in the 1970s and has experienced a significant ramp-up over the past 10 years. However, this level of replacement fuel does not account for the large amount of diesel fuel consumed in Brazil, and thus the total petroleum replacement provided by ethanol in Brazil is much less than the 34 percent level reported above.

The fact that the U.S. already produces more ethanol than Brazil annually (yet replaces less than 3

percent of its motor fuels) reveals that this country's petroleum dependence is significantly larger than Brazil's. It would take a considerable amount of time for the U.S. to achieve similar results, on a percentage basis, given the time it would take to develop the production capacity of the magnitude required to reach the 30 percent level.

III. Achievability of the Goal

A. Statutory Requirements

Section 504(a) of EAct 1992 requires DOE to periodically "examine" the goals established in section 502(b)(2) and determine whether they should be modified. (42 U.S.C. 13254(a)) The examination of the goals is to be made taking into account the program goals stated under section 502(a), namely to promote the development and use of "domestic replacement fuels" and to "promote the replacement of petroleum fuels with replacement fuels to the maximum extent practicable."

As an initial matter, DOE notes that it is unaware of any analysis or technical data that was used by Congress in 1992 as a basis for setting the 10 percent and 30 percent replacement fuel goals set forth in EAct 1992. Thus, DOE is aware of no affirmative determination by Congress or by any agency that, at the time they were set, the statutory goals were reasonably achievable. Regardless, and as described and discussed below, the Department periodically has evaluated the feasibility of the goals.

B. Previous Analyses of the Existing Goals

1. Technical Report 14

Several previous efforts were made by the Department to analyze the replacement fuel goal. The first effort was in 1996, as part of the Assessment of Costs and Benefits of Flexible and Alternative Fuel Use in the U.S. Transportation Sector, Technical Report Fourteen: Market Potential and Impacts of Alternative Fuel Use in Light-Duty Vehicles: A 2000/2010 Analysis (U.S. Department of Energy, Office of Policy and Office of Energy Efficiency and Renewable Energy, January 1996, report number DOE/PO-0042), to be referred to as Technical Report 14. To analyze the potential for replacement fuels, Technical Report 14 relied upon the Alternative Fuels Trade Model (AFTM), a long-run static equilibrium model that estimates prices and quantities that balance the interrelated world oil and gas markets, given assumptions about supply, demand, and costs. This model allows for comparisons between a baseline or benchmark case against a

modified case (the unconstrained case), or even a series of modified cases.

Technical Report 14 estimated that overall replacement fuel use in light-duty vehicles in 2010 would range from 12.4 percent to 45.8 percent assuming various policies measures are adopted and mature alternative fuel industries are permitted to develop. Out of all of the cases run (30 in total), two-thirds (20) resulted in replacement fuel use of 30 percent or more of light-duty fuel use. (Technical Report 14 pp. 6–8 and 14–15). The higher penetration levels presented typically occur when utilizing the EIA AEO 1994 reference case oil prices (compared to Technical Report 14's other major cases which were run under only low oil prices). The report projects most alternative fuels and replacement fuels as being competitive with petroleum motor fuels when the reference fuel prices are used. When low oil prices are used, alternative fuel and replacement fuel use declines. The most significant replacement fuel levels projected occur when greenhouse gas (GHG) emissions are constrained. The scenarios constraining GHG emissions result in higher levels of alternative fuels used because typically most alternative fuels are less carbon-intensive than petroleum fuels.

The benchmark cases evaluated project much lower levels of replacement fuel use (less than 13 percent) and do not assume new policies or mandates to facilitate replacement fuel use. The benchmark cases also assume the existence of transitional barriers, which are not present for the most part in the other scenarios evaluated. In the case without transitional barriers or the "unconstrained case," alternative fuel vehicles and alternative fuel infrastructure is assumed to exist in sufficient numbers to allow significantly increased levels of replacement fuel use, assuming they are otherwise cost-competitive.

Overall, Technical Report 14 concluded that at least in 1996, displacing 30 percent of light-duty motor fuel use appeared theoretically feasible by 2010, assuming certain policies and market conditions materialize. However, Technical Report 14 only considered replacement fuels in the context of motor fuel demand by on-road light duty vehicles. Light-duty fuel use in the U.S. is typically 75–80 percent of all motor fuel use, so achieving 30 percent replacement of light-duty fuel use equates to replacing approximately 22–24 percent of all motor fuel use.

⁴ The AEO is EIA's long-term forecast of energy supply, demand, and prices, based on upon results from EIA's National Energy Modeling System (NEMS). EIA is an independent statistical and analytical agency within DOE.

2. EPA 1992 Section 506 Report

The second major attempt by the Department to evaluate the replacement fuel picture was made at the end of the last decade, in the report *Replacement Fuel and Alternative Fuel Vehicle Analysis Technical and Policy Analysis*, Pursuant to Section 506 of the Energy Policy Act of 1992 (U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Transportation Technologies, December 1999 with amendments September 2000), hereinafter section 506 report. The report is available at http://www.eere.energy.gov/vehiclesandfuels/epact/pdfs/plf_docket/section506.pdf.

The report concluded that it was unlikely that the 10 percent and 30 percent goals contained in EPA 1992 would be achieved given the limited statutory authorities provided to DOE and the relatively low price of petroleum motor fuels that had occurred in the time since EPA 1992's passage. An addendum issued in 2000 indicated that significantly higher oil prices (in the \$30 per barrel range) might lead to additional replacement fuel use, but would not alter the original conclusion that achievement of the goals was unlikely.

Despite the conclusion concerning achievability, the report did not take the additional step of making a determination under EPA 1992 section 504(b) that the goals were not achievable; nor did the report seek to revise the statutory replacement fuel goals. The report did indicate DOE's continued support for alternative fuel and replacement fuel programs, and concluded that alternative fuels could provide significant benefits in terms of greenhouse gas emission reductions and oil savings. Like Technical Report 14, the section 506 report indicated that the 30 percent goal is achievable eventually if certain obstacles are overcome, mainly that alternative and replacement fuels become more price competitive with petroleum motor fuels. However, the report highlights the significant lead-times necessary to get sufficient vehicles on the road and the steep ramp-up that must occur to increase the use of replacement fuels.

3. Transitional Alternative Fuels and Vehicles (TAFV) Model Report

The next report to consider the achievability of the replacement fuel goals was the TAFV Model Report. See *The Alternative Fuel Transition: Results from the TAFV Model of Alternative Fuel Use in Light-Duty Vehicles 1996–2000* (ORNL.TM2000/168) (September

17, 2000). This report was completed shortly after the section 506 report. It examined multiple pathways toward increased replacement and alternative fuel use. The major difference between the TAFV report and earlier reports is that it used a dynamic transitional model to analyze potential replacement fuel pathways. Many of the earlier studies and analyses used single-period equilibrium models and also assumed no transitional barriers to increased alternative fuel and replacement fuel use. The TAFV report includes a number of scenarios that assume no transitional barriers but it also includes multiple pathways that do include analysis of transitional barriers.

The TAFV report is instructive in that it highlights just how difficult it will be to achieve the 30 percent replacement fuel production goal. Of the policy options considered, only one achieves the 30 percent goal in the 2010 timeframe and that case relies on a retail sales mandate for alternative fuels (an option that is not authorized by statute.) Of the cases reviewed both with and without transitional barriers, replacement fuel levels achieved were less than 20 percent. Several other policy options led to increased use of replacement fuel use but all of them required authority beyond that currently afforded DOE. For example, these scenarios relied on a low-GHG fuel subsidy or increased Corporate Average Fuel Economy (CAFE) standards to lead to larger levels of replacement fuel use; however, even in the high oil price case, the GHG fuel subsidy resulted in only about 22 percent replacement fuel use by that year. Most of the other policy options considered led to no more than 10 percent replacement fuel use by 2010. The TAFV report also concluded that it was unlikely the 2010 replacement fuel goal would be achieved without significant policy changes, including incentives for the "expansion of vehicle production and fuel availability."

Another important factor to consider is that the replacement fuel levels projected in the TAFV report only considered light-duty fuel and thus overstated the actual potential replacement fuel levels by about 25 percent. The report is available for review at: http://www.eere.energy.gov/vehiclesandfuels/epact/pdfs/plf_docket/tafv99report31a_ornlm.pdf.

In summary, the section 506 report and TAFV 2000 Report both concluded that it would be difficult and unlikely, but not impossible, to achieve the 2010 replacement goal in EPA 1992. In neither of these reports issued in mid-

late 2000 did DOE make a determination under EPA 1992 section 504(b) that the statutory replacement fuel goals were not achievable—*i.e.*, the determination that would have triggered a statutory obligation to set a new, achievable, replacement fuel goal. The Department chose to take a "wait and see" approach regarding the need to revise the 2010 goal.

C. Current Review and Analysis of the Goal

In the development of this proposed rule, DOE evaluated the prospects for achieving the replacement fuel goals set out in the Energy Policy Act of 1992, which call for developing the capacity to produce enough replacement fuels to offset 10 and 30 percent of the on-highway motor fuels projected consumption for 2000 and 2010, respectively. Based on actual data reported for 2000, the 10 percent replacement fuel goal was not achieved. Replacement fuel use in that year totaled about 4.7 billion gallons, or only about 2.9 percent of the 162 billion gallons of on-highway motor fuel consumed. Of this amount, oxygenates in the form of ethanol and Methyl Tertiary Butyl Ether (MTBE) supplied about 92 percent of the replacement fuel production. (See *Transportation Energy Data Book—26th Edit.*, Table 2.3 (2006) (replacement fuel use) and FHWA *Motor Fuel Use Report*, Table MF–21; <http://199.79.179.101/ohim/hs00/mf.htm>.)

Based on EIA's latest forecast (AEO 2006), replacement fuels currently supply approximately 2.5 percent of the total motor fuel used in on-road motor vehicles. The amount of replacement fuel used, as a percent of total motor fuel consumed, has essentially been flat for the past decade despite an increase in use of alternative and replacement motor fuels. This is because the growth in replacement fuels has been matched by the growth in petroleum motor fuels.

Additionally, the recently accelerated phase-out of MTBE as an additive in gasoline has limited the total amount of replacement fuels consumed since MTBE previously accounted for a significant portion of these fuels. Because a gallon of MTBE contains more energy than a gallon of ethanol, replacing MTBE with ethanol may result in more gallons of ethanol used, but not in a higher replacement fuel level, since the level of replacement (percentage) is calculated on an energy content basis. This replacement of MTBE with ethanol partly explains why replacement fuels have not garnered a larger share of the on-road fuels market on an energy basis, even as ethanol use has increased quite

significantly in the past several years, increasing from a level of slightly more than 1 billion gallons in 2002 to 4 billion gallons in 2005.

The EIA AEO 2006 reference case projects that replacement fuels in 2010 will account for approximately 2.94 percent of total on-road motor fuels, or approximately 5.7 billion gallons of gasoline equivalent replacement fuel. As noted above, ethanol production is increasing significantly but some of this increase is offset by the near complete phase-out of MTBE expected by 2010. Given the short-term nature of the 2010 goal, it appears that ethanol would be the primary replacement fuel option to consider. Some production capacity for ethanol now exists, with increases in capacity projected over the next few years, partly in response to the Renewable Fuel Standard established by the Energy Policy Act of 2005. Ethanol can be used in low-level blends with gasoline in conventional vehicles already on U.S. roads, and methods to distribute ethanol already exist. The changes in distribution and infrastructure needed for other fuels (e.g., gaseous fuels or electricity) to make major contributions would be much longer term in nature, and thus largely impractical for serious consideration before 2010. Therefore, ethanol in blends is expected to account for about 80 percent of the replacement fuels produced in 2010, with the remaining balance made up of mostly natural gas and propane. Even in the AEO 2006 high price forecast, replacement fuels only account for slightly more than 3 percent of total on-road motor fuel in 2010.

