Heavy Vehicle Technology Quality Metrics and GPRA Benefits Analysis Methodology Final Report (Revised)

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List of Exhibits

1.0 Introduction:

This report describes the approach and findings of the Quality Metrics and GPRA assessment of the Heavy Vehicle Technologies Program of EERE. The scope of the effort included:

- Characterizing baseline and advanced technology vehicles for Class 3 – 6 and Class 7 and 8 trucks,
- Estimating the market potential of technologies that improve fuel efficiency and/or involve the use of alternative fuels,
- Determining the initial petroleum and greenhouse gas emissions reductions associated with the advanced technologies.

This report contains a description of the basis from which the analysis methodology was developed, a discussion of the models used to estimate market potential and initial or 'first order' benefits, and a presentation of the benefits estimated as a result of the adoption of the advanced technologies. These initial estimates, along with market penetration and other results are then modeled as part of the EERA-wide integrated analysis to provide final benefit estimates reported in the FY04 Budget Request.

2.0 Background:

This analysis of the initial benefits expected from achieving the Heavy Vehicle Technologies Program goals was developed based on three primary reference sources:

- Vehicle characteristics and use information—as obtained from the 1997 Vehicle Inventory and Use Survey (VIUS). This provides information on both vehicle performance characteristics, such as fuel economy; and also vehicle use patterns such as miles travelled per year. (Ref. 1)
- Truck operator investment requirements—as provided by a survey of Owner-Operators performed by the American Trucking Associations in 1995. (Ref. 2)
- Vehicle performance and cost characteristics for advanced technologies—as identified by the EERE Program Managers.

Important "background" information such as energy prices and baseline technology fuel economies are based on Annual Energy Outlook (Reference Case) prepared by the Energy Information Administration (Ref. 3).

The methodology involves a disaggregation of heavy vehicle types according to usage patterns. This has enabled the identification of the vehicle types that accumulate the greatest vehicle miles travelled; and therefore offer the best opportunity for economic return; i.e. pay-back on an investment in an energy conserving technology.

In prior years, the Heavy Vehicle Technologies Program had focused on one efficiency technology, the LE-55 Engine and one alternative fuels technology (natural gas). As a result, the market segmentation also identifies travel distributions for heavy vehicles that utilize central refueling sites, and those that do not, as it was judged that central refueling would be conducive to using an alternative fuel such as natural gas.

3.0 Approach:

3.1 Market Segmentation Analysis

"Heavy Vehicles" are defined in this analysis as including Classes 3 through 6 (Medium Trucks) and Classes 7 and 8 (Heavy Trucks). The Heavy Truck classes are further subdivided by end-use types. VIUS data were examined for all vehicles in use and vehicles two years old or less. The Heavy Truck vehicle market was parsed by the Analytic Team into three types that account for similar usage and annual vehicle mile usage patterns. The vehicle type segments are:

- Type 1 – multi-stop, step van, beverage, utility, winch, crane, wrecker, logging, pipe, garbage collection, dump, and concrete delivery;
- Type 2 – platform, livestock, auto transport, oil-field, grain, and tank;
- Type 3 – refrigerated van, drop frame van, open top van, and basic enclosed van.

The lower speed and 'stop and start' duty characteristics of Type 1 trucks greatly reduces the potential efficiency benefits of aerodynamic improvements in that sector. For similar reasons, fuel economy improvements due to advanced tires also would be limited for Type 1 vehicles.

As compared to long distance, over the road travel, Type 2 vehicles tend to be used in local or regional delivery; and, as a result, will realize little fuel economy benefit from aerodynamic improvements. Distances travelled by Type 2 vehicles are typically greater than Type 1, which makes them a somewhat better market sector for advanced tires.

In general, Type 3 vehicles are the best candidates for both tire and aerodynamic improvement technologies. Refueling characteristics; i.e. central-source refueling or non-central source also were considered as centrally-refueled vehicles would find an alternative fuel source more practical than vehicles that always refuel at road-side facilities.

Heavy vehicle characteristics are summarized in Exhibit 3-1. In the medium truck market segment (Classes 3 through 6), all vehicle types, with the exception of auto transport, on average travel about 20,000 miles per year. Heavy trucks, depending on type, travel an average of 40,000 miles to 92,000 miles per year. One of the more interesting findings was the significant difference in fuel economy among the vehicle types with Type 3 heavy vehicles exhibiting an average fuel economy nearly twice as high as Type 1 heavy vehicles (8.90 vs 4.55 MPG).

Exhibit 3-1: Heavy Vehicle Characteristics

Vehicle Type	Average Annual Miles (1)	Fuel Economy (MPG)	Percent Centrally Refueled (1)
Class 3-6	20,126	8.90	40.1%
Class 7 & 8 Type 1	40,043	4.55	59.8%
Class 7 & 8 Type 2	74,066	6.16	41.0%
Class 7 & 8 Type 3	92,434	8.90	42.0%

Note 1: Vehicles 2 years old or less

In addition to the market characterization, historical market penetration data was obtained from VIUS surveys for energy conserving technologies including radial tires, aerodynamic devices, and fan clutches. This data was utilized in the calibration of the rate of efficiency technology adoption in the model. (Ref. 1).

