Preliminary Assessment of Fleets Covered by the Energy Policy Act

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ABSTRACT

To facilitate the goal of decreasing oil imports by 10 percent by the year 2000 and 30 percent by 2010, two sections of the Energy Policy Act encourage and mandate alternative fuel vehicles in the acquisition of fleet vehicles. The first step in estimating the contribution of these mandates toward meeting the aforementioned goal entails identifying affected fleets. This paper presents a preliminary assessment of potential vehicle fleet coverage. Only a limited number of companies in the methanol, ethanol, and hydrogen industries are likely to qualify for this mandate. Whereas, many of the oil producers, petroleum refiners, and electricity companies are likely to be regulated.

INTRODUCTION

In 1992, the Energy Policy Act (EPACT) was enacted to provide a comprehensive national energy policy. One of its goals is to gradually increase U.S. energy security in ways that are both cost-effective and environmentally prudent. Consistent with this goal, one of EPACT's objectives is to decrease the nation's dependence on foreign oil. To meet this objective, Section 502 of the EPACT requires the Secretary of Energy to establish a program to determine the feasibility of achieving a goal of reducing petroleum motor fuel consumption by 10 percent by the year 2000 and 30 percent by 2010.

Many strategies can be used to accomplish this goal. However, the largest reduction in foreign oil dependence is expected to be achieved by reducing the 23,210 petajoules in annual petroleum use (equivalent, on a gross Btu basis, to approximately 10.4 million barrels of crude oil per day) consumed by almost 200 million cars and trucks, through the use of alternative fuels. Two of the factors that limit the replacement of gasoline today are: access to alternative fuel refueling stations and the availability of motor vehicles that operate on alternative fuels.

In the hope of encouraging the development of a nationwide alternative fuel refueling infrastructure and the expanded use of alternative fueled vehicles, the Alternative Fuel Provider Vehicle Acquisition Mandate was established under Section 501 of EPACT. The reason for targeting alternative fuel providers as the first market segment required to use large quantities of alternative fuels and alternative fuel vehicles is because alternative fuel providers are, in theory, most likely to benefit from the success of alternative fuels in the marketplace. By being the "test-bed," alternative fuel providers can demonstrate the commercial feasibility of alternative fuels and alternative fuel vehicles, thereby enhancing public acceptance of these fuels and vehicles.

The Alternative Fuel Provider Vehicle Acquisition Mandate (EPACT Section 501) requires that an increasing percentage of the new light-duty vehicles (LDVs) acquired by a "covered person" be alternative fueled vehicles (AFVs). Except for electric motor vehicles, the schedule of this mandate is as follows:
- 30 percent for model year 1996,
- 50 percent for model year 1997,
- 70 percent for model year 1998, and
- 90 percent for model year 1999 and thereafter.

For covered persons whose principal business is to generate, transmit, import, or sell electricity (at wholesale or retail), this vehicle acquisition mandate does not apply until after December of 1997, if they intend to comply with the mandate using electric vehicles.

To better understand the potential impact of this legislation, the Office of Alternative Fuels asked that Oak Ridge and Argonne National Laboratories to investigate the likely "coverage" of vehicle fleets and provide preliminary estimates of the size and composition of vehicle fleets likely to be regulated under EPACT Section 501. Due to the limited information available to date, this paper focuses on the likely coverage of different alternative fuel industries under Section 501.

QUALIFYING CRITERIA UNDER EPACT SECTION 501

For purposes of EPACT Section 501, alternative fuels include methanol, ethanol, natural gas, liquefied petroleum gas, electricity, and hydrogen. Excluded from this list are mixtures with less than 70 percent of methanol or ethanol, MTBE (methyl tertiary butyl ether) and ETBE (ethyl tertiary butyl ether.) Further, alternative fueled vehicles acquired pursuant to this Mandate must be operated solely on alternative fuels, except when operating in areas where these fuels are not available.