For replacement fuels to replace 30 percent of the motor fuel produced in 2010, replacement fuel production would have to increase more than 10-fold, to nearly 60 billion gallons. Even if extraordinary measures were undertaken, replacement fuel production could not be ramped up enough to meet the level required to achieve the 30 percent replacement fuel goal in three years. By way of illustration, if all the corn currently produced in the U.S. were used to produce ethanol, the amount of ethanol produced would only be about 18 billion gallons of gasoline equivalent, which constitutes only 9 percent of U.S. motor fuels.

DOE therefore proposes to determine that the existing EPCA 1992 replacement fuel goal of 10 percent for 2000 was not met and that the goal of 30 percent for 2010 is not achievable, considering all information available and the economic and technical feasibility of achieving the 2010 goal.

IV. Goal Modification and Background

A. Statutory Requirements

Section 504(b) requires “[i]f, after analysis of information obtained in connection with carrying out subsection [504](a) [which requires periodic review of the replacement fuel goals] or section 502, or other information, and taking into account the determination of technical and economic feasibility made under section 502(b)(2), the Secretary determines that goals described in section 502(b)(2), including the percentage requirements or dates are not achievable, the Secretary, in consultation with appropriate Federal agencies, shall, by rule, establish goals that are achievable, for the purposes of this title” (42 U.S.C. 13254(b)). In modifying the goal, DOE may promulgate an achievable goal by adjusting the level of the goal and/or adjusting the timeframe of the goal.

The Department has proposed to determine that the EPCA 1992 replacement fuel goal of 30 percent by 2010 is not achievable. That determination, if finalized, would require the Department to establish a new goal, by rule which is achievable. Section 504 makes clear that achievability of the goal is key, both for analysis of the goal as well as modifying the goal. EPCA 1992, however, does not define “achievable” for the purpose of modifying the goal. Section 502(b)(2) directs DOE to consider the technological and economic feasibility of the statutory goal in determining the goal’s achievability under the initial review. The Department interprets the term to mean that in order for a goal to be achievable, there must be a reasonable expectation, based on technological and economic feasibility, that the desired level of production capacity will be created within the relevant timeframe.

B. Previous Rulemaking

Section 507(c) directed the Department to issue an Advanced Notice of Proposed Rulemaking (ANOPR) that, in part, would evaluate the progress toward achieving the replacement goal and assess the adequacy and practicability of the goal. (42 U.S.C. 13257(c)) In response to that directive, DOE issued an ANOPR on April 17, 1998 (63 FR 19372). DOE conducted three public hearings (Minneapolis, Minnesota; Los Angeles, California; and Washington, DC) and solicited written comments from the public on the ANOPR. More than 110 interested parties responded by providing written and oral comments. Comments were received through July

16, 1998. DOE has reviewed all of these comments and, in the following paragraphs, provides a summary of and DOE’s response to those comments relevant to the replacement fuel goal.

In the ANOPR, DOE requested comments on 23 specific questions covering three broad areas: Replacement fuels, fleet requirements, and urban transit buses. Only the first set of questions is relevant to today’s rulemaking. A detailed discussion of these comments was previously provided in the notice of proposed rulemaking for the Private and Local Government Fleet Determination, 68 FR 10320, 10326–10328 (March 3, 2003).

The questions raised in the 1998 ANOPR addressed whether the existing replacement fuel goal for 2010 was achievable, and if not, what goal would be achievable; how DOE should determine achievability; what should be done to maximize use of replacement fuels (such as mandates and incentives); and how DOE should determine the impact of replacement fuels.

Comments about the goal were received from more than 40 individuals or entities, and primarily addressed whether the goal of replacing 30 percent of the U.S. motor fuel by 2010 was considered achievable. While generally lacking specific goal levels and dates to inform today’s action, the comments did identify likely problems in achieving the existing goal. Almost half of the comments received that explicitly addressed this question regarded the goal as unachievable. By an even wider margin, those submitting comments considered the goal unachievable under present economic conditions, and many offered suggestions as to what changes would be required to make the goal feasible. Only one comment was received which suggested a specific revised goal, while several others suggested that modifying the goal would be as arbitrary as the original goal.

Comments received were in general agreement that the lack of alternative fuel infrastructure, low petroleum fuel prices, and various limitations on alternative fuel vehicle availability were key barriers to achievement of EPCA 1992’s 30 percent replacement fuel production goal. Numerous comments were received suggesting a variety of incentives (such as tax credits) to spur greater production and use of replacement fuels. Virtually no comments were received suggesting additional data relevant to the decision at hand, nor concerning how to determine the impact of efforts to increase replacement fuel use.

C. Final Private and Local Determination/Court Decision

DOE previously addressed the issue of whether to revise the replacement fuel production goal for 2010 contained in EPCA 1992 in the context of its determination that an AFV acquisition mandate for private and local government fleets was not necessary. (See 69 FR 4219; January 29, 2004.) Section 507(e) directs the Department to consider whether a fleet requirement program is “necessary” for the achievement of the replacement fuel goals. (42 U.S.C. 13257(e)) As part of the Department’s decision under that directive, DOE stated in its notice of final rulemaking that a private and local government fleet rule would “not appreciably increase the percentage of alternative fuel and replacement fuel used by motor vehicles” (69 FR 4220). DOE further concluded that “adoption of a revised goal would not impact its determination that a private and local government rule * * * would not provide any appreciable increase in replacement fuel use” (69 FR 4221). DOE, therefore, did not revise the replacement fuel goal at the time but indicated that it would continue to evaluate the need to revise the statutory goal in the future.

Subsequent to the publication of the January 29, 2004, final rule, DOE was sued in Federal court by the Center for Biological Diversity and Friends of the Earth for failing to impose a private and local government fleet acquisition mandate and for not revising the replacement fuel production goal for 2010 as part of its determination. On March 6, 2006, the U.S. District Court for the Northern District of California invalidated DOE’s final determination regarding the private and local government fleet mandate and ordered DOE to revise the replacement fuel production goal for 2010. (See *Center for Biological Diversity v. U.S. Department of Energy et al.*, No. C 05–01526 WHA (Order on Cross-Motions for Partial Summary Judgment).) In its order, the Court directed DOE to prepare notices of proposed rulemaking and final rules on both the replacement fuel goal for 2010 and the private and local government fleets determination. Today’s notice fulfills the Court’s requirement that DOE “shall publish a Notice of Proposed Rulemaking for a revised replacement fuel goal by no later than September 6, 2006.” (See the Court’s timeline order at p. 2 of the order.) This is the initial step to a later rulemaking that DOE will conduct to decide whether a private and local government fleet mandate is necessary.

D. Advanced Energy Initiative

The President’s Advanced Energy Initiative sets out an aggressive course for reducing the Nation’s dependence on foreign petroleum. This initiative, announced in the President’s State of the Union address in January 2006, sets a national goal of replacing more than 75 percent of the U.S. imports from foreign sources by 2025. The Advanced Energy Initiative emphasizes technology developments as the key to reducing energy dependence, including several in the area of replacement fuels. These appear under the portion of the Initiative focused on “Changing the way we fuel our vehicles”, which indicates:

We can improve our energy security through greater use of technologies that reduce oil use by improving efficiency, expansion of alternative fuels from homegrown biomass, and development of fuel cells that use hydrogen from domestic feedstocks.

The Advanced Energy Initiative is available on the White House Web site at the following location: <http://www.whitehouse.gov/stateoftheunion/2006/energy/>.

V. Goal Modification Analysis

Given the timeframe set by the Court, in this NOPR, the Department has had to rely on the best information and data currently available. The Department searched and reviewed relevant internal and external reports, studies, and analyses on alternative and replacement fuel use and projected production. The pertinent information was compiled to assist in the development of an “achievable goal.”

A. Approach

The Department has several options, in accordance with the authority provided in section 504 of EPCA 1992. First, DOE could modify the goal level to what it believed was achievable in the 2010 timeframe, probably around the 3 percent projected in the AEO 2006. DOE estimates that given technical and other constraints in this short timeframe, expanding production of replacement fuels much beyond 3 percent by 2010 is unlikely as previously discussed.

The other primary option would be to move the goal out in time, since the potential contributions from replacement fuels increase over time. A third option would be to combine the two primary options and modify both the replacement fuel level and date. In analyzing the data, DOE looked at all of these options. The Department evaluated credible data, projections, and other information covering

approximately the next 25 years, to see what could be achievable. The Department’s evaluation and analysis went out to 2030, since that is the last date for which credible input existed, particularly in the form of the AEO 2006.

In general, the analytical framework included only existing statutory authorities and incentives in the development of the technologies. The only exception was in DOE’s Hydrogen, Fuel Cells and Infrastructure Technologies Program (Hydrogen Program) which did consider additional incentives and/or mandates in the future as is discussed later in this section. Therefore, the primary variables in the Department’s analysis were projected technological and economical improvements.

B. Building Blocks

The replacement fuel production goal proposed in this NOPR was developed after careful consideration of existing market factors, energy forecasts, and programs directed by the Department and its national laboratories. Three combined building blocks were considered: (1) The reference case projected by EIA in the AEO 2006; (2) the high price case presented in the AEO 2006; and (3) projections from the DOE programs conducting research and development (R&D) on replacement fuel and vehicle technologies. The outcome of this effort is several different cases under which varying levels of replacement fuel are potentially achieved.

Each of these three combined building blocks includes a number of smaller building blocks which were assembled to form the combined building blocks. These building blocks include replacement fuel and vehicle technologies, with projected contributions based on either the high or reference prices from the AEO, or the DOE program development projections. Some of the building blocks are relevant to all of the scenarios, while others appear in a limited number of scenarios. As indicated above, the Department evaluated data out through 2030, at periodical intervals. In all cases, the highest levels of replacement fuels appear in 2030. Below is a description of the building blocks and “cases” which were used to develop the four scenarios, described in the subsequent section.

1. AEO 2006 Reference Case Description

The AEO 2006 reference case is the base case assembled by EIA. It takes into account developments that are likely to occur as a result of technologies and

policies that exist today. It does not account for potentially new policies, or legislation. The reference case also includes a number of other critical assumptions including economic growth rates and oil prices. The AEO 2006 reference case assumes a U.S. economic growth rate of 3 percent per year. Oil prices in this case are projected to fluctuate from the high \$40 range to mid \$50 range and peak at \$57 in 2030. The AEO indicates that the oil price projection in the reference case represents EIA's "current judgment regarding the expected behavior of the Organization of Petroleum Exporting Countries (OPEC) producers in the long term, adjusting production to keep world oil prices in a range of \$40 to \$50 per barrel" (AEO 2006, p. 206).