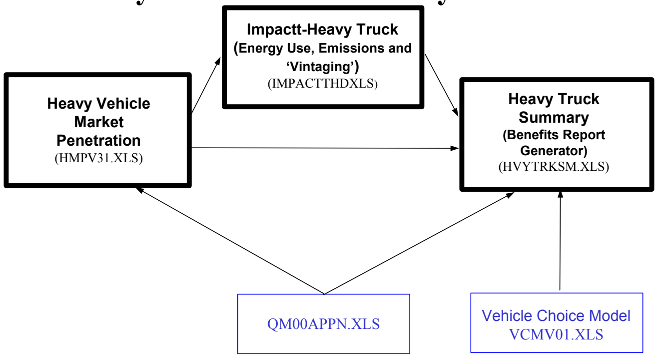
3.2 Heavy Vehicle Benefits Analysis Overview

Initial benefits estimates are generated through the linkage of three spreadsheet models:

- The Heavy Vehicle market Penetration (HVMP) model
- Integrated Market Penetration And Cost of Transportation Technologies (IMPACTT) model, and
- Heavy Truck Summary (HVS) model.

The relationship of these three models is indicated in Exhibit 3-2[1].

Exhibit 3-2:
Heavy Truck Benefits Analysis Models



Values for technology performance attributes and cost are input into the Heavy Vehicle Market Penetration (HVMP) model. This includes estimates for current technology fuel economy. Energy prices and projections used in the HVMP are linked to the values in the Quality Metrics Light Vehicle Results Model (QM00APPN.XLS). The HVMP model was developed to estimate the potential market impacts of new technologies on the medium and heavy truck market. The results generated by this model are:

- Market penetrations, in units of percent of new vehicles sold for each type and class of vehicle, and
- Composite fuel economy rating (new mpg) of the vehicles sold.

The market penetration results are supplied through a link to the Impactt-Heavy Truck model. This 'accounting' model calculates 'first order' energy savings, criteria and carbon pollution effects, and the rate of market penetration of the new technologies into the entire fleet of Class 3 through 8 trucks.

These interim results are linked to the Heavy Truck Summary model in which various reports of the energy, emissions, and economic benefits attributable to the use of the advanced technologies

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[1] The Heavy Vehicle Market Penetration Model was developed as a collaborative effort, initially by John Maples of Oak Ridge National Laboratory (ORNL), with assistance from James Moore, of TA Engineering, Inc. Subsequent enhancements have been performed by Moore (TA Engineering).

IMPACTT was originally developed by Marianne Mintz, Argonne National Laboratory (ANL). The version of the model used for the Heavy Vehicle Analyses has been modified by Moore, et al, TA Engineering, with assistance from ANL.

The Heavy Truck Summary Model is a report generating spreadsheet. It was initially developed by Maples, and has subsequently been modified by Analysts at the National Renewable Energy Laboratory, and TA Engineering. Quality Metrics Light Vehicle Results Model was developed initially by John Maples, ORNL and since been modified extensively by Elyse Steiner, NREL and other NREL analysts.

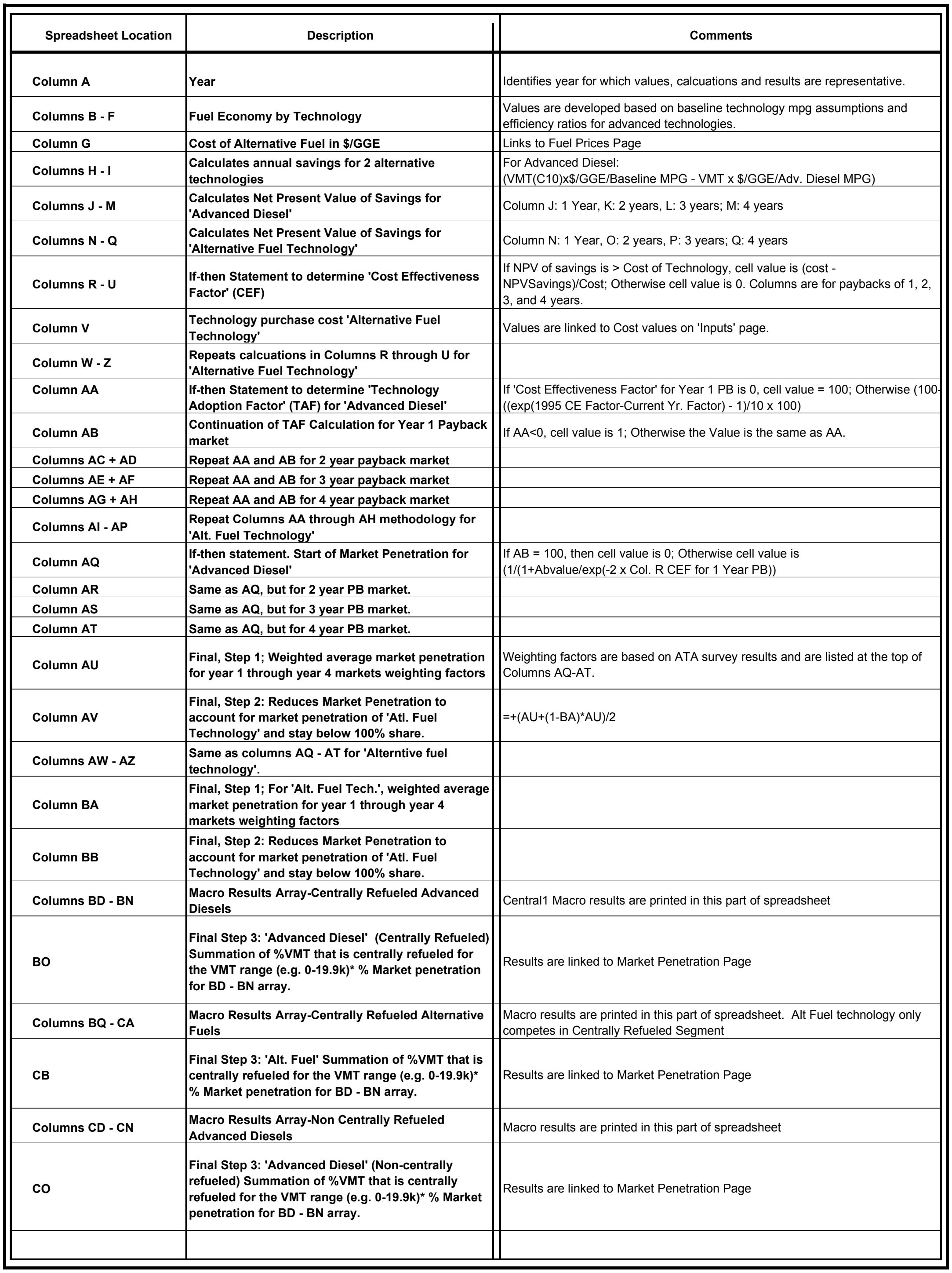
The Vehicle Choice Model was developed as a collaborative effort of ANL, ORNL, and NREL analysts. It is based on a national survey of consumer attribute preferences conducted by ANL.