To qualify as a "covered person" subject to this Mandate, an organization must meet ALL of the following four criteria:
1. Owns, operates, leases, or otherwise controls a fleet that contains at least 20 light-duty motor vehicles that are used primarily within at least one single metropolitan statistical area (MSA) or a consolidated metropolitan area.
that larger companies are more likely to have large fleets than smaller companies. Therefore, if most of the larger companies contacted are disqualified from Section 501 because of not being able to meet the "fleet size" criterion, then smaller companies should also be disqualified from the mandate. This assumption is likely to be subject to criticism. However, in the absence of information relating company size to fleet size, it cannot be validated at this time. Thus, results reported here are indicative of general patterns, not precise estimates of the covered population of companies or light duty vehicles, and should be interpreted with caution.

A "pathway" analysis was conducted for each of the six alternative fuels and petroleum to ensure that every industry function that is likely to be regulated under the Alternative Fuel Provider Vehicle Acquisition Mandate is included -- from producers downstream to retailers. These pathways serve as the basis for determining whether a business unit qualifies as a "covered person."

ASSESSMENT OF FLEET VEHICLE COVERAGE BY FUEL TYPE

Instead of repetitively describing the steps used to assess fleet vehicle coverage for each of the six alternative fuel industries, the essence of the assessment approach is illustrated by using the methanol industry as an example. Since the qualifying criteria for assessing the petroleum industry are different from the six alternative fuel industries, a separate discussion is presented on the petroleum industry.

METHANOL INDUSTRY - Methanol is produced primarily from natural gas feedstocks (75%). Coal, residual oil, and biomass can also be used as a methanol feedstock. Since U.S. natural gas is produced mostly in Louisiana and Texas, most methanol plants are located there as well (accounting for about 88% of all U.S. methanol production). The U.S. currently imports about 20% of its methanol. The primary use of methanol is as a feedstock for other products, such as chemicals, extractants, solvents, MTBE and TAME (tertiary amyl methyl ether). To a lesser extent, methanol is used as an alternative fuel, in the form of M85 (85% methanol and 15% gasoline by volume) or M100.

Methanol is shipped from producer to storage terminals, where it is picked up by wholesalers, retailers, or even end users, through the use of tank truck haulers. Methanol marketers and retailers include the larger integrated oil companies such as Chevron, Arco, Shell, etc., and independent marketers, such as Olympian Oil Co. End users include state groups, municipalities, and the private sector. Figure 1 illustrates a generic methanol pathway.

Manufacturing Function - Three methanol producers were selected from a list of methanol producers compiled by the Energy Information Administration. The combined methanol production of these three producers amounts to 42% of the total methanol production in the U.S. These companies are involved in all stages of the pathway -- from producing, all the way downstream to selling methanol. However, most of them do not generate their greatest share of revenue from methanol.

None of these companies own, operate, lease or otherwise control 20 LDVs in an MSA (or a CMSA), or 50 LDVs nationwide. This qualifying criterion disqualifies all three methanol producers from being "covered persons." None of these companies presently operate alternative fueled vehicles.

Retailers. Terminals, and distribute fuel to their own retail outlets. On the
marketers and jobbers. Refiner marketers are often representatives
for the best prices at terminals, and sell fuel to the independent

This is the pathway of industry functions in the methanol

Refining Function - The component of "refining" in the
methanol pathway is bypassed in this analysis because the
"refining" step produces MTBE which is in turn blended with
gasoline to make oxygenated gasoline. Neither MTBE nor
oxygenated gasoline are alternative fuels in EPACT.

Storage/Blending Function - Blending of M85 is typically
done by splash blending -- the tank hauler will fill 85% of the tank
with methanol and top off the load with conventional gasoline.
However, due to the limited demand for M85, the principal
business of the tank truck carriers is essentially gasoline, not
methanol.

Transport Function - Two companies which transport
methanol were contacted. For one, the principal business is
transporting gasoline; for the other, diesel fuel. Neither of them
owns 20 LDVs in the MSAs within which they operate, nor 50
LDVs nationwide. These companies typically own and operate
fleets of large trucks (tractor trailers and tank trucks.)