According to the reference case, potential replacement fuel levels will grow from the 2005 level of 2.63 percent of total motor fuel use to 8.65 percent in 2030. To arrive at a potential replacement figure, DOE used the figures provided in the AEO 2006 but made the additional assumption that all of the coal-to-liquid (CTL) fuels in the AEO 2006 figures are used in the transportation sector and count as replacement fuels for purposes of section 502 of EPA Act 1992. A significant portion of CTL is expected to be used as jet fuel, so a somewhat smaller portion than assumed here would probably be used for on road motor vehicle transportation. In the reference case, the CTL fuels account for slightly more than half of the total replacement fuels in 2030 or about 4 percent. Realistically, DOE expects a portion of CTL fuels may be used for non-transportation purposes (such as industrial.) However, it is anticipated that the transportation sector is likely to represent the highest-value use of these fuels. While it is unclear at this time to what extent they will be supplied to non-transportation sectors, the projected high-value of motor vehicle fuels would likely result in the majority of CTL production being used as motor fuels the transportation sector. Therefore, the figure used with the AEO 2006 reference case description represents an upper bound for CTL fuel produced for the transportation sector. (See below for additional discussion on CTL fuels.) The other replacement fuels included in the reference case for 2030 are ethanol at slightly over 3 percent, biodiesel at less than a quarter of a percent, and "other alternative fuels" at less than 1 percent. The "other alternative fuels" are discussed below. Hydrogen use occurs in the AEO reference case but is minimal.

2. AEO 2006 High Price Case Description

The high price case makes "more pessimistic assumptions for worldwide crude oil and natural gas resources than in the reference case" (AEO 2006, p. 204). In particular, OPEC resources and production capacity are projected to be lower in this case. As a result, oil prices rise to nearly \$90/barrel by 2030. Even in the high price case, however, some of the projected prices are considerably lower than today's levels and only rise to \$70/barrel in 2013 and \$80/barrel in 2018. The high oil price forecast for the next several years ranges from \$50 to \$60. In this case, transportation energy demand also is reduced because of high petroleum prices, which tend to encourage fuel efficiency. At the same time, higher oil prices in general also encourage more replacement fuel use. The result is that the replacement fuel potential of the high price case is more than double the reference case, rising to a level of almost 18 percent in 2030.

As in the reference case, CTL fuels account for a large share of the total replacement fuels. Of the nearly 18 percent replacement fuel level, CTL accounts for more than 11 percent with a total production capacity of 1.69 million barrels per day. Thus, the CTL level more than doubles from the reference case projection. As noted above, DOE assumes that all of the CTL produced is used for transportation purposes and therefore counts toward the replacement fuel goal provisions in section 502 of EPA Act 1992. This represents an upper bound of the potential for CTL since it is likely that not all the CTL produced will be used as a transportation motor fuel. Ethanol production and the other alternative fuels largely are unchanged from the reference case. However, gas-to-liquid (GTL) fuels for the first time show up as a potential replacement fuel, accounting for approximately 1.31 percent petroleum replacement and providing about 0.19 million barrels of oil equivalent production per day. GTL fuels are discussed in the Program Development Case section below because DOE has an active program underway to increase their potential.

3. DOE Program Development Case Description

The DOE program development case represents the potential replacement fuel levels achieved if DOE is successful in accelerating the introduction of technologies and new fuels through its R&D programs. These levels are predicated on the respective programs continuing existing R&D activities and

the achievement of technology goals/milestones that have been set. They also depend on economic targets being achieved and market acceptance of the technologies and fuels reviewed; however, for the most part, they do not rely upon new policy or regulatory initiatives. Information to support these cases came primarily from the relevant Energy Efficiency and Renewable Energy and Fossil Energy programs, and included Government Performance and Results Act (Pub. L. 103-62; August 3, 1993; GPRA) analyses and recently released technical reports identifying potential contributions of various fuel and vehicle technologies. (For more information concerning GPRA analyses, see http://www1.eere.doe.gov/ba/pba/gpra_estimates/fy_07.html.)

The GPRA analysis specifically was relied on for the figures used for the Hydrogen Program and the fuel-efficiency savings rates projected for the EERE's FreedomCAR and Vehicles Technologies Program (FCVT). It should be noted that the GPRA figures are based on the AEO 2005 forecast and not AEO 2006 because it was not available when the most recent GPRA analysis was conducted. In the case of hydrogen, therefore, this means that the analysis presented here is based on last year's AEO and thus probably understates the contribution of hydrogen because oil prices (a major factor in determining alternative fuel use levels) were much lower in AEO 2005. In the case of FCVT's fuel efficiency savings, DOE calculated a savings rates based on last year's GPRA report and applied this figure to AEO 2006's projection of on-road motor fuel use.

The discussion below includes the programs and fuels that contribute to the replacement fuel goal, including fuel efficiency measures, ethanol, biodiesel, coal-to-liquid fuels, gas-to-liquid fuels, hydrogen, other alternative fuels, and plug-in hybrid-electric vehicles (PHEVs). In particular, the technologies and fuels for which information was received from DOE program offices include fuel efficiency measures, ethanol, gas-to-liquid fuels, hydrogen, and electricity in PHEVs.

Section 504(b) of EPA Act 1992 requires that the goal, as modified, be achievable. (42 U.S.C. 13254(b)) As part of our determination as to whether a goal would be achievable, the Department considered technologies that are technically and economically feasible today. The Department also considered technologies that currently may not be technologically or economically feasible, but that we reasonably expect to be technologically and economically feasible given the achievement of

certain conditions in the timeframes necessary to contribute to the goal. Thus, for any technology included in the analysis that is not now considered technically and economically feasible, the discussion below includes information on the conditions the Department considers necessary for such technologies to be technologically and economically feasible.

a. Energy Efficiency for Light-Duty, Medium-Duty, and Heavy-Duty Vehicles

The EPA Act 1992 replacement fuel goal does not directly take into account improvements in fuel efficiency because the goal is measured in terms of the percentage of motor fuels provided by replacement fuels. Fuel efficiency improvements to motor vehicles, however, indirectly contribute to the achievement of the replacement fuel goal contained in EPA Act 1992 by lowering total fuel consumption, resulting in a larger percentage of petroleum replacement provided by a given amount of replacement fuel. Moreover, fuel efficiency is an important objective because it helps conserve all fuels whether they are petroleum or replacement fuels and greater fuel efficiency can lower the cost to consumers of operating motor vehicles. DOE, therefore, has an aggressive R&D program that focuses on accelerating the development of technologies that will greatly improve the fuel efficiency of on-road vehicles including light-duty vehicles, commercial light trucks, and heavy trucks and buses.

EERE's FCVT R&D program is leading to a comprehensive suite of new technologies, including hybrid vehicle components, such as electric motors; energy storage units, such as advanced batteries; and power electronics. It also is working on advanced combustion systems, advanced fuels, lightweight materials, and many other systems to improve the fuel efficiency of today's conventionally-fueled vehicles and pave the way for the advanced technology vehicles of tomorrow, including fuel cell vehicles.

Through its efforts, FCVT expects to dramatically reduce oil consumption by improving the fuel efficiency of personal vehicles, such as passenger cars and light-duty trucks, and doubling the fuel efficiency of commercial vehicles, while also developing the core technologies needed for tomorrow's fuel cell hybrid vehicles. The fuel savings provided by these efforts are expected to be significant. (As discussed below in section VI, changes in the motor vehicle fleet take many years to achieve because of the long replacement rates for motor

vehicles. These technology improvements and breakthroughs take a long time to have an impact on petroleum consumption.)

Based on the GPRA analysis conducted by FCVT, DOE projects that fuel efficiency improvements could offset as much as 3.04 million barrels per day of petroleum by 2030. This figure was derived by looking at the GPRA fiscal year 2007 savings rates and comparing them to forecasted on-road petroleum consumption levels in the AEO 2006. A major reason for the reduction in petroleum is the increased fuel efficiency due to increased numbers of diesel-fueled and hybrid-electric vehicles. The FCVT goals analysis indicates much higher levels of these vehicles than forecasted by EIA, which typically relies upon more modest improvements in technologies based upon historical patterns. According to the GPRA analysis, by 2030 conventional gasoline vehicles will only account for 37 percent of new vehicles sales while they account for 80 percent in the AEO reference forecast. The reason for the difference is the much higher level of market penetration projected for new hybrid and diesel-fueled vehicles in the GPRA analysis.

While there is a great deal of promise demonstrated by these technologies, the Department recognizes that their achievement of the levels proposed is not assured. The fuel savings described in this document are specifically contingent on meeting every goal currently set in the FCVT program. If milestones set by the programs are not met, or if oil price levels turn out to be lower than those currently incorporated into programmatic forecasts, there may be some reduction in the penetration of these new technologies and the resulting fuel savings. Further, we note that the projected fuel savings resulting from the FCVT program were not arrived at through the same type of analysis used to establish fuel economy standards under the National Highway Traffic Safety Administration (NHTSA's) fuel economy rulemaking process. As such, the levels relied upon in this current analysis should not be interpreted as levels that could be set as standards under NHTSA's fuel economy program. Fuel economy standards are set by NHTSA after analyzing vehicle manufacturers' specific product plans and technology data. The level at which the fuel economy standards are set must reflect a balancing of four statutory criteria: technological feasibility, economic practicability, the need of the nation to conserve energy, and the effects of other federal motor vehicle standards on fuel economy. Thus,

NHTSA must adhere to a significantly different process when establishing standards, in contrast to DOE's effort here to modify the replacement fuel goal. Nevertheless, the Department believes that it has taken a reasonable approach in relying upon technological improvement projections for the purpose of today's rule.

As noted above, this level of petroleum reduction cannot be directly reflected in the replacement fuel production goal proposed because it offsets petroleum use but does not result in more replacement fuel use. However, because it lowers the total amount of petroleum used, it nevertheless permits replacement fuel production to account for a higher percentage of motor vehicle fuel production than would otherwise be achievable without the petroleum savings. Another indirect benefit of the FCVT programs is the greater market penetration of diesel-fueled vehicles. These vehicles will be increasingly necessary if and when larger amounts of synthetic distillate fuels such as CTL and GTL are to be used in the transportation sector.

b. Ethanol

Ethanol is a two-carbon straight-chain alcohol that is used as both a near-neat fuel (*i.e.*, as E85) and in low-level blends with gasoline (at up to 10 percent ethanol by volume). Ethanol can be produced from a variety of feedstocks, including ethylene, corn, sorghum, and biomass, and using a variety of processing methods. By far, the most common feedstock in the U.S. is corn; in other countries, such as Brazil, sugarcane is the primary feedstock. In the corn process, the starch is extracted from the feedstock and then hydrolyzed to sugar where microorganisms (*e.g.*, yeast) ferment it into ethanol. Ethanol is produced from corn through the wet or dry mill process. The primary production method in the U.S. is dry milling. About 75 percent of ethanol is produced using dry milling (Renewable Fuels Association 2005). The ethanol from corn (and sorghum) process is fully commercialized. At the end of 2005, the U.S. fuel ethanol capacity was over 4 billion gallons from approximately 100 plants located primarily in the Midwest. Most of the plants process corn or sorghum, but there are several small facilities that process wastes, such as beer and cheese whey.

Several organizations (including DOE) are working at developing ethanol from biomass such as energy crops (*e.g.*, switchgrass), agricultural residues (*e.g.*, corn stover) and forestry wastes. There are no commercial biomass-to-ethanol (cellulosic) facilities currently in

operation in the United States. However, DOE has a significant research and development effort in the production of ethanol from biomass. The U.S. Department of Agriculture (USDA) and DOE are also jointly working on developing the technologies for energy crop development.