are calculated. Energy price factors and projections from the Annual Energy Outlook Reference Case are used by the Heavy Truck Summary model to calculate cost savings (Ref. 3).

3.3 Heavy Vehicle Market Penetration Model

Exhibit 3-3 explains the HVMP model's calculation method for Class 7 & 8, type 1 vehicles. The

Exhibit 3-3: HVMP Market Share Calculation Methodology



Spreadsheet Location	Description	Comments
Column A	**Year**	Identifies year for which values, calcuations and results are representative.
Columns B - F	**Fuel Economy by Technology**	Values are developed based on baseline technology mpg assumptions and efficiency ratios for advanced technologies.
Column G	**Cost of Alternative Fuel in $/GGE**	Links to Fuel Prices Page
Columns H - I	**Calculates annual savings for 2 alternative technologies**	For Advanced Diesel: (VMT(C10)x$/GGE/Baseline MPG - VMT x $/GGE/Adv. Diesel MPG)
Columns J - M	**Calculates Net Present Value of Savings for 'Advanced Diesel'**	Column J: 1 Year, K: 2 years, L: 3 years; M: 4 years
Columns N - Q	**Calculates Net Present Value of Savings for 'Alternative Fuel Technology'**	Column N: 1 Year, O: 2 years, P: 3 years; Q: 4 years
Columns R - U	**If-then Statement to determine 'Cost Effectiveness Factor' (CEF)**	If NPV of savings is > Cost of Technology, cell value is (cost - NPVSavings)/Cost; Otherwise cell value is 0. Columns are for paybacks of 1, 2, 3, and 4 years.
Column V	**Technology purchase cost 'Alternative Fuel Technology'**	Values are linked to Cost values on 'Inputs' page.
Column W - Z	**Repeats calcuations in Columns R through U for 'Alternative Fuel Technology'**	
Column AA	**If-then Statement to determine 'Technology Adoption Factor' (TAF) for 'Advanced Diesel'**	If 'Cost Effectiveness Factor' for Year 1 PB is 0, cell value = 100; Otherwise (100-((exp(1995 CE Factor-Current Yr. Factor) - 1)/10 x 100)
Column AB	**Continuation of TAF Calculation for Year 1 Payback market**	If AA<0, cell value is 1; Otherwise the Value is the same as AA.
Columns AC + AD	**Repeat AA and AB for 2 year payback market**	
Columns AE + AF	**Repeat AA and AB for 3 year payback market**	
Columns AG + AH	**Repeat AA and AB for 4 year payback market**	
Columns AI - AP	**Repeat Columns AA through AH methodology for 'Alt. Fuel Technology'**	
Column AQ	**If-then statement. Start of Market Penetration for 'Advanced Diesel'**	If AB = 100, then cell value is 0; Otherwise cell value is (1/(1+Abvalue/exp(-2 x Col. R CEF for 1 Year PB))
Column AR	**Same as AQ, but for 2 year PB market.**	
Column AS	**Same as AQ, but for 3 year PB market.**	
Column AT	**Same as AQ, but for 4 year PB market.**	
Column AU	**Final, Step 1; Weighted average market penetration for year 1 through year 4 markets weighting factors**	Weighting factors are based on ATA survey results and are listed at the top of Columns AQ-AT.
Column AV	**Final, Step 2: Reduces Market Penetration to account for market penetration of 'Atl. Fuel Technology' and stay below 100% share.**	=+(AU+(1-BA)*AU)/2
Columns AW - AZ	**Same as columns AQ - AT for 'Alterntive fuel technology'.**	
Column BA	**Final, Step 1; For 'Alt. Fuel Tech.', weighted average market penetration for year 1 through year 4 markets weighting factors**	
Column BB	**Final, Step 2: Reduces Market Penetration to account for market penetration of 'Atl. Fuel Technology' and stay below 100% share.**	
Columns BD - BN	**Macro Results Array-Centrally Refueled Advanced Diesels**	Central1 Macro results are printed in this part of spreadsheet
BO	**Final Step 3: 'Advanced Diesel' (Centrally Refueled) Summation of %VMT that is centrally refueled for the VMT range (e.g. 0-19.9k)* % Market penetration for BD - BN array.**	Results are linked to Market Penetration Page
Columns BQ - CA	**Macro Results Array-Centrally Refueled Alternative Fuels**	Macro results are printed in this part of spreadsheet. Alt Fuel technology only competes in Centrally Refueled Segment
CB	**Final Step 3: 'Alt. Fuel' Summation of %VMT that is centrally refueled for the VMT range (e.g. 0-19.9k)* % Market penetration for BD - BN array.**	Results are linked to Market Penetration Page
Columns CD - CN	**Macro Results Array-Non Centrally Refueled Advanced Diesels**	Macro results are printed in this part of spreadsheet
CO	**Final Step 3: 'Advanced Diesel' (Non-centrally refueled) Summation of %VMT that is centrally refueled for the VMT range (e.g. 0-19.9k)* % Market penetration for BD - BN array.**	Results are linked to Market Penetration Page