Wholesale Function - This component includes refiner
marketers and jobbers. Refiner marketers are often representatives
of the integrated oil companies who own their own tanks at the
terminals, and distribute fuel to their own retail outlets. On the
other hand, jobbers are independent marketers who "shop around"
for the best prices at terminals, and sell fuel to the independent

Retail: Generally sold at larger, multi-service, conventional gasoline filling stations.

Assessment Results - Based on information provided by the
Renewable Fuel Association, and on data collected from a limited
number of companies with part of their activities associated with
methanol, we conclude that none of the companies in the methanol
pathway are likely to qualify under Section 501.

ETHANOL INDUSTRY - More than 95% of ethanol is
produced using corn as the basic feedstock. The remaining 5% is
made from biomass feedstocks. Some companies, such as A.E.
Staley, whose primary product is corn syrup, make ethanol as a
secondary product. Their ethanol customers include those in the
perfume, liquor (overseas), and assorted industrial businesses.
Those who are in the business solely for the purpose of producing
ethanol are selling it mostly to the petroleum industry to make
gasoline blends, such as gasohol (90% gasoline and 10% ethanol
by volume), or oxygenated gasoline.

Consumption of ethanol for these purposes was stimulated by the
Clean Air Act Amendments of 1991. The Reformulated
Gasoline standards for ozone non-attainment areas and the
Oxygenated Fuel programs in carbon monoxide non-attainment
areas have increased demand for ethanol, which is a substitute for
MTBE as a gasoline oxygenate. More importantly, the recently
adopted (but court challenged) rule by Environmental Protection
Agency which requires at least 30% of oxygenates in reformulated
gasoline must come from renewable sources could increase the use
of ethanol in reformulated gasoline. With this increased demand
for oxygenates may come the need to produce more ethyl tertiary
butyl ether (ETBE) and TAME (tertiary amyl ethyl ether). Like
MTBE, ETBE and TAME are octane enhancing gasoline additives,
but are not yet traded on the open market.

Currently, the use of ethanol as an alternative vehicular fuel is
not nearly as widespread as methanol, propane, or natural gas. For
example, in 1992 the federal government operated approximately
2,565 methanol fueled vehicles, 677 CNG vehicles, with only 25
electric fueled vehicles. Blends such as E85 (85% ethanol and
15% gasoline by volume), E90, E93, and E100 have been used to
some extent in alternative fueled vehicles. Figure 2 illustrates the
pathway encompassing all ethanol industry functions.

Assessment Results - Based on information provided by the
Renewable Fuel Association, and on data collected from a limited
number of companies with part of their activities associated with
ethanol, we conclude that none of the companies in the ethanol
pathway are likely to be required to comply with the vehicle
acquisition mandate.
Like methanol, the only ethanol market segment that is likely to be covered under EPACT 501 are the ethanol producers, since they are most likely to produce, transport, or distribute a large enough quantity of ethanol to be characterized as having their "principal business" in ethanol. However, even with these producers producing enough ethanol at the present time to meet the "principal business" qualifying criterion, the "fleet size" requirements exempt them from Section 501. The refining component in the ethanol industry is bypassed because neither ETBE nor oxygenated gasoline are EPACT alternative fuels. None of the companies involved in downstream segments from storing ethanol are likely to be covered because none of them generate the largest share of their revenue from activities associated with ethanol.

Manufacturing:
Predominantly in the midwest, close to corn farmers. More than 95% of ethanol is made from corn; 6% of U.S. corn is used to make ethanol.

Refining:
Produce ETBE, which in turn is used to make oxygenated gasoline. However, these refineries are exempt from Section 501 of EPACT because they use alternative fuel to make a product that is not an alternative fuel.

Storage/Blending:
Located mostly in MSAs across the U.S. Various fuels are typically stored here. Ethanol mixed with gasoline forms different blends, such as E65 (65% ethanol and 15% conventional gasoline).

Transportation:
Shipped to all corners of the U.S., by rail (50%) and barge (40%) from mfr. to terminals, and by tank truck from terminals to retail outlets.