The DOE program has outlined a detailed plan for developing a cost-effective technology by 2012, based on achieving an ethanol selling price of \$1.07/gallon from feedstocks costing \$35/dry ton. The plan does not analyze whether the target price of \$1.07/gallon is economically feasible, but instead identifies the technological advancements and economic conditions necessary to yield the target price at which ethanol is cost-competitive. In addition, the program is evaluating or developing integrated bio-refineries that would produce ethanol both biologically and thermochemically through gasification. Finally, DOE and USDA are jointly working on technologies to drive down the cost of biomass from roughly \$50/dry ton today to \$30-\$35/dry ton in 2012.

Significant amounts of ethanol use are projected in both the EIA and the DOE Program Development Cases. In the reference case of the 2006 AEO, it is estimated that almost 7 billion gallons of ethanol are produced in 2010 with just over 16 billion gallons being produced in 2030. The Program Development Case has much higher projections, with 10.7 billion gallons in 2010 and over 60 billion gallons in 2030.

c. Biodiesel

Biodiesel (methyl esters) is produced from biomass oils and fats such as soybean oil, waste grease and palm oil. The oils or fats are reacted with an alcohol, usually methanol, in the presence of a catalyst. Both acidic and basic-catalysts are used, but most processes use base catalysis by NaOH. Conversions of over 97 percent are common. In addition to biodiesel, this process produces glycerin, a mix of glycerol (1,2,3-propanetriol), water, and salts. The production of biodiesel is a fully commercialized process, however, there is considerable ongoing industrial development directed at improving the efficiency of the process technology. The primary ongoing government research efforts in this area are in the areas of air emissions, compatibility with advanced engines, and development of additional products from glycerin, as well as USDA's continued efforts to increase corn yields.

Biodiesel use in the transportation sector was 75 million gallons in 2005, a tripling of the 2004 levels. This growth is expected to continue. Projections of the maximum biodiesel production were made for the near-, mid- (2015) and longer-term (2030), in a 2004 report published by the National Renewable Energy Laboratory (Biomass Oil Analysis: Research Needs and Recommendations, National Renewable Energy Laboratory, document NREL/TP-510-34796, June 2004). In the near-term, if all biomass oils currently exported were converted to biodiesel, over 1.6 billion gallons of biodiesel would be available. In 2015, it is estimated that 3.5 billion gallons of biodiesel could be produced by improving oil seed yields and using Conservation Reserve Program (CRP) lands. In addition, 133 million gallons of biodiesel could be produced from waste fats and oils, bringing the total to 3.6 billion gallons of biodiesel. In the longer-term (*i.e.*, 2030), the projected maximum potential biodiesel almost triples over 2015 levels to 10 billion gallons. According to the report, production of 10 billion gallons of biodiesel could be produced by 2030, assuming:

- A 25 percent improvement in oil crop yield (4 billion gallons);
- All wheat exports were displaced, freeing up 30 million acres (3.1 billion gallons) for production of canola or other high oil yield crops; and
- Convert some fraction of soybean production to canola production (3.1 billion gallons).

The AEO 2006 provides much lower estimates for biodiesel. In the reference case, 190 million gallons of biodiesel are used in 2010, rising to 340 million gallons in 2030.

d. Coal-to-Liquid (CTL) Fuels

Coal is the most abundant fossil fuel resource in the U.S. with recoverable reserves estimated in 2005 at 267 billion tons. The recoverable resource base provides approximately 250-year supply at today's usage rates. The technology to produce CTL synthetic fuels has been available for years, and the industry continues to make incremental technological advances. Although the cost of production of CTL is less than today's oil prices, there are other major barriers to the use of coal to produce liquid fuels: Uncertainty of world oil prices; high cost of production coupled with high initial capital cost, and the long decision-to-production lead times. The threshold (or hurdle) price of crude oil that is required to trigger large capital investments is higher than what would otherwise be the case without

these market risks and barriers to entry and therefore could be higher than the current cost of production. Depending on the processes used, production facilities can produce synthetic gasoline or diesel fuels. CTL plants commonly employ the Fischer-Tropsch process.⁵ CTL fuels are clean, refined products requiring little if any additional refinery processing, are fungible with petroleum products and, therefore, can use the existing fuels distribution and end-use infrastructure, an attribute that is not present in the case of most other replacement or alternative fuels. (See testimony of Lowell Miller of DOE Fossil Energy before the Senate Energy and Natural Resources Committee on April 24, 2006, http://fossil.energy.gov/news/testimony/2006/060424-C._Lowell_Miller_Testimony.html and "Development of Coal-to-Liquid Fuels" DOE report to Congress, June 2006.)

DOE's current research priorities do not include funding for improving the processes used to make CTL fuels because the technology is mature with evolutionary advances and incremental improvements and therefore, Federal sponsorship of CTL technologies is not consistent with the Research and Development Investment Criteria. According to the AEO 2006, "CTL is economically competitive at an oil price in the low to mid-\$40 per barrel range and a coal cost in the range of \$1 to \$2 per million BTU, depending on coal quantity and location." The AEO 2006 projects significant amounts of CTL fuels will be produced in the next several decades, with the first production plants coming online as early as 2011. A significant amount of the petroleum replacement provided in each of the scenarios reviewed results from the contribution by CTL.

In the AEO 2006 Reference Case, CTL replaces 0.76 million barrels of oil per day in 2030. In the AEO 2006 High Price Case, CTL replaces 1.69 million barrels of oil per day in 2030. Thus, CTL fuels have the potential to replace between 4-11 percent of total motor fuel, although a significant portion might ultimately be used as jet fuel. It is anticipated that some portion of the fuel produced from CTL processes will be used outside the

⁵ The Fischer-tropsch was invented by F. Fischer and H. Tropsch in Germany in 1923 for " * * * coal liquefaction, based on the catalytic conversion of synthesis gas (*i.e.*, a mixture of hydrogen and carbon monoxide) into a mainly liquid and some gaseous hydrocarbons. The hydrocarbons make from the synthesis gas are mainly paraffins and olefins and are more easily refined into gasoline and diesel fuel. In addition to hydrocarbons, some oxygenated compounds, such as methanol, and produced from the synthesis gas." Energy Deskbook, U.S. Department of Energy, Document No. DOE/IR/05114-1, June 1982.

transportation sector, although it is currently unclear how much. Therefore, the analysis supporting the replacement fuel goal set in today's notice and the figures presented here currently assume 100 percent contribution in the motor fuels market. (This issue was specifically taken into account when adjusting total replacement fuel levels in setting the proposed goal in section VI, below.) As better production data is developed on stream of such plants, DOE may review the goal accordingly. However, most if not all of the production stream from such plants is expected to replace petroleum even if it is not directly used in on-road applications and, therefore, CTL will have a positive contribution to reducing oil use. In EIA's forecast, CTL surpasses all other alternative transportation fuels in terms of potential use.

e. Gas-to-Liquid (GTL) Fuels

Like CTL, GTL fuels are expected to contribute to transportation motor fuel supply in the future. GTL fuels are produced by converting natural gas reserves into synthetic petroleum fuels also using the Fischer-Tropsch process. The primary product of this process, accounting for 40–70 percent of the total yield, is a synthetic distillate or diesel fuel that has zero sulfur, and is fully fungible and compatible with existing liquid fuels and can be introduced into the current petroleum infrastructure and supply system. The production of GTL fuels currently is not economic in the U.S. due to high natural gas prices, and its use is only expected to be cost-effective using stranded natural gas as a feedstock. Stranded natural gas reserves are those that would otherwise be abandoned because they cannot be transported economically. Because of these factors, GTL provides far less petroleum replacement potential than CTL and only becomes a factor in the AEO forecast if oil reaches the levels forecast in the high price case.

AEO 2006 states that GTL fuels are profitable when oil prices exceed \$25 a barrel and natural gas prices are \$0.50–\$1.00 per million BTU. The AEO 2006 reference forecast projects domestic natural gas prices to range from about \$5 to \$6 per million cubic feet range (a thousand cubic feet is roughly equivalent to a million BTU) over the next 25 years. Given this price range, the only viable natural gas that can be used to produce GTL fuel is stranded natural gas. According to the AEO, all of the GTL forecasted to be used is produced using stranded natural gas reserves located in Alaska. Once converted to GTL, the stranded Alaskan reserves could then be shipped via the

Trans Alaskan Pipeline System for incorporation into more conventional fuel transportation and distribution methods. The AEO 2006 reference case indicates that GTL has the potential to replace 0.19 million barrels of oil per day in the high oil case. DOE's Fossil Energy input includes similar levels of petroleum replacement for GTL, but also includes GTL as viable in the reference case if certain technology goals are realized.

DOE has conducted R&D to improve and refine the processes used to produce GTL fuels, but no longer conducts this R&D because GTL is a mature technology with incremental progress driven by market forces. Current promising private sector efforts involve novel technology approaches that have the potential to reduce the capital cost to produce synthesis gas by over 25 percent, and also reduce the size of production facilities so that modest-sized natural gas fields can be exploited. Thus, DOE projects a slightly higher replacement level from GTL fuels than provided in EIA's forecast. Fossil Energy's program projects that GTL could replace 0.20 million barrels per day by 2030, slightly more than the AEO 2006 high oil price case. Moreover, the Fossil program projects that GTL is viable in the reference case and that GTL could replace up to 0.15 million barrels per day by 2030 even with lower oil prices.

Another important factor to consider is the potential for importing GTL from foreign sources. EIA currently projects that in 2030 worldwide GTL production will exceed 1.1 million barrels per day in its reference case and 2.6 million barrels per day in the high oil price case. Some of this production could be imported to the U.S. to offset petroleum demand. However, the replacement fuel goal proposed in this notice does not take into account these potential imports, and therefore likely understates the total potential for GTL fuels to offset petroleum demand.

f. Hydrogen

Hydrogen is the third most abundant element on the earth's surface, found primarily in water and organic compounds, but requires very energy intensive processes to isolate the Hydrogen in a form that can be used for fuel. It can be produced from sources such as natural gas, coal, gasoline, methanol, or biomass through the application of heat; from bacteria or algae; through photosynthesis; or by using electricity or sunlight to split water into hydrogen and oxygen. Because it is abundant, can be produced from a variety of sources, and burns

cleanly or can be converted to electricity with little or no emissions, it has been looked to as a potential replacement for petroleum.

DOE has an extensive R&D program focused on commercializing hydrogen as a motor fuel for transportation. To realize the vision of the President's Hydrogen Fuel Initiative, DOE's Hydrogen Program supports R&D of transportation, stationary and portable hydrogen fuel cell technologies in parallel with technologies for hydrogen production and delivery infrastructure. The program is partnering with automotive and energy companies to make the technology ready by 2015, thereby enabling the availability of safe, affordable, and viable hydrogen fuel cell vehicles and hydrogen fuel infrastructure to consumers by 2020. The current focus is on addressing key technical challenges (for fuel cells and hydrogen production, delivery, and storage) and institutional barriers (such as hydrogen codes and standards to maximize safety, and training and public awareness). Once technical and cost targets are close to being met and the business case is established, policies and programs with incentives may be warranted to facilitate the transition.