calculation method for the other 3 vehicle types and classes is highly analogous.

The HVMP model estimates market penetration based on cost effectiveness of the new technology. Cost effectiveness is measured as the incremental cost of the new technology less the discounted expected energy savings of that technology over a specified time period in relation to specified payback periods.

Exhibit 3-4 shows the payback distribution assumed in the HVMP model. This payback distribution was generated using data taken from a survey of 224 motor carriers conducted by the American Trucking Association. (Ref. 2) The survey found that, for example, 16.4% of the truck operators responding require a payback of one year on an investment.

Exhibit 3-4: Heavy Vehicle Payback Period Market Distribution

Number of Years	Percent of Motor Carriers
1	16.4%
2	61.7%
3	15.5%
4	6.4%

The new technology cost and the expected efficiency improvements are exogenous inputs. Energy savings are calculated using the following data and assumptions:

- Annual vehicle miles traveled;
- Fuel efficiency (mpg) without new technology (Ref. 1);
- Fuel efficiency (mpg) with new technology; these are specified as multipliers ‘times’ conventional mpg to limit the effort dedicated to estimating future conventional vehicle technology changes.
- Projected fuel price – diesel, ethanol, and CNG (Ref. 3);
- Incremental cost of new technology over time (economies of scale);
- Discount rate; and
- Payback period.

Values assigned for each are indicated in the Appendix, which contains a printout of the complete HVMP model.

In the HVMP model, the truck classes are segmented according to refueling location (i.e. central or multiple locations). The data analysis revealed that all vehicle segments have central refueling occurring at least forty percent (40.1%) of the time. As vehicles age, central refueling declines. This may be explained by the transition from larger fleet operations to small independent owner operators as centrally refueled vehicles age.

Eleven travel distance categories for medium trucks and twenty-one for heavy trucks are represented in the model. These categories were determined using travel distributions developed with the VIUS data by ORNL (Ref. 4).

Exhibits 3-5 and 3-6 show the distribution for Centrally and Non-Centrally refueled vehicles. Type 3 vehicles display the greatest amount of annual travel of all heavy vehicle classes. Centrally refueled vehicles travel less per year than non-centrally refueled vehicles. In the non-centrally refueled vehicle segment, the majority of travel occurs from 100,000 to 140,000 miles per year. In the central refueling segment, the majority of travel occurs in a more even distribution between 20,000 and 140,000 miles per year.