Wholesale:
Refiner marketers are often representatives of the big oil companies, such as Exxon, Shell, etc. who own their own tanks at the terminals, and distribute to retail outlets. Jobbers shop around for the best prices at terminals, then sell to the independent retailers.

Retail:
Generally sold at larger, multi-service, conventional gasoline filling stations.

Natural Gas Production:
Extracted from underground reservoirs, then cleaned, purified, and odorized.

Transportation:
Almost exclusively by pipeline.

Storage/Marketing:
Local natural gas marketers store and distribute for local retail needs.

Local Distribution Companies:
About 3% of domestic natural gas is consumed by the transportation industry. Most of this is used to fuel the NG pipeline power compressors, but some goes to local gas distribution companies, for use by AFVs.

Figure 3. Natural Gas Industry Pathway

Assessment Results - Of the eight companies for which information was obtained, only two are likely to be covered under Section 501. Both companies produce natural gas and generate 100% of their revenue from functions associated with natural gas. Although our survey suggests that most utility companies are likely to generate enough revenue from selling natural gas as home heating fuel, the factors that most likely will determine the extent of Section 501 coverage of their fleet are geographic location and central fueling capabilities. The survey results indicate that a clear definition of the intent of Section 501 EPACT is necessary to ascertain its applicability to companies dealing with natural gas as a commodity.

In the survey conducted by the Natural Gas Fuels magazine, all of the 107 utilities that serve EPACT MSAs own more than 20 LDVs. A total of 108,654 vehicles (including heavy-duty) were owned by these utilities with a majority (64,198) owned by the 38 dual (gas and electric) utilities. Based on information published in
the Automotive Fleet Fact Book and on results of the 1987 Truck Inventory and Use Survey, 12% of these vehicles are assumed to be heavy-duty. The survey also reported that 14,250 vehicles were converted to compressed natural gas by utilities that serve the EPACT MSAs. The conversion rate is 14.9% assuming that all converted vehicles are light-duty. The 38 dual utilities have fewer vehicles converted to CNG, 4,661 at a 8.3% rate. The conversion rate for natural gas only utilities is 26.3%

Roughly 100,000 LDVs are owned or leased by natural gas utilities. Our preliminary estimate is that less than 50% of these vehicles will qualify. Natural gas utilities are most likely to have their light-duty vehicle fleets already converted to compressed natural gas as is evident from the response by the West Tennessee Public Utility located in Huntington, Tennessee (pop. 4,000). This utility already has 16 LDVs converted to compressed natural gas. Thus, the Act may have little effect on such companies.

PROPAINE INDUSTRY - Propane is produced as a by-product of natural gas processing, and of crude oil refining. Approximately 88% of U.S. consumed propane is produced in the U.S., and the rest imported. Of the propane produced domestically, about 70% comes from natural gas processing, with the rest coming from the crude oil refining process as by-product.

Transport of propane to regional bulk storage facilities is about 90% by pipeline, with other methods including tank truck, tank car, and barge (Figure 4). Pipelines distribute propane to regional terminals, from which tank trucks (such as the small "bobtail" units) distribute it to local, lower volume users. Often the bulk storage terminals will deal with fuel oil as well as propane.

Some propane is shipped from natural gas plants to fractionators which may be operated by gas producers, oil companies, transporters or wholesalers. However, most propane is shipped to wholesalers with little or no additional processing. Wholesalers may supply propane to "sister" companies within a single corporate structure, or to independent retailers. Propane is stored in salt domes near production facilities, and in tanks at each production stage.

Currently, there are approximately 350,000 propane-powered vehicles in the U.S., being served by 10,000 public propane refueling stations, as well as fuel storage and refueling capability for private fleets on site. A large percentage of these vehicles are probably off-road vehicles, such as fork lifts, tractor units, etc. and "bobtails" which are used to deliver propane.

Assessment Results - Fifteen propane gas companies were selected from the National Propane Gas Association (NPGA) membership directory and a separate listing of propane retailers having the highest sales volumes. All but four of these companies that have all or part of their activities associated with propane gas are likely to be exempt from Section 501. The factor that most frequently disqualifies propane companies from coverage is the "fleet size" qualifying criterion (owning and operating 50 or more LDVs nationwide).