The Hydrogen Program is currently conducting basic and applied research, technology development and learning demonstrations, underlying safety research, systems analysis, and public outreach and education activities. These activities include cost-shared, public-private partnerships to address the high-risk, critical technology barriers preventing widespread use of hydrogen as an energy carrier. Public and private partners include automotive and power equipment manufacturers, energy and chemical companies, electric and natural gas utilities, building designers, standards development organizations, other Federal agencies, State government agencies, universities, national laboratories and other national and international stakeholder organizations. The Hydrogen Program encourages the formation of collaborative partnerships to conduct R&D and other activities that support program goals.

DOE is funding R&D efforts that will provide the basis for the near-, mid-, and long-term production, delivery, storage, and use of hydrogen derived from diverse energy sources, including fossil fuel, nuclear energy, and renewable sources. Distributed reforming of natural gas, coal-derived liquids, and renewable liquid fuels (e.g., ethanol and methanol) is likely to be the most efficient and economical way to produce hydrogen in the transition to

large scale introduction of hydrogen fuel, but costs are still too high.

The replacement fuel levels projected for hydrogen in this notice are based on the GPRA analysis conducted for the Hydrogen Program for fiscal year 2007. According to the GPRA analysis, the Hydrogen Program assumes that all of the hydrogen produced in 2025 comes from natural gas reforming with coal conversion to hydrogen not taking place until 2030. See GPRA (Mid-Term Benefits Analysis of EERE's Programs) p. 2–8. The AEO 2006 reference case indicates that hydrogen could replace several thousand barrels per day by 2030. The program development case established by the Hydrogen Program indicates a much more aggressive level of petroleum replacement at nearly a half a million barrels per day by 2030. DOE acknowledges that reaching this higher level may require the adoption of additional policy initiatives or incentives to ease the transition to hydrogen fueled fuel cell vehicles.

g. Other Alternative Fuels

In the reference case, the “other alternative fuels” consist of natural gas, liquefied petroleum gas, electricity, and methanol. Currently, natural gas and liquefied propane are the two most common alternative transportation fuels used (whereas ethanol is used primarily as an oxygenate and in low level blends such as gasohol.) They are primarily used in fleets because they require special vehicles and infrastructure. Currently, these fuels account for only one-fifth of the replacement fuels used in the U.S. and less than half a percent of petroleum motor fuel use. These fuels (with the exception of electricity derived from plug-in electric vehicles) are not treated separately in the program development cases discussed elsewhere in this notice because their use is not projected to increase significantly during the period reviewed, and DOE does not have any active R&D initiatives underway to significantly increase the use of these fuels in the future.

DOE, however, has some regulatory requirements and demonstration programs that include the use of these fuels, but DOE believes the contributions resulting from these programs are largely represented in the AEO reference case. Although small, the contribution from these fuels is expected to double in the reference case, and their contribution is reflected in the replacement fuel level proposed in section VI. These other alternative fuels replace 0.12 million barrels of oil per day in the reference case and 0.11 million barrels per day in the high price case. Their percentage of use is reduced

in the high price case because higher energy prices lead to additional fuel efficiency and less overall fuel consumption.

h. Technologies and Programs Not Considered in This Analysis

Electricity in Plug-in Hybrid-Electric Vehicles (PHEV)

A relatively new but promising technology, PHEVs are attracting significant interest within the government and private industry. The Administration's Advanced Energy Initiative identifies PHEVs as one of the critical new technologies needed to offset petroleum fuel use. Like currently-available hybrid electric vehicles (HEVs), plug-in hybrids are very fuel efficient and can refuel using conventional fuels but have the added advantage of being able to plug-in to the electric grid. PHEVs which are currently being considered would have a driving range in electric-only mode of 20–40 miles. This capability gives the necessary driving range to satisfy most commuter trips and therefore could offset a significant amount of petroleum motor fuel if utilized by a large segment of the consumer market.

To bring this technology to market, the Advanced Energy Initiative includes new research to develop advanced battery technologies such as lithium-ion batteries, and advanced electric drive technologies. These steps are necessary to provide the range and utility that consumers demand. Simply adding more of the batteries used in currently-available hybrid vehicles is not practical because of the cost and weight of current batteries. DOE already has had much success in the area of battery development, having developed the nickel metal hydride batteries currently used by all commercially-available HEVs. Another advantage of PHEV is that they represent a practical step toward hydrogen fuel cell vehicles, because they will use some of the same electric drive and power-management systems that PHEVs will use.

The savings from operating vehicles on electricity could be significant. The Electric Power Research Institute (EPRI) believes the fuel efficiency of plug-in hybrids could exceed 80 or more miles per gallon, particularly in urban driving conditions. Because vehicles are driven mostly during the day for commuter trips, plug-in hybrids can be recharged at night using off-peak electric generation capacity. This means that a significant number of plug-in hybrids could be phased-in without requiring any new power plants. And because very little generation is supplied by

petroleum, almost all the electricity supplied to these vehicles would offset petroleum use. EPRI estimates that the national average price of operating a PHEV on electricity is the equivalent of 75 cents per gallon. EPRI also estimates that because half the cars on U.S. roads are driven less than 24 miles per day, that PHEVs could reduce petroleum motor fuel consumption by 60 percent. As new, more fuel-efficient power plants are developed, PHEVs would be expected to become more energy efficient. However, the Department can not at this time verify EPRI's projections.

At this time, the specific technology baseline/configuration projected for PHEVs is still being developed. When combined with the relatively recent development of this technology concept, this means that there are no comprehensive estimates for potential replacement fuel contributions from this technology. DOE currently is partnering with industry to develop several initial configurations for evaluation and analysis, but concludes it is premature to include any specific contributions from PHEVs in the replacement fuel goal.

Other Federal Programs

In addition to the programs discussed above, there are numerous other Federal programs encouraging replacement fuel production; *e.g.*, the direct loan, loan guarantee, and grant programs for the purchase of renewable energy systems and energy efficiency improvements administered by the USDA under sec. 9006 of the Farm Security and Rural Investment Act of 2002 (Pub. L. 107–171). Such programs combine public and private contributions aimed at conserving and diversifying the Nation's energy supply, including motor vehicle fuels. The Department has not been able to quantify the impacts of such programs, but fully anticipates that the programs will have a positive impact on increasing the production capacity of replacement fuels in the timeframe of the proposed goal. The Department requests comment on the possible contributions from other Federal programs, other government activities and private sector initiatives in achieving the proposed goal.

C. Replacement Fuel Scenarios

The previous section discussed the building blocks reviewed by the Department. This section combines the various building blocks into separate and distinct scenarios. Four scenarios were considered: (1) The reference case projected by EIA in AEO 2006; (2) the high price scenario presented in AEO

2006; (3) a combination of the AEO 2006 reference case with achievement of program goals (designated as Program Developments); and (4) a combination of the AEO 2006 high price case with Program Developments. The different scenarios represent the potential bounds for proposing a revised replacement fuel production goal under sections 502 and 504 of EAct 1992. The analysis performed looked at values for

replacement fuel penetrations in the 2020, 2025, and 2030 timeframes.

1. Reference Case

As discussed earlier, the reference case represents the base case, or the most conservative approach to projecting potential replacement fuel production. The total projected replacement fuel production level by the year 2030 is approximately 8.65 percent in this scenario. This level of petroleum replacement further assumes

that all CTL fuel is used for transportation purposes. Aside from this assumption, the most noticeable difference between this scenario and the ones that include the program development case is the relatively low amount of biofuels that is projected to be used. (This is due to assumptions made about technological progress of ethanol production technologies in the program development case.) Results for this scenario are provided in Figure 1.

FIGURE 1.—SUMMARY OF RESULTS FOR REFERENCE CASE SCENARIO

[Note: Results in mbpd unless otherwise noted]

Reference	2020	2025	2030
On-Road Fuel Use ⁶	14.42	15.36	16.46
Additional Fuel Efficiency Savings (FCVT)	0.00	0.00	0.00
On-Road Fuel Use w/Additional Fuel Efficiency Savings	14.42	15.36	16.46
Ethanol	0.490	0.510	0.514
Biodiesel	0.02	0.02	0.02
Hydrogen/FCVs	0.001	0.001	0.002
Coal to Liquids	0.23	0.58	0.76
Gas to Liquids	0.00	0.00	0.00
Other Alternative Fuels	0.10	0.11	0.12
Petroleum Use	13.58	14.14	15.03
Total Replacement Fuel	0.84	1.22	1.42
Portion Replacement Fuel	5.83%	7.95%	8.65%

2. High Price Case

The high price case, which predicts higher oil prices throughout the forecast, indicates a potential for replacement fuel production level that is double that in the reference case. By 2030, replacement fuel production

potentially accounts for 2.65 million petroleum equivalent barrels per day, providing a replacement fuel production level of 17.84 percent. The most notable changes in this forecast are the reduction in total on-road fuel consumption, dropping from 16.46 to 14.86 million barrels a day as a result

of reduced demand, and the significant increase in potential CTL production, which increases from a level of 0.76 million barrels a day in the reference case to 1.69 million barrels a day in the high price case. Results for this scenario are provided in Figure 2.

FIGURE 2.—SUMMARY OF RESULTS FOR HIGH PRICE CASE SCENARIO

[Note: Results in mbpd unless otherwise noted]

High price	2020	2025	2030
On-Road Fuel Use	13.20	13.97	14.86
Additional Fuel Efficiency Savings (FCVT)	0.00	0.00	0.00
On-Road Fuel Use w/Additional Fuel Efficiency Savings	13.20	13.97	14.86
Ethanol	0.537	0.600	0.622
Biodiesel	0.0280	0.03	0.03
Hydrogen/FCVs	0.001	0.001	0.002
Coal to Liquids	0.29	0.81	1.69
Gas to Liquids	0.04	0.19	0.19
Other Alternative Fuels	0.088	0.10	0.11
Petroleum Use	12.21	12.24	12.21
Total Replacement Fuel	0.99	1.73	2.65
Portion Replacement Fuel	7.49%	12.37%	17.84%

3. Reference Case With Program Developments

This scenario combined the reference case assumptions regarding

transportation energy demand with projections for successful DOE R&D programs. As in the reference case discussed above, this case assumes that all the CTL production capacity

forecasted in the reference case is used for transportation purposes. The reference case with program developments further assumes additional fuel efficiency savings over

⁶ On all summary results tables, the AEO 2006 cases have some fuel efficiency savings built into the forecasts, as a result of gradual improvements in vehicle technologies. The fuel efficiency savings

reflected in the line below in each table represent those additional savings due to FCVT program developments.

and above those included in the reference case based on the fuel efficiency improvements and change in vehicle penetration rates attributed to the R&D initiatives underway within FCVT. Each of the other program initiatives discussed in this notice are factored into this scenario so that estimates for replacement fuel production potential of GTL, ethanol, biodiesel, and hydrogen are included.

The potential impact of combining these forecasts with the individual program goals results in a replacement fuel production level potential of 35.25 percent in 2030. The most significant differences from the two previous forecasts (reference and high price stand-alone) are the incorporation of additional fuel economy improvements and that biofuels (ethanol and biodiesel) provide very large potential petroleum

replacement, accounting for roughly two-thirds of the total replacement fuel in this scenario. The additional fuel efficiency improvements represent over 3 mbpd savings by 2030. The two biofuels also combine to replace more than 3.0 mbpd equivalent in this scenario. Results for this scenario are provided in Figure 3.