Exhibit 3-5: Type 3 Heavy Vehicle Travel Distribution – Central Refueling

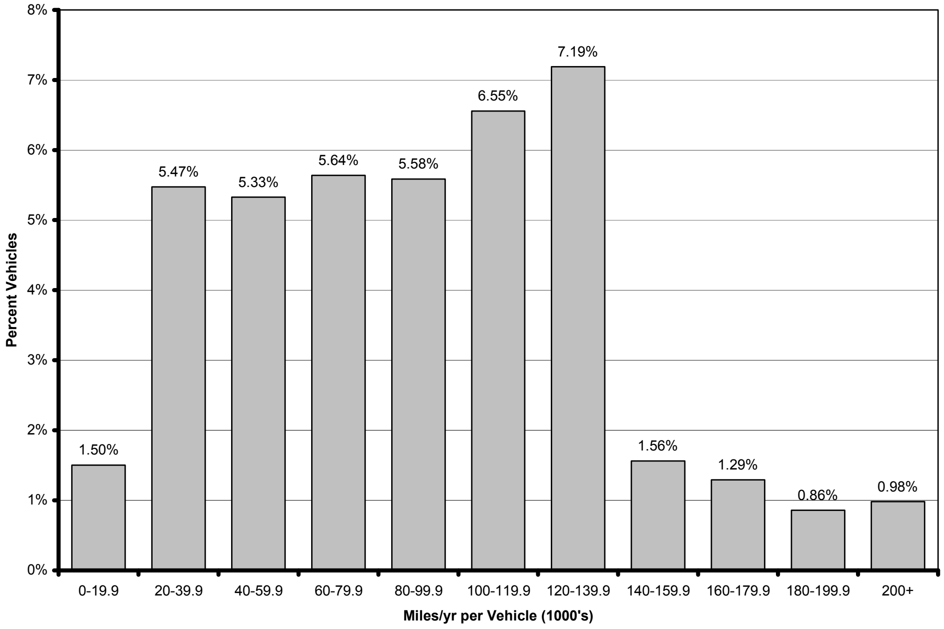
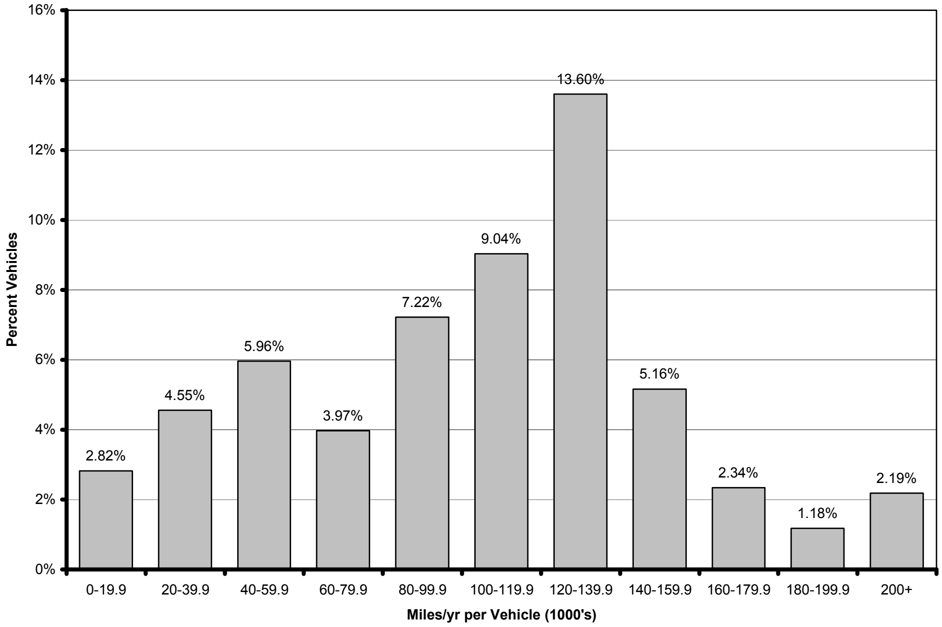


Exhibit 3-6: Type 3 Heavy Vehicle Travel Distribution – Non-Central Refueling



The technology performance assumptions and truck utilization patterns are used to determine payback performance for the advanced technologies in each type and class of vehicle. The model then calculates composite market penetrations and fuel economy values.

3.4 IMPACTT Heavy Truck

This model is a version of the IMPACTT tools developed by M. Mintz of ANL (Ref. 5). Fuel economies and market penetrations determined in HVMP are inputs to this model, which determines initial energy savings due to the expected market penetration of the advanced technologies in Medium and Heavy Vehicles. The model also has the capability of estimating criteria emissions savings, and carbon reduction. In addition, it projects the portion of the Medium and Heavy Vehicle *fleet* that are advanced technologies.

3.3 Heavy Truck Summary

This report generator provides nine tables of the first order benefits for the period covering 2000 through 2030.

Specific results are generated for the following:

- Class 3 – 8 Energy and Emissions Reductions
- Technology Market Penetrations
- Sales and Stocks of Advanced Technology Vehicles
- Heavy Vehicle Energy Use—including a breakdown by Class and Technology
- CO_2 Emissions and Emissions Reduction
- NOx, CO, and Non-methane Hydrocarbon Emissions and Emission Reductions, and
- Value of Emissions Reductions (both Carbon and Criteria Pollutants)

4.0 Results

Principal results for QM04 analysis are provided in Exhibits 4-1 through 4-5 below.

These are reproduced from the Heavy Truck Summary Model.