Manufacturing: Produced either by means of fractionation and refrigeration, in a natural gas plant, or by crude oil to propane in a petroleum refinery.

Transportation: 60% by pipeline. At pipeline terminals, tank trucks gather to transport propane to regional bulk storage facilities. Other methods include tank trucks, tank cars, and barges.

Storage/Marketing: Regionally located bulk storage facilities, which deal exclusively with propane, or with both fuel oil and propane.

Transportation: Distribution to retail outlets is handled exclusively by tank truck.

Retail: About 3% of domestic propane is consumed in the transportation industry. End users include industrial businesses who use locally fueled vehicles such as forklifts, as well as highway vehicles.

Figure 4. Propane Industry Pathway

Unlike other alternative-fuel industries, virtually every company contacted had already converted far more than the EPACT-mandated share of its light-duty fleet to propane fuel. Moreover, since virtually all bobtails run on propane, a significant share of heavy-duty vehicles operated by the industry is powered by propane. In all, of the propane companies that were contacted, 10 (67%) have already converted some LDVs and an equal number have converted heavy-duty vehicles to LPG vehicles.

In many cases, respondents' estimates of their company's propane sales as a transportation fuel included substantial amounts for forklift trucks and other off-road vehicles. It is unclear whether this is consistent with EPACT definitions. Also, because of the large number of propane-fueled heavy-duty vehicles (bobtails), it was not possible to estimate the share of total vehicles (light duty or otherwise) that have been converted to alternative fuels. (i.e., the denominator was often total vehicles while the numerator was LDVs). Note, however, that none of these issues is likely to change our conclusion that propane companies already have converted substantial portions of their fleets to alternative fuels. It should also be noted that information collected from a selected number of propane companies confirms the insights and general information obtained at the outset of our work from the NPGA representative.

HYDROGEN INDUSTRY - There are a number of possible methods for producing hydrogen, but approximately 80% of U.S. produced hydrogen comes either as a by-product in the chlor-alkali industry (for producing chlorine and sodium), or from steam.
reforming of natural gas. The raw hydrogen captured from these processes is then purchased by another company such as Airco or Air Products and Chemicals, to clean the hydrogen into a saleable form. Usually, companies that clean the hydrogen for resale will sell it directly to end users, but they may also sell to companies who specialize in the marketing of industrial gases.

Transport of hydrogen is by tank truck, but it is claimed that pipelines such as those used for natural gas would also work for hydrogen. Figure 5 illustrates the hydrogen pathway, from production to retailing.

Manufacturing:
Produce hydrogen using petroleum fractions, natural gas, or coal. These companies also generally store, refine, transport, and distribute hydrogen to retailers.

Transportation:
Tank trucks are utilized for shipment of hydrogen to retail outlets, or to end-users. Also used are barges and pipelines.

End-Use
Distribution:
These outlets are often an outlet of the same company that produced the hydrogen.

Figure 5. Hydrogen Industry Pathway

Hydrogen is used extensively in the chemical and petrochemical industries, primarily for producing ammonia (used in turn for the production of fertilizers and plastics). Hydrogen fueled vehicles are not yet commercially available, but national laboratories and college engineering departments are working on applications of hydrogen in the motor vehicle industry.

The Chemical Economic Handbook provides a list of U.S. producers of merchant gaseous hydrogen, a list of U.S. producers of by-product hydrogen, and a list of U.S. producers of captive hydrogen. Many of the by-product and captive hydrogen producers are oil and chemical companies.*

Assessment Results - Based on information provided by the National Hydrogen Association and on data collected from a limited number of companies associated with hydrogen, we conclude that none of the companies in the hydrogen pathway are likely to be covered under Section 501 because none of these companies characterize hydrogen as their principal business.

Although no by-product hydrogen producers (such as oil refineries) or captive hydrogen producers (such as ammonia producers) were contacted, there is little likelihood that either would be covered under Section 501.