FIGURE 3.—SUMMARY OF RESULTS FOR REFERENCE CASE WITH PROGRAM DEVELOPMENT SCENARIO

[Note: Results in mbpd unless otherwise noted]

Reference/program goals	2020	2025	2030
On-Road Fuel Use	14.42	15.36	16.46
Additional Fuel Efficiency Savings (FCVT)	0.55	1.11	3.04
On-Road Fuel Use w/Additional Fuel Efficiency Savings	13.88	14.25	13.42
Ethanol	1.326	1.953	2.581
Biodiesel	0.366	0.51	0.65
Hydrogen/FCVs	0.001	0.16	0.47
Coal to Liquids	0.23	0.58	0.76
Gas to Liquids	0.05	0.15	0.15
Other Alternative Fuels	0.10	0.11	0.12
Petroleum Use	11.81	10.79	8.64
Total Replacement Fuel	2.07	3.46	4.73
Portion Replacement Fuel	14.94%	24.27%	35.25%

4. High Price Case With Program Developments

This scenario looked at the impact of the high price case assumptions regarding transportation energy demand combined with the Program Developments. It includes the same assumptions regarding CTL use as

discussed above. The program goal assumptions regarding potential replacement fuels or petroleum reductions are the same as used in the previous scenario. The major difference in this scenario is that CTL production more than doubles due to higher oil prices. Ethanol and biodiesel again demonstrate the potential to replace a

significant amount of petroleum. The higher oil prices, however, have the effect of reducing overall on-road fuel use, which magnifies the potential replacement fuel levels. The result in this scenario is a maximum potential replacement fuel level of 47.06 percent. Results for this scenario are provided in Figure 4.

FIGURE 4.—SUMMARY OF RESULTS FOR HIGH PRICE CASE WITH PROGRAM DEVELOPMENT SCENARIO

[Note: Results in mbpd unless otherwise noted]

High price/program goals	2020	2025	2030
On-Road Fuel Use	13.20	13.97	14.86
Additional Fuel Efficiency Savings (FCVT)	0.50	1.01	2.74
On-Road Fuel Use w/Additional Fuel Efficiency Savings	12.70	12.96	12.12
Ethanol	1.326	1.953	2.58
Biodiesel	0.37	0.506	0.645
Hydrogen/FCVs	0.001	0.16	0.47
Coal to Liquids	0.29	0.81	1.69
Gas to Liquids	0.05	0.15	0.20
Other Alternative Fuels	0.088	0.10	0.11
Petroleum Use	10.58	9.28	6.41
Total Replacement Fuel	2.12	3.68	5.70
Portion Replacement Fuel	16.71%	28.40%	47.06%

D. DOE's VISION Model Analysis

To validate the results of its analysis, DOE used the VISION model to look at the replacement fuel production levels suggested by the different scenarios considered. The Replacement Fuel Goal is a production capability goal. The purpose of the VISION Modeling exercise was to verify the replacement fuel production levels were reasonable

given various potential vehicle mixes and fuel availability.

The VISION model, developed by DOE and Argonne National Laboratory, is used regularly by the Department to support programmatic decision-making in the area of transportation technologies. VISION has been used for such activities as responding to Congressional inquiries, projecting the

oil reduction potential of advanced vehicle technologies, estimating fuel efficiency improvements required to save specific amounts of petroleum, and other similar tasks. VISION has a number of capabilities including the ability to project light- and heavy-vehicle stock, vehicle miles traveled (VMT), and energy consumption by technology and fuel types. It can also

assess market penetration rates necessary to achieve certain objectives, such as carbon reductions or petroleum reductions. In addition, as with the AEO, VISION specifically addresses any “rebound” effects within transportation, such as where increased VMT may result from lower operating costs due to efficiency improvements. (For more information on VISION, see <http://www.transportation.anl.gov/software/VISION/index.html>).

The VISION model was used in this case to review the inputs assumed in the different scenarios and verify the petroleum reduction savings, as well as the vehicle mix necessary to use some of the fuels. In particular, DOE was interested in whether sufficient light- and heavy-duty vehicles, in particular

flexible fueled and diesel-powered vehicles would be available to use the mix of replacement fuels evaluated. The VISION run provided information on the market penetration of flexible fueled and diesel-powered vehicles that would be needed to use the quantities of ethanol, biodiesel, and synthetic diesel fuels (i.e., CTL fuels). Overall, the VISION Reference Case scenario shows slightly higher numbers for diesel and hybrid electric vehicles than the EIA baseline. Under the VISION runs, there are significant differences between the Reference Case scenario and the Reference Case with Program Developments scenario concerning projected penetrations of FFVs, diesel vehicles, hybrid electric vehicles, and

fuel cell vehicles. This is as would be expected due to the number of FFVs required to use the amount of ethanol projected by the Biomass Program to be available in 2030, the number of diesels and HEVs to demonstrate the petroleum savings due to fuel efficiency as projected by FCVT, the number of diesels needed to use the levels projected of diesel replacement fuels (biodiesel, GTL, CTL), and the number of FCVs required to use the hydrogen projected by HFCIT. Overall, advanced technology vehicles overall levels projected by VISION may require additional mechanisms to be achieved. See below Figure 5 showing the projections for new sales for all highway vehicles in 2030.

FIGURE 5.—VISION MODEL COMPARISON OF 2030 VEHICLE SALES MIX

New LDV sales 2030	EIA reference (percent)	VISION model, reference case (percent)	VISION model, reference case with program developments (percent)
Conventional Fueled	80.0	74.74	0.06
FFVs	6.3	6.16	23.83
Diesel	6.3	9.24	22.43
CNG, EV <i>et al.</i>	1.2	1.26	1.26
HEVs	6.1	8.59	37.43
FCVs	0.0	0.04	15.00

In particular, the VISION model was used to evaluate the replacement fuel levels projected by DOE in the different scenarios. The results matched very closely with those found by DOE and in most cases VISION suggested slightly

higher replacement fuel levels. Some small differences occurred due to differences in assumptions about overall petroleum consumption, efficiency gains, and heating values for fuels. Figure 6 shows the comparison of

results for the two of the scenarios under the 2030 analysis, the reference case and the reference case with program development scenarios.

FIGURE 6.—COMPARISON OF ANALYSIS AND VISION RESULTS FOR 2030

Fuel/technology	Reference case scenario analysis (mmbd)	Reference case scenario VISION (mmbd)	Reference case with program development scenario analysis (mmbd)	Reference case with program development scenario VISION (mmbd)
Ethanol	0.514	0.53	2.58	2.65
Biodiesel	0.02	0.02	0.65	0.60
Hydrogen	0.002	0	0.47	0.37
Coal-to-Liquids	0.76	0.76	0.76	0.76
Gas-to-Liquids	0	0	0.15	0.20
Other Alternative Fuels	0.12	0.16	0.12	0.16
Plug-in Hybrid Electric Vehicles	0	0	0	0
Total Replacement Fuel Contribution	1.42	1.48	4.73	4.75

F. Other Issues

1. Domestic Content

Section 502(b)(2) of EPAAct 1992 directs that of the replacement fuels counted in the goal, at least half must be domestic replacement fuels (42 U.S.C. 13252(b)(2)). This is not an issue

for today’s action because nearly all of the replacement fuels analyzed are domestic in nature. The only replacement fuels analyzed that showed potential for being imported are gas-to-liquids, which represent a relatively small contribution to the overall goals. In addition, the small amount of GTL

fuels included in the analysis was assumed to be based solely upon domestic resources. Ethanol imports are also assumed to be small; none is anticipated to be imported once cellulosic ethanol enters the market. All biodiesel, coal-to-liquid fuels, and hydrogen are assumed to be domestic. A

few of the other alternative fuels may be imported, but again, they represent a very small portion of the overall replacement fuel contributions. Thus, the overwhelming majority of the replacement fuels included in the analyses are domestic in nature.

2. Greenhouse Gases

As part of its analysis of the replacement fuel levels considered in this notice, DOE evaluated the overall greenhouse gas implications of the various scenarios. This analysis was included for several reasons. First, the Department felt such an analysis was needed to do a complete job of addressing the major issues surrounding the goal. Virtually all discussions of energy in contexts similar to this action have addressed greenhouse gas implications, including those within Congress. Second, section 502(a) specifically identifies "reducing greenhouse gas emissions" as one of the overall goals of the replacement fuel program (42 U.S.C. 13252(a)).

All scenarios show reduced carbon emissions over the reference case. Carbon emissions are reduced because more fuel efficient vehicles are used in these scenarios and the replacement fuels in general are less carbon intensive than petroleum motor fuels. The exception is the greenhouse gas emissions associated with CTL fuels if sequestration is not used to capture the carbon during fuel production. EIA indicates that there are currently no plans to sequester the carbon associated with CTL production absent new policies or requirements. Therefore, the Department has not assumed that such emissions will be sequestered. Even with the increased emissions of GHG from CTL, the net effect of the replacement fuel production goal proposed in today's notice is a substantial reduction in greenhouse gas emissions.

The VISION model was used to project the life cycle greenhouse gas emissions of the scenarios analyzed in this rulemaking. Since the greenhouse gas emissions are dependent upon the mix of replacement fuels produced (including the specific feedstocks used) and used and this actual mix cannot be completely determined at this time, the estimated greenhouse gas emissions are based on the projected fuel composition for 2030. On a life-cycle basis, the goal will achieve a reduction in greenhouse gas emissions of over 40 percent compared to the reference case. The annual emissions will decrease from 846.5 million metric tons of carbon equivalent (MMTCe) from fuel mix represented by the AEO 2006 reference

case scenario, to just under 500 MMTCe from the fuel mix represented by the fuel mix that most closely represents the AEO 2006 reference case with program development scenario. This reduction is primarily due to the high utilization of biofuels, which have significantly lower carbon emissions than petroleum-based fuels, especially when derived from biomass. As noted earlier, the exact carbon emissions cannot be pinpointed as the mix of fuels may ultimately be different than that projected; however, it is clear that significant reductions should be expected to occur.

VI. New Replacement Fuel Production Goal Proposal

A. Discussion of Proposed Goal of 30 Percent by 2030

In summarizing the analyses provided above, it appears that a new replacement fuel goal in the range of just under 9 percent up to over 47 percent may be achievable in the 2030 timeframe. This wide range of potential replacement fuel production capacity percentages required the Department to carefully revisit the scenario assumptions to determine if a more specific goal level could be proposed.

The first scenario (Reference Case) results in less than 9 percent replacement fuel. For purposes of this rulemaking, the Department believes it is conservative because it assumes relatively low oil prices and no additional replacement fuel resulting from Program Developments. Therefore the Department proposes to reject this scenario for further consideration because it reflects what the Department believes is an unlikely combination of events. The second scenario (High Price Case) results in about 18 percent replacement fuel. The Department believes this result, though still conservative because it too assumes no Program Development contributions, is more likely than the first scenario. Even if its higher oil prices do not materialize, it is likely that at least some Program Development will make up the difference.

The remaining other two scenarios (Reference Case with Program Developments and High Price Case with Program Developments), range in contribution from over 35 to about 47 percent. The Department believes the fourth scenario, High Price Case with Program Developments, may be overly optimistic because it assumes an unlikely combination of events (*i.e.*, high oil prices and that all programs will meet their expected goals). Therefore, the Department believes it cannot reasonably conclude, at the

present time, that the higher percentage level is "achievable" in 2030 within the current statutory requirements. In addition, there was a specific assumption for CTL (namely that all CTL fuels would be supplied to the transportation sector) which also cautions for discounting the results to more reasonably achievable levels.