Exhibit 4-1: Summary Class 3 - 8 Energy and Emission Reductions

	Energy Reduction			Alternative	Petroleum	Carbon Reduction						Energy Cost Savings			Incremental
	Total	Class 3-6	Class 7-8	Fuel Use	Reduction	Total	Class 3-6	Class 7-8	Emission Reductions (1000 tons)			Total	Class 3-6	Class 7-8	Vehicle Cost
Year	mmb/d	mmb/d	mmb/d	mmb/d	mmb/d	(MMTCe)	(MMTCe)	(MMTCe)	NOx	CO	NMHC	million 2000$	million 2000$	million 2000$	million 2000$
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00
2001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00
2002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00
2003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	0.06	0.06	0.00	0.25
2004	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.011	0.015	0.003	0.53	0.47	0.06	2.51
2005	0.001	0.000	0.001	0.000	0.001	0.047	0.006	0.041	0.163	0.186	0.041	21.66	2.72	18.94	169.12
2006	0.003	0.000	0.002	0.000	0.003	0.106	0.006	0.099	0.298	0.343	0.098	50.03	3.01	47.02	88.80
2007	0.004	0.000	0.004	0.000	0.004	0.190	0.011	0.179	0.547	0.612	0.176	93.96	5.37	88.59	115.20
2008	0.007	0.000	0.007	0.000	0.007	0.301	0.017	0.285	0.877	0.968	0.279	150.31	8.29	142.02	147.67
2009	0.011	0.001	0.010	0.000	0.011	0.448	0.024	0.424	1.310	1.441	0.413	224.63	12.02	212.61	188.23
2010	0.015	0.001	0.014	0.000	0.015	0.641	0.034	0.607	1.882	2.064	0.591	325.54	17.21	308.33	239.63
2011	0.021	0.001	0.020	0.000	0.021	0.897	0.047	0.850	2.640	2.892	0.827	458.20	23.97	434.23	305.83
2012	0.029	0.001	0.027	0.000	0.029	1.205	0.062	1.142	3.547	3.881	1.108	611.64	31.61	580.03	358.01
2013	0.037	0.002	0.036	0.000	0.037	1.582	0.081	1.501	4.633	5.068	1.447	803.67	41.03	762.65	420.82
2014	0.048	0.002	0.046	0.000	0.048	2.048	0.104	1.943	5.949	6.514	1.865	1,032.99	52.63	980.36	493.11
2015	0.062	0.003	0.059	0.000	0.062	2.629	0.136	2.493	7.585	8.325	2.393	1,330.07	68.81	1,261.26	574.61
2016	0.076	0.004	0.072	0.000	0.076	3.191	0.171	3.020	9.145	10.079	2.916	1,608.70	86.12	1,522.58	535.76
2017	0.088	0.005	0.083	0.000	0.088	3.725	0.208	3.517	10.590	11.733	3.422	1,871.27	104.41	1,766.86	535.23
2018	0.100	0.006	0.094	0.000	0.100	4.234	0.248	3.986	11.925	13.294	3.914	2,128.23	124.52	2,003.71	544.79
2019	0.112	0.007	0.105	0.000	0.112	4.712	0.294	4.418	13.136	14.767	4.402	2,355.96	146.93	2,209.03	561.74
2020	0.122	0.008	0.114	0.000	0.122	5.159	0.345	4.814	14.203	16.126	4.875	2,581.52	172.51	2,409.01	592.70
2021	0.138	0.010	0.128	0.000	0.138	5.813	0.423	5.390	15.889	18.234	5.575	2,946.19	214.54	2,731.66	746.06
2022	0.158	0.012	0.146	0.000	0.158	6.684	0.524	6.160	18.165	21.036	6.482	3,430.39	269.01	3,161.38	865.19
2023	0.185	0.015	0.170	0.000	0.185	7.806	0.646	7.160	21.092	24.590	7.607	4,056.63	335.83	3,720.79	974.27
2024	0.218	0.019	0.199	0.000	0.218	9.207	0.797	8.411	24.831	29.090	9.013	4,843.96	419.04	4,424.91	1,061.82
2025	0.257	0.023	0.234	0.000	0.257	10.858	0.991	9.867	29.459	34.705	10.782	5,781.88	527.76	5,254.12	1,096.60
2026	0.295	0.028	0.267	0.000	0.295	12.449	1.176	11.273	33.947	40.107	12.456	6,717.58	634.40	6,083.18	1,000.14
2027	0.332	0.032	0.300	0.000	0.332	14.015	1.365	12.650	38.466	45.552	14.132	7,662.34	746.52	6,915.82	1,022.08
2028	0.368	0.037	0.331	0.000	0.368	15.549	1.560	13.989	43.018	51.037	15.809	8,611.45	863.88	7,747.57	1,043.74
2029	0.403	0.042	0.362	0.000	0.403	17.037	1.759	15.278	47.447	56.408	17.449	9,556.15	986.59	8,569.55	1,065.46
2030	0.437	0.046	0.390	0.000	0.437	18.449	1.961	16.488	51.507	61.408	18.984	10,479.51	1,113.74	9,365.77	1,085.18
Cumulative Total From Year 2000 to Year															
2005	0.001	0.000	0.001	0.000	0.001	0.048	0.007	0.041	0.175	0.204	0.044	22.25	3.25	19.00	171.89
2010	0.041	0.002	0.039	0.000	0.041	1.733	0.099	1.635	5.089	5.632	1.600	866.72	49.15	817.56	951.40
2015	0.239	0.013	0.226	0.000	0.239	10.093	0.529	9.565	29.442	32.311	9.239	5,103.29	267.20	4,836.09	3,103.79
2020	0.737	0.042	0.694	0.000	0.737	31.114	1.794	29.320	88.441	98.310	28.768	15,648.97	901.68	14,747.28	5,874.01