ELECTRICITY INDUSTRY - In the U.S., most electricity is generated by fossil fuel plants (mostly from the burning of coal, but also natural gas and oil). Fossil fuel steam plants account for about 69% of the total, followed by nuclear plants (20%), and renewables (11%). There are three general stages which are involved in the electricity supply pathway. These stages are electricity generation, electricity transmission, and electricity end-use distribution (Figure 6). In the generation stage, utility companies (both investor-owned and municipal utilities) and independent power producers generate electric power. Independent power producers usually sell electricity to utility companies at power plant gates. In the electricity transmission and distribution stage, utility companies transmit and distribute electricity to end users.

Figure 6. Electricity Industry Pathway

From a list of the Electric Transportation Coalition (ETC) membership, 22 individual utilities across the nation were selected for phone contacts. Most of the 22 selected companies are investor-owned companies. Thirteen companies responded to the inquiry. Among the 13 companies that responded, eleven are investor-owned or privately-owned. Four utility companies sell both electricity and natural gas. All 13 companies are involved in electricity generation, transmission, and distribution; each stated that their principal business is to sell electricity, except one utility company which sells more natural gas than electricity.

Assessment Results - Results from our inquiry confirm the ETC's position that much of its utility membership will be covered under Section 501. We estimate about 400,000 LDVs owned or operated by electric utility companies will be subject to Section 501 requirements. This investigation focused primarily on

investor-owned utility companies, and to a lesser extent on municipal utilities; no independent power producer were contacted. However, because of the small-scale operation of most independent power producers, as a group, we believe they may be exempt from Section 501 requirements.

PETROLEUM INDUSTRY - In the petroleum industry, the large integrated oil companies participate in all areas of the production pathway, from exploration all the way to retailing. But there are also independent oil companies who are involved with any one or two of the nine basic functions in the industry (Figure 7).

The petroleum pathway begins with exploration, which involves seeking out underground oil reserves. Production basically involves the drilling and capturing of the crude oil. The crude oil is then transported in bulk to refineries by tanker or pipeline. The U.S. also imports a large percentage of its crude oil; approximately 45% of our crude oil consumption for the past few years has been imported.

Refined petroleum products such as gasoline and diesel fuel are mostly transported in bulk from the refinery by pipeline, tank truck or tank car. The products are shipped to storage terminals located around the country, usually in larger metropolitan areas, which act as hubs in the overall supply and distribution process. The filling stations are either owned by the wholesaler, leased by the wholesaler, or owned by an open dealer (private ownership).

Assessment Results - One of the qualifying criteria for the petroleum industry is that a business entity must "produce, import or produce and import in combination, an average of 50,000 barrels per day or more of petroleum; and a substantial portion of its business be producing alternative fuels." This criterion exempts any business unit that is involved in storing, transporting, and/or selling petroleum products from EPACT Section 501. As a result, only entities that are associated with the "Exploration and Production" and the "Refining" components, and any activities between these two components, are included in this assessment. That is, only companies that explore for, and produce and import crude oil; and those that produce and import refined petroleum products are evaluated here.

The nature of crude oil exploration and petroleum refining complicates the assessment of the petroleum companies. When crude oil explorers and producers extract crude oil from underground reservoirs, raw natural gas can be extracted as a by-product. Since natural gas is an EPACT alternative fuel, a substantial portion of oil explorers' and producers' business might be producing alternative fuel. Under this premise, crude oil explorers and producers are evaluated to determine whether they meet the remaining three qualifying criteria -- (1) located in an EPACT MSA, (2) own and operate 20 LDVs in that MSA, and (3) own and operate 50 or more LDVs nationwide. This premise will be validated in a final assessment.

Figure 7. Petroleum Industry Pathway

Similarly, since propane is a "by-product" of the petroleum refining process, all of the large petroleum refiners are evaluated for their coverage under the Alternative Fuel Provider Vehicle Acquisition Mandate (EPACT Section 501). "Large" is defined in the sense of meeting the "petroleum production" criterion of 50,000 barrels per day.