The third scenario, which also incorporates the Program Developments but assumes Reference Case oil prices, would result in just over 35 percent replacement. Though more optimistic than the second scenario in terms of the Program Development contribution, it is less optimistic than fourth scenario in terms of oil prices.

The range in between the second and third scenarios is approximately 18 to 35 percent. Based on the discussion above, the Department believes at this time that this represents a reasonable range for the modified replacement fuel goal. The Department strongly believes that many of the programs will achieve their individual technical goals. Therefore the Department selected a proposed goal a few points above the mid-point of this range, 30 percent. The Department proposes to determine that a goal of 30 percent replacement fuel by 2030 is "achievable" within the meaning of EPCA 1992 section 504.

The Department believes this goal is "achievable" for the following reasons. First, the proposed goal incorporates a portfolio of different technologies. Some of these would be expected to ultimately provide greater contributions, while others might provide lesser contributions. On average, however, these variations would be expected to balance each other out, leaving a goal still in this range. Also, the Department is relying on the most recent fuel price projections from EIA, which it considers to be the most reliable long-range projections. However, it is possible that events that cannot be predicted may have short-term and long-term impacts that could increase fuel prices above the projections. This has been illustrated with recent increases in fuel prices due to natural disasters and other global events. Thus, it is entirely possible that contributions from some of the replacement fuels could turn out to be higher than have been included here, if petroleum prices end up significantly higher as currently being experienced.

Furthermore, much of the replacement fuel contribution is anticipated to come from fuels capable of being blended in with conventional petroleum fuels (*e.g.* biofuels) or which are fungible with conventional fuels (CTL, GTL). Thus, infrastructure obstacles to much of the projected

replacement are expected to be minimized. Finally, this analysis has primarily focused on domestic replacement fuels, thus excluding imports. The requirement in section 502(b)(2) was that at least half of the replacement needed to be by domestic motor fuels (42 U.S.C. 13252(b)(2)); however, the Department has shown scenarios where imports of replacement fuels would probably not be required in order to achieve the desired levels.

Electricity for plug-in hybrid-electric vehicles has not been included in the estimates, due to the early development stage of the technology, and the absence of credible estimates. Depending on the success of this technology, there could be significant additional contributions to reducing overall petroleum consumption through PHEV efficiency improvements, plus additional replacement of petroleum with electricity.

Therefore, the Department is proposing to extend the replacement fuel production goal of 30 percent of U.S. motor fuels to 2030. While this appears achievable for a number of reasons, including those above, there are several additional reasons why the Department believes this is the appropriate approach to take. First, when Congress passed EPAct 1992, it indicated that it believed the level of 30 percent replacement fuel was appropriate. Current discussions within Congress are also focusing toward this level using a similar time frame to the one proposed here. (See S. 2025, H.R. 4409, S. 2747, and others.) Second, this level of replacement fuel production and timeframe are both consistent with the goals of the President's Advanced Energy Initiative, announced in early 2006, which also incorporates a portfolio of technologies to address our Nation's transportation energy situation.

There are important reasons why a time frame extending out to 2030 is required to make major changes in motor fuel consumption patterns and thus production levels—the lead-time for investments to begin and bear fruit, and the retirement cycles for U.S. vehicles. Major investments of capital are required to alter the U.S. supply of transportation fuels. Because these investments are focused over the entire operating life of a production facility (often 30 years), potential investors need to have a high degree of certainty that their investment will pay off through confidence that the cost of competing fuels will be higher than the cost of fuels produced by the subject plant far into the future.

Once the capital is raised, the plant must be built and reach full operation,

which can also easily take five years or more, depending on the complexity and size of the production plant involved. When adding a substantial number of new plants (such as cellulosic ethanol and coal-to-liquid fuels) to meet the 30 percent replacement fuel goal, this phase of constructing multiple plants and bringing them up to full operating capacity could easily add five or even ten years to the date of seeing major impacts on motor fuel consumption. Thus, it can easily be 20 years from the date of initial investments until significant market penetrations are seen.

Many of the investments anticipated in 1992 have only recently begun. Recent high oil prices are beginning to spur more investment in alternative and replacement fuels, but not fast enough to allow the Department to set a 2010 replacement fuel production goal at levels any higher than the AEO 2006 (~3 percent).

Although the replacement fuel goal is production based, production is closely linked to consumption. On the vehicle side, a similar period of lead-time is typically required to make a significant impact on U.S. fuel consumption patterns. This is because it takes more than 25 years to turn over the U.S. fleet of in-use vehicles. According to the 25th Edition of the Transportation Energy Data Book (TEDB 25, U.S. DOE and Oak Ridge National Laboratory, ORNL-6974, 2006), after 30 years, approximately 93 percent of the 1990 model year vehicles are projected to be retired, and slightly less than 96 percent of the 1990 model year light trucks will have been scrapped. The median lifetime for 1990 cars is now 16.9 years, and 15.5 years for 1990 light trucks. While the truck numbers are relatively consistent (compared to 1970 and 1980 model years), the car numbers have increased substantially (from 11.5 years in 1970 and 12.5 years in 1980).

The effects of this can be seen by a U.S. vehicle population of 226 million in 2003, with annual new light-duty vehicle sales of approximately 16.5–17 million/year (or approximately equal to 7 percent of the size of the in-use fleet). Thus, any replacement fuel or higher efficiency technology which requires actual replacement of vehicles must be phased into the U.S. fleet of vehicles over a number of years to eventually account for a significant portion of in-use vehicles. (See TEDB, Tables 3.8, 3.9, 4.5, 4.6, and 8.1.) In summary, due to both lead-times for investments and the time required to turn over nearly all of the U.S. fleet of vehicles, a significant change in the utilization of U.S. motor fuel consumption patterns could easily take two decades.

The Department wishes to remind all interested parties that not all of the factors influencing the likelihood of achieving this goal are in the Department's control. Nor are they easy to predict more than 20 years into the future. The level of replacement fuel that actually materializes could be substantially lower or higher than 30 percent due to unforeseen and/or uncontrollable events, not the least of which could be oil prices substantially higher or lower than currently anticipated.

B. Relevance to the President's Advanced Energy Initiative

The President's initiative establishes a number of targets that are relevant to the replacement fuel goal proposed in this notice. In the area of biofuels, the initiative specifically calls for accelerating research for cellulosic ethanol so that it is practical and cost-effective by 2012. The ability to produce cellulosic ethanol at a price that is competitive with conventional fuels is a critical step in ensuring sufficient supplies of replacement fuels to offset future growth in transportation motor fuels use. The replacement fuel production goal of 30 percent in 2030 proposed in this notice assumes large quantities of cellulosic ethanol will be produced. The initiative also continues the Administration's hydrogen fuel initiative by funding research and development to make hydrogen a viable transportation fuel.

The initiative also seeks to offset the growth in transportation motor fuel demand through efforts to develop a variety of more fuel-efficient light-, medium-, and heavy-duty vehicles. The fuel efficiency effort includes work underway within DOE's FCVT Program through the FreedomCAR and Fuel Partnership and the 21st Century Truck Partnership. A central focus of these efforts is to accelerate the introduction of high efficiency technologies such as PHEVs and advanced battery-powered HEVs. Improvements made in these areas will not only help offset petroleum motor fuels in the short and mid-term, but will pave the way for fuel efficient fuel cell vehicles in the longer term. As highlighted elsewhere in this notice, fuel efficiency improvements indirectly contribute to the achievement of the replacement fuel goal contained in EPAct 1992 by increasing the percentage of petroleum replacement provided by a given amount of replacement fuel.

C. Future Analyses

The Department also intends to continue to review the replacement fuel production goal, as necessary, under the

Replacement Fuel Program established under section 502(a) of EPCA 1992. As such, should any future review indicate that the replacement fuel production goal, as modified, is not achievable, the Department will again institute a rulemaking process to modify the goal to ensure that it is consistent with the provisions of EPCA 1992.

VII. Opportunity for Public Comment

A. Participation in Rulemaking

Interested persons are invited to participate in this proceeding by submitting written data, views, or comments with respect to the subject set forth in this notice and the proposals made by DOE. All parties are encouraged to provide analysis, data or other supporting documentation to support their comments as appropriate. The Department encourages the maximum level of public participation possible in this proceeding. Individual consumers, representatives of consumer groups, manufacturers, associations, coalitions, States or other government entities, and others are encouraged to submit written comments on the proposal. DOE also encourages interested persons to participate in the public hearing announced at the beginning of this notice. Whenever applicable, full supporting rationale, data and detailed analyses should also be submitted.

B. Written Comment Procedures

Comments on this Notice may be submitted to the Department through electronic or hardcopy means. DOE would appreciate an electronic copy of the comments to the extent possible. Electronic copies should be e-mailed to regulatory_info@afdc.nrel.gov, or may be submitted through the Federal eRulemaking Portal at <http://www.regulations.gov>. DOE is currently using Microsoft Word. If written (hardcopy) comments are submitted, eight copies must be provided. The outside of the envelope, and the comments themselves, must be marked with the designation (Alternative Fuel Transportation Program: Replacement Fuel Goal, NOPR, RIN 1904-AB67) and must be received by the date specified at the beginning of this notice. In the event any person wishing to submit written comments cannot provide eight copies, alternative arrangements can be made in advance by calling Mr. Dana O'Hara at (202) 586-9171.

All comments received on or before the date specified at the beginning of this notice of proposed rulemaking and other relevant information will be considered by DOE before final action is

taken on the proposal. All comments submitted will be made available in the electronic docket set up for this rulemaking. This docket will be available on the worldwide Web at the following address: http://www.eere.energy.gov/vehiclesandfuels/epact/private_fleets.shtml. Pursuant to the provisions of 10 CFR 1004.1, anyone submitting information or data that he or she believes to be confidential and exempt by law from public disclosure should submit one complete copy of the document, as well as seven (7) copies, if possible, from which the information has been deleted. DOE will make a determination as to the confidentiality of the information and treat it accordingly.

C. Public Hearing Procedures

The time and place of the public hearing are set forth at the beginning of this notice. DOE invites any person who has an interest in this proceeding, or who is a representative of a group or class of persons that has an interest, to make a request for an opportunity to make an oral presentation at the hearing. Requests to speak should be sent to the address or phone number indicated in the **ADDRESSES** section of this notice and should be received by the time specified in the **DATES** section of this notice.

The person making the request should briefly describe his or her interest in the proceeding and, if appropriate, state why that person is a proper representative of the group or class of persons that has such an interest. The person also should provide a phone number where he or she may be reached during the day. Each person selected to speak at the public hearing will be notified as to the approximate time that he or she will be speaking. A person wishing to speak should bring ten copies of his or her statement to the hearing. In the event any person wishing to speak at the hearing cannot meet this requirement, alternative arrangements can be made in advance by calling Mr. Dana O'Hara, at (202) 586-9171.

DOE reserves the right to select persons to be heard at the hearing, to schedule their presentations, and to establish procedures governing the conduct of the hearing. The length of each presentation will be limited to ten minutes, or based on the number of persons requesting to speak.

A DOE official will be designated to preside at the hearing. The hearing will not be a judicial or an evidentiary-type hearing, but will be conducted in accordance with 5 U.S.C. 553 and section 501 of the Department of Energy

Organization Act. (42 U.S.C. 7191) At the conclusion of all initial oral statements, each person may, if time allows, be given the opportunity to make a rebuttal statement. The rebuttal statements will be given in the order in which the initial statements were made.