Exhibit 4-2: Market Penetration of Advanced Technologies in Heavy Vehicles

	Class 7-8 Type 1		**Class 7-8 Type 2**		**Class 7-8 Type 3**		**CLASS 7-8 Final**		**CLASS 3-6 Final**	
Year	CURRENT	ENHANCED	CURRENT	ENHANCED	CURRENT	ENHANCED	CURRENT	ENHANCED	CURRENT	ENHANCED
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2004	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2005	0.2%	0.0%	1.2%	0.0%	2.4%	0.0%	1.8%	0.0%	0.3%	0.0%
2006	0.3%	0.0%	1.7%	0.0%	3.3%	0.0%	2.4%	0.0%	0.4%	0.0%
2007	0.4%	0.0%	2.3%	0.0%	4.4%	0.0%	3.2%	0.0%	0.5%	0.0%
2008	0.5%	0.0%	3.0%	0.0%	5.6%	0.0%	4.1%	0.0%	0.6%	0.0%
2009	0.7%	0.0%	3.9%	0.0%	7.1%	0.0%	5.2%	0.0%	0.8%	0.0%
2010	0.9%	0.0%	5.1%	0.0%	9.1%	0.0%	6.7%	0.0%	1.0%	0.0%
2011	1.2%	0.0%	6.6%	0.0%	11.8%	0.0%	8.7%	0.0%	1.3%	0.0%
2012	1.6%	0.0%	8.3%	0.0%	14.5%	0.0%	10.8%	0.0%	1.6%	0.0%
2013	2.2%	0.0%	10.7%	0.0%	17.9%	0.0%	13.5%	0.0%	2.0%	0.0%
2014	2.9%	0.0%	13.8%	0.0%	22.4%	0.0%	17.0%	0.0%	2.7%	0.0%
2015	2.6%	0.0%	18.4%	0.0%	27.8%	0.0%	21.2%	0.0%	3.6%	0.0%
2016	4.2%	0.0%	18.1%	0.0%	27.6%	0.0%	21.3%	0.0%	4.0%	0.0%
2017	4.1%	0.0%	18.0%	0.0%	27.5%	0.0%	21.2%	0.0%	4.4%	0.0%
2018	4.1%	0.0%	17.9%	0.0%	27.4%	0.0%	21.1%	0.0%	4.8%	0.0%
2019	4.1%	0.0%	17.9%	0.0%	27.3%	0.0%	21.1%	0.0%	5.6%	0.0%
2020	4.2%	0.0%	18.2%	0.0%	27.7%	0.0%	21.4%	0.0%	6.4%	0.0%
2025	18.6%	0.0%	54.7%	0.0%	66.5%	0.0%	55.3%	0.0%	14.6%	0.0%
2030	20.1%	0.0%	56.7%	0.0%	69.8%	0.0%	58.0%	0.0%	16.0%	0.0%

Exhibit 4-3: Heavy Vehicle (Class 3-8) Sales and Stocks of Advanced Technology Vehicles

	SALES				STOCKS				STOCKS (Percent of Total)			
	3-6		7&8		3-6		7&8		3-6		7&8	
Year	Current	Enhanced	Current	Enhanced	Current	Enhanced	Current	Enhanced	Current	Enhanced	Current	Enhanced
2000	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
2001	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
2002	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
2003	14	0	0	0	14	0	0	0	0.0%	0.0%	0.0%	0.0%
2004	97	0	23	0	111	0	23	0	0.0%	0.0%	0.0%	0.0%
2005	566	0	5,810	0	677	0	5,833	0	0.0%	0.0%	0.1%	0.0%
2006	821	0	8,223	0	1,496	0	14,038	0	0.0%	0.0%	0.3%	0.0%
2007	1,140	0	11,214	0	2,630	0	25,199	0	0.1%	0.0%	0.5%	0.0%
2008	1,508	0	15,201	0	4,125	0	40,288	0	0.1%	0.0%	0.7%	0.0%
2009	2,008	0	20,538	0	6,110	0	60,616	0	0.1%	0.0%	1.1%	0.0%
2010	2,787	0	27,723	0	8,859	0	87,971	0	0.2%	0.0%	1.5%	0.0%
2011	3,781	0	37,752	0	12,576	0	125,080	0	0.3%	0.0%	2.1%	0.0%
2012	4,665	0	47,413	0	17,139	0	171,380	0	0.4%	0.0%	2.8%	0.0%
2013	6,013	0	59,932	0	22,996	0	229,584	0	0.5%	0.0%	3.6%	0.0%
2014	7,880	0	75,881	0	30,646	0	302,881	0	0.6%	0.0%	4.6%	0.0%
2015	10,715	0	95,903	0	41,026	0	395,033	0	0.8%	0.0%	5.9%	0.0%
2016	12,240	0	97,361	0	52,790	0	487,080	0	1.0%	0.0%	7.1%	0.0%
2017	13,406	0	96,857	0	65,539	0	576,638	0	1.2%	0.0%	8.2%	0.0%
2018	14,954	0	98,191	0	79,606	0	665,075	0	1.5%	0.0%	9.2%	0.0%
2019	17,740	0	100,285	0	96,173	0	752,627	0	1.7%	0.0%	10.2%	0.0%
2020	20,908	0	105,159	0	115,554	0	841,520	0	2.0%	0.0%	11.1%	0.0%
2021	24,915	0	134,262	0	138,510	0	955,365	0	2.4%	0.0%	12.4%	0.0%
2022	29,980	0	169,837	0	166,008	0	1,100,015	0	2.8%	0.0%	14.1%	0.0%
2023	34,504	0	210,610	0	197,406	0	1,280,315	0	3.3%	0.0%	16.1%	0.0%
2024	40,834	0	253,636	0	234,395	0	1,497,944	0	3.9%	0.0%	18.5%	0.0%
2025	51,498	0	289,206	0	281,184	0	1,744,877	0	4.6%	0.0%	21.1%	0.0%
2030	60,253	0	321,557	0	522,781	0	2,962,059	0	8.1%	0.0%	32.7%	0.0%