Separate listings of crude oil explorers and producers, and petroleum refiners are the bases for this coverage evaluation. About 70% of refiners that have production capability of 50,000 barrels per day are located within MSAs; and more than 80% of them are estimated to own and operate 20 or more light duty vehicles within the MSA. Almost all of the crude oil explorers and producers that meet the "50,000 barrels per day" criterion are estimated to own and operate 20 or more light duty vehicles. In


this preliminary effort, we assume that these companies own and operate more than 50 LDVs nationwide."

CONCLUDING REMARKS

Alternative fuel providers must meet a number of criteria in order to qualify as "covered" persons under EPACT Section 501. The qualifying criteria include consideration of: fleet size, geographic location, central-fueling capability, and the level of involvement in alternative fuels activities. EPACT defines alternative fuels as: methanol, ethanol, liquefied petroleum gas (LPG), natural gas, hydrogen and electricity. Also included in Section 501 are petroleum companies that produce a substantial amount of alternative fuels. For the petroleum industry, the qualifying criteria differ somewhat. A pathway analysis was conducted for each EPACT alternative fuel to ensure that every component in the pathway is assessed, from producers to downstream retailers.

The discussion is generally based on information provided by trade associations and on data collected from a limited number of companies whose activities are associated with alternative fuels. No attempt was made to select a statistically representative sample. In fact, we deliberately sought contacts with companies which, in our opinion, are most likely to be covered. Thus, results in this report are indicative of general patterns, not precise estimates of the covered population, and should be used cautiously. Table 1 presents the percentages of alternative fuel industries that are likely to be covered under Section 501.

Moreover, the determination of a company's "coverage" is based exclusively on our interpretation of Section 501. For example, the "principal business" of a "covered person" is interpreted as the activity from which the largest share of one's revenue is generated or to which the major share of one's investment is directed. Whether this share is greater than 50% is irrelevant. Also, the "fleet size" requirement of 20 LDVs is interpreted in such a way that as long as there are 20 or more LDVs operated in an EPACT MSA by one of the company's offices, this company meets the "fleet size of 20" requirement. That is, under the circumstance where a company operates many satellite offices around the country, as long as one of the offices located within an EPACT MSA owns and operates 20 or more LDVs within that MSA, this company qualifies for Section 501 (given that all other qualifying criteria are met.)

Guided by the interpretation of Section 501, we conclude that very few companies in the methanol, ethanol, and hydrogen industries are likely to be covered under this mandate. On the other hand, many of the petroleum and electricity companies are likely to be regulated by this mandate. In the case of methanol, the overwhelming factor that exempts companies from Section 501 is the qualification of having one's principal business be methanol. Most of the methanol producers are unlikely to produce methanol as their principal product. None of the methanol producers contacted own or operate 20 LDVs in an MSA. Companies downstream from the manufacturing of methanol typically engage primarily in transporting, marketing and/or selling gasoline, diesel or other refined petroleum products. Almost no company characterizes its principal business as methanol. The only potential coverage would be the methanol producers, since they are the only ones likely to produce, sell, or transport enough methanol as their principal business. However, the nation's largest methanol producer is exempt from this mandate because it does not own 20 LDVs.

In the ethanol industry, the only companies that meet the "principal business" criterion are the ethanol producers. However, they are presently not covered for failing the "fleet size" criterion. Companies downstream from the manufacturing of ethanol generally do not characterize their principal business as ethanol. Like the methanol industry, the only potential coverage would be the ethanol producers.

The production of natural gas and propane can coincide with crude oil production and refining. Eight natural gas companies/utilities were contacted. They participate in all or part of the industry functions (i.e., producing, transporting, storing, distributing, selling.) All but two are likely to be exempt from Section 501 requirements. The two companies (none of which is a utility company) that are likely to be covered under Section 501 produce natural gas and generate 100% of their revenue from functions associated with natural gas.