Any further procedural rules needed for the proper conduct of the hearing will be announced by the Presiding Officer at the hearing. If DOE must cancel the hearing, DOE will make every effort to publish an advance notice of such cancellation in the **Federal Register**. Notice of cancellation will also be given to all persons scheduled to speak at the hearing. The hearing may be canceled in the event no public testimony has been scheduled in advance.

VIII. Regulatory Review

A. Review Under Executive Order 12866

This proposed regulatory action has been determined to be a "significant regulatory action" under Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (October 4, 1993). Accordingly, this action was subject to review under the Executive Order by the Office of Information and Regulatory Affairs in the Office of Management and Budget.

B. Review Under Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980, 5 U.S.C. 601-612, requires preparation of a regulatory flexibility analysis for any rule that is likely to have a significant economic impact on a substantial number of small entities. Today's action merely proposes a modified replacement fuel goal, with no requirements imposed upon any parties. Therefore, this action would not result in compliance costs on small entities. Therefore, DOE certifies that today's proposed action will not have a significant economic impact on a substantial number of small entities, and accordingly, no initial regulatory flexibility analysis has been prepared.

C. Review Under the Paperwork Reduction Act

No new recordkeeping requirements, subject to the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.*, would be imposed by today's regulatory action.

D. Review Under the National Environmental Policy Act (NEPA)

10 CFR 1021.102(b) applies the requirements of the National Environmental Policy Act to "any DOE action affecting the quality of the environment of the United States, its territories or possessions." Today's

action, however, is solely the proposal of a modified replacement fuel goal, and not the imposition of any affirmative duty upon any party. Therefore, no impact on the quality of the environment flows from today's action, and thus the Department is not required to conduct an analysis under NEPA.

The Department did conduct an initial greenhouse gas analysis utilizing the VISION model, to determine the relative impact between the proposed goal scenario (AEO 2006 reference case plus program goals) and the baseline case (AEO 2006 reference case). This analysis can be found in section V.F. 2 above.

E. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, Civil Justice Reform, 61 FR 4729 (February 7, 1996), imposes on Executive agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; and (3) provide a clear legal standard for affected conduct rather than a general standard and promote simplification and burden reduction. With regard to the review required by sections 3(a) and 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. Executive Order 12988 does not apply to this rulemaking notice because DOE is merely proposing to modify the replacement fuel goal provided in section 502(b)(2) of EPCA 1992, and is not proposing any regulations that would impose any requirements on any parties.

F. Review Under Executive Order 13132

Executive Order 13132, Federalism, 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies

formulating and implementing policies or regulations that preempt State law or that have implications of Federalism. Agencies are required to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and carefully assess the necessity for such actions. DOE has examined today's proposed modification of the replacement fuel goal and has determined that it would not preempt State law and would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

G. Review of Impact on State Governments—Economic Impact on States

Section 1(b)(9) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (September 30, 1993), established the following principle for agencies to follow in rulemakings: "Wherever feasible, agencies shall seek views of appropriate State, local, and tribal officials before imposing regulatory requirements that might significantly or uniquely affect those governmental entities. Each agency shall assess the effects of Federal regulations on State, local, and tribal governments, including specifically the availability of resources to carry out those mandates, and seek to minimize those burdens that uniquely or significantly affect such governmental entities, consistent with achieving regulatory objectives. In addition, agencies shall seek to harmonize Federal regulatory actions with regulated State, local and tribal regulatory and other governmental functions."

Because DOE is merely proposing to modify the replacement fuel goal under section 502(b)(2) of EPCA 1992, no significant impacts upon State and local governments are anticipated. The position of State fleets currently covered under the existing EPCA 1992 fleet program is unchanged by this action.

H. Review of Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995, Public Law 104-4, requires each Federal agency to assess the effects of Federal regulatory actions on State, local and tribal governments and the private sector. The Act also requires a Federal agency to develop an effective process to permit timely input by elected officials on a proposed "significant intergovernmental mandate," and requires an agency plan

for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published in the **Federal Register** a statement of policy on its process for intergovernmental consultation under the Act (62 FR 12820). The notice of proposed rulemaking published today does not propose or contain any Federal mandate, so the requirements of the Unfunded Mandates Reform Act do not apply.

I. Review of Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999, Public Law 105-277, requires Federal agencies to issue a Family Policymaking Assessment for any proposed rule that may affect family well-being. Today's notice of proposed rulemaking would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

J. Review of Treasury and General Government Appropriations Act, 2001

The Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by the Office of Management and Budget (OMB). OMB's guidelines were published at 67 FR 8452 (February 22, 2002), and DOE's guidelines were published at 67 FR 62446 (October 7, 2002). DOE has reviewed today's notice under the OMB and DOE guidelines, and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13175

Under Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 65 FR 67249 (November 9, 2000), DOE is required to consult with Indian tribal officials in development of regulatory policies that have tribal implications. Today's notice would not have such implications. Accordingly, Executive Order 13175 does not apply to this notice.

L. Review Under Executive Order 13211

Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy, Supply,

Distribution, or Use, 66 FR 28355 (May 22, 2001) requires preparation and submission to OMB of a Statement of Energy Effects for significant regulatory actions under Executive Order 12866 that are likely to have a significant adverse effect on the supply, distribution, or use of energy. A mere modification to the replacement fuel goal under EPA Act 1992 section 502(b)(2) does not require fleets, suppliers of energy, or distributors of energy to do or to refrain from doing anything. Consequently, DOE has concluded there is no need for a Statement of Energy Effects.

IX. Approval by the Office of the Secretary

The issuance of the proposed rule for the replacement fuel goal modification has been approved by the Office of the Secretary.

Issued in Washington, DC, on September 6, 2006.

Alexander A. Karsner,

Assistant Secretary, Energy Efficiency and Renewable Energy.

List of Subjects in 10 CFR Part 490

Administrative practice and procedure, Energy conservation, Fuel economy, Gasoline, Motor vehicles, Natural gas, Penalties, Petroleum, Reporting and recordkeeping requirements.

For the reasons set forth in the preamble, the Department of Energy is proposing to amend Chapter II of title 10 of the Code of Federal Regulations as set forth below:

PART 490—ALTERNATIVE FUEL TRANSPORTATION PROGRAM

1. The authority citation for part 490 is revised to read as follows:

Authority: 42 U.S.C. 7191 *et seq.*; 42 U.S.C. 13201, 13211, 13220, 13251 *et seq.*

2. In § 490.1 of subpart A, paragraph (b) is revised to read as follows:

§ 490.1 Purpose and Scope.

* * * * *

(b) The provisions of this subpart cover:

(1) The definitions applicable throughout this part;

(2) Procedures to obtain an interpretive ruling and to petition for a generally applicable rule to amend this part; and

(3) The goal of the replacement fuel supply and demand program established under section 502(a) of the Act (42 U.S.C. 13252(a)).

3. Subpart A is amended by adding § 490.8 to read as follows:

§ 490.8 Replacement fuel production goal.

The goal of the replacement fuel supply and demand program established by section 502(b)(2) of the Act (42 U.S.C. 13252(b)(2)) and revised by DOE pursuant to section 504(b) of the Act (42 U.S.C. 13254(b)) is to achieve a production capacity of replacement fuels sufficient to replace, on an energy equivalent basis, at least 30 percent of motor fuel consumption in the United States by the year 2030.

[FR Doc. E6-15516 Filed 9-18-06; 8:45 am]

BILLING CODE 6450-01-P

COMMODITY FUTURES TRADING COMMISSION

17 CFR Part 1

RIN 3038-AC34

Financial Reporting Requirements for Introducing Brokers

AGENCY: Commodity Futures Trading Commission.

ACTION: Proposed rules.

SUMMARY: The Commodity Futures Trading Commission ("Commission" or "CFTC") is proposing to amend Commission regulations to require introducing brokers ("IBs") submitting CFTC financial Forms 1-FR-IB that are certified by independent public accountants to file such financial reports electronically with the National Futures Association ("NFA"). The proposed amendments also would require that certified Financial and Operational Combined Uniform Single Reports ("FOCUS" Reports), submitted by IBs registered with the Securities and Exchange Commission ("SEC") as securities brokers or dealers ("B/Ds") in lieu of Form 1-FR-IB, be filed either electronically or in paper form in accordance with the rules of the NFA. The CFTC also is proposing to amend Commission regulations to require that with respect to any such electronic filing, a paper copy including the original signed certification be maintained by the IB in its records for a period of five years in accordance with Commission Regulation 1.31.

DATES: Comments must be received on or before October 19, 2006.

ADDRESSES: You may submit comments, identified by 3038-AC34, by any of the following methods:

• *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.

• *E-mail:* secretary@cftc.gov. Include "Proposed Amendments to Rules 1.10

and 1.31" in the subject line of the message.

• *Fax:* (202) 418-5521.

• *Mail:* Send to Eileen Donovan, Acting Secretary of the Commission, Commodity Futures Trading Commission, 1155 21st Street, NW., Washington, DC 20581.

• *Courier:* Same as Mail above.

All comments received will be posted without change to <http://www.cftc.gov>, including any personal information provided.

FOR FURTHER INFORMATION CONTACT:

Thomas J. Smith, Deputy Director and Chief Accountant, at (202) 418-5430 or Jennifer C.P. Bauer, Special Counsel, at (202) 418-5472, Division of Clearing and Intermediary Oversight, Commodity Futures Trading Commission, Three Lafayette Centre, 1155 21st Street, NW., Washington, DC 20581. Electronic mail: (tsmith@cftc.gov) or (jbauer@cftc.gov).

SUPPLEMENTARY INFORMATION:

I. Background

Section 4f(b) of the Commodity Exchange Act ("Act") authorizes the Commission to adopt regulations imposing minimum financial requirements on IBs.¹ Commission Regulation 1.10(a)(2)(ii)(A)² requires each person filing an application for registration as an IB to file a financial Form 1-FR-IB³ certified by an independent public accountant concurrently with the application. IBs that also are registered with the SEC as a B/D may file a FOCUS Report in lieu of a Form 1-FR-IB. The application for registration, and the certified Form 1-FR-IB or FOCUS Report, must be filed with the National Futures Association ("NFA") in paper form.⁴

Regulation 1.10(b)(2)(ii)(A) requires each registered IB to annually file a certified Form 1-FR-IB as of the close of the IB's fiscal year with NFA. IBs that are registered with the SEC as B/Ds may file an annual FOCUS Report with NFA in lieu of the Form 1-FR-IB. Regulation 1.10(b)(2)(iii) requires that certified Forms 1-FR-IB, or FOCUS Reports, must be filed in paper form with NFA and may not be filed electronically. Regulation 1.10(d)(4) requires that

¹ 7 U.S.C. 6f(b).

² The regulations of the Commission cited in this release may be found at 17 CFR Ch. I (2006).

³ The Form 1-FR-IB is a financial report that includes a statement of financial condition, a statement of income or loss, a statement of minimum net capital, and appropriate footnote disclosures.

⁴ NFA is a registered futures association under Section 17 of the Commodity Exchange Act, 7 U.S.C. 21, and has been delegated responsibility for processing the Commission's registration function. NFA also is a self-regulatory organization, as defined in Regulation 1.3(ee).