Although our preliminary investigation suggests that only 25% of the natural gas utilities are likely to be covered under Section 501, the survey by Natural Gas Fuels magazine shows that nearly all of the natural gas utilities serving the EPACT MSAs are likely to be covered. Most utilities will probably generate enough revenue from distributing and selling natural gas as home heating fuel, the factors that most likely will determine the extent of Section 501 coverage of their fleet are geographic location and central-fueling capabilities. Unfortunately, neither of the two surveys, our and Natural Gas Fuels magazine's, provided data on geographic location and central-fueling capabilities. Probably not as active in converting their vehicles to use alternative fuels as the propane industry, the natural gas industry has already converted a noticeable share of their light-duty fleets to use compressed natural gas.

Fifteen propane companies were contacted, of which four are likely to be regulated under the vehicle acquisition mandate. Eight of the fifteen companies characterize their principal business as propane. However, by not owning and/or operating 50 or more LDVs nationwide, four of the eight were disqualified from compliance. The remaining four consist of one propane producer, and three marketers/distributors. With almost three-quarters of the propane companies contacted having already converted their light-duty fleet to use propane in percentages greater than the EPACT-mandated share, the industry as a whole is probably more than halfway there in meeting the vehicle acquisition mandate for model year 1996.

None of the hydrogen companies contacted characterize their principal business as hydrogen, even for the nation's two largest hydrogen producers. For these two hydrogen producers, the revenue shares generated from producing, transporting, distributing, and selling hydrogen range from 3% to 5%. No contacts were made to by-product hydrogen producers nor captive hydrogen producers. It is our opinion at this time that none of those companies will be covered due to their low level of activity in producing hydrogen. We conclude that no companies involved in the hydrogen industry are likely to be regulated by Section 501.

All but one of the thirteen electric power companies that responded to our inquiry characterize their principal business as electric power. Furthermore, all of the twelve companies with their
principal business in electric power own and operate at least 20 LDVs in an MSA, and 50 LDVs nationwide. This leads us to conclude that most of the (investor-owned) electric power utilities would probably be required to comply with Section 501. This conclusion confirms the ETC’s belief that much of its utility membership will be covered under Section 501. This investigation covered primarily investor-owned utility companies, with little or no coverage of municipal utilities and independent power producers. Because of the small-scale operations of independent power producers, they may be, in our opinion, exempt from Section 501 requirements. In a future effort, more information on municipal utilities and independent power producers will be obtained.

Determining the coverage of petroleum companies is complicated by the fact that petroleum companies are also involved in producing, distributing and selling natural gas and LPG. As discussed in the petroleum section, only companies that are associated with "Exploration and Production" and "Refining" activities (and any activities between these components) are assessed for their coverage using the appropriate criteria (i.e., producing 50,000 or more barrels of petroleum per day and substantially involved in producing alternative fuels). Companies downstream from the "Refining" component are discussed in the appropriate section (i.e., M85 in the methanol section, E85 in the ethanol section, and LPG in the propane section). Almost all oil producers and petroleum refiners, as long as they meet the "production" criterion, are likely to be regulated by the vehicle acquisition mandate.

Largely based on information provided by trade associations, on data collected from a limited number of companies, and by our interpretation of Section 501, this preliminary assessment concludes that only a limited number of companies in the methanol, ethanol, and hydrogen industries are likely to qualify for this mandate. The legislation is likely to have little or no impact on the propane industry because a substantial portion of the industry’s fleet has already converted to alternative fuels. On the other hand, many of the crude oil producing companies, petroleum refiners, and electricity companies are likely to be regulated by this mandate.

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<td>Ethanol</td>
<td>11</td>
<td>2*</td>
<td>0**</td>
<td>2</td>
<td>✔</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>✔</td>
<td>2 (25%)</td>
</tr>
<tr>
<td>Propane</td>
<td>15</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>✔</td>
<td>4 (27%)</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>✔</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Electricity</td>
<td>13</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>✔</td>
<td>12 (92%)</td>
</tr>
</tbody>
</table>

* One company did not report its principal business.

** Two companies did not report their fleet sizes.

✔ All fleets are assumed to be centrally fueled or capable of being centrally fueled.

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