Exhibit 4-4: Heavy Vehicle (Class 3-8) Energy Use

Year	Base Case Energy Use, Trillion BTUs			Class 3-6 Technology Energy Use, Trillion BTUs				Class 7&8 Technology Energy Use, Trillion BTUs				Current & Enhanced Energy Use	Energy Savings	Energy Savings by Program, Trillion BTUs	
	Class 3-6	Class 7-8	Total	Class 3-6 Conv.	Current Program	Enhanced Program	Total	Class 7-8 Conv.	Current Program	Enhanced Program	Total	Trillion BTUs	Trillion BTUs	Current Program	Enhanced Program
2000															
2001	835.8	3,903.2	4,739.0	835.8	0.0	0.0	835.8	3,903.2	0.0	0.0	3,903.2	4,739.0	0.0	0.0	0.0
2002	840.6	4,069.2	4,909.7	840.6	0.0	0.0	840.6	4,069.2	0.0	0.0	4,069.2	4,909.7	0.0	0.0	0.0
2003	855.6	4,238.5	5,094.1	855.6	0.0	0.0	855.6	4,238.5	0.0	0.0	4,238.5	5,094.1	0.0	0.0	0.0
2004	864.7	4,361.5	5,226.2	864.7	0.0	0.0	864.7	4,361.5	0.0	0.0	4,361.5	5,226.2	0.1	0.1	0.0
2005	874.8	4,438.8	5,313.6	874.5	0.0	0.0	874.5	4,430.5	6.3	0.0	4,436.8	5,311.3	2.3	2.3	0.0
2006	876.1	4,479.5	5,355.6	875.5	0.3	0.0	875.8	4,459.4	15.1	0.0	4,474.5	5,350.3	5.3	5.3	0.0
2007	882.8	4,543.3	5,426.1	881.8	0.5	0.0	882.3	4,507.3	27.1	0.0	4,534.3	5,416.6	9.5	9.5	0.0
2008	895.3	4,613.4	5,508.7	893.7	0.8	0.0	894.5	4,556.3	42.8	0.0	4,599.2	5,493.6	15.1	15.1	0.0
2009	910.5	4,706.9	5,617.4	908.2	1.1	0.0	909.3	4,621.9	63.7	0.0	4,685.6	5,594.9	22.4	22.4	0.0
2010	928.4	4,808.6	5,737.1	925.2	1.6	0.0	926.7	4,687.2	91.0	0.0	4,778.2	5,705.0	32.1	32.1	0.0
2011	949.7	4,930.5	5,880.2	945.2	2.2	0.0	947.4	4,760.4	127.5	0.0	4,887.9	5,835.3	45.0	45.0	0.0
2012	967.3	5,032.5	5,999.8	961.3	2.9	0.0	964.2	4,804.1	171.2	0.0	4,975.3	5,939.5	60.4	60.4	0.0
2013	981.0	5,141.1	6,122.1	973.2	3.8	0.0	977.0	4,840.7	225.2	0.0	5,065.9	6,042.9	79.3	79.3	0.0
2014	994.6	5,248.2	6,242.8	984.4	5.0	0.0	989.4	4,858.5	292.2	0.0	5,150.8	6,140.2	102.6	102.6	0.0
2015	1,009.3	5,359.5	6,368.9	996.0	6.5	0.0	1,002.5	4,858.9	375.7	0.0	5,234.6	6,237.1	131.8	131.8	0.0
2016	1,024.7	5,472.7	6,497.5	1007.9	8.3	0.0	1,016.2	4,865.1	456.2	0.0	5,321.4	6,337.5	159.9	159.9	0.0
2017	1,042.3	5,595.1	6,637.4	1021.7	10.2	0.0	1,031.9	4,885.8	533.0	0.0	5,418.8	6,450.7	186.7	186.7	0.0
2018	1,060.6	5,719.7	6,780.3	1,035.9	12.3	0.0	1,048.2	4,913.6	606.4	0.0	5,519.9	6,568.1	212.2	212.2	0.0
2019	1,079.0	5,838.6	6,917.6	1,049.6	14.7	0.0	1,064.3	4,942.0	675.1	0.0	5,617.1	6,681.4	236.2	236.2	0.0
2020	1,091.6	5,942.9	7,034.5	1,056.8	17.4	0.0	1,074.3	4,962.1	739.5	0.0	5,701.6	6,775.9	258.6	258.6	0.0
2021	1,134.1	6,088.3	7,222.4	1,091.7	21.1	0.0	1,112.9	4,986.0	832.2	0.0	5,818.2	6,931.1	291.4	291.4	0.0
2022	1,178.1	6,238.0	7,416.1	1,126.3	25.6	0.0	1,151.8	4,973.5	955.8	0.0	5,929.3	7,081.1	335.0	335.0	0.0
2023	1,224.2	6,391.3	7,615.5	1,161.0	30.7	0.0	1,191.8	4,916.4	1,116.1	0.0	6,032.5	7,224.2	391.3	391.3	0.0
2024	1,272.0	6,549.0	7,821.0	1,195.1	37.0	0.0	1,232.1	4,812.1	1,315.4	0.0	6,127.4	7,359.5	461.5	461.5	0.0
2025	1,321.5	6,709.2	8,030.7	1,226.8	45.0	0.0	1,271.8	4,669.2	1,545.5	0.0	6,214.7	7,486.5	544.2	544.2	0.0
2026	1,344.4	6,840.6	8,184.9	1,233.1	52.3	0.0	1,285.4	4,507.9	1,767.7	0.0	6,275.5	7,561.0	624.0	624.0	0.0
2027	1,367.8	6,974.5	8,342.3	1,239.9	59.5	0.0	1,299.4	4,355.8	1,984.7	0.0	6,340.5	7,639.9	702.5	702.5	0.0
2028	1,391.6	7,111.1	8,502.7	1,246.8	66.6	0.0	1,313.4	4,214.9	2,195.1	0.0	6,410.0	7,723.3	779.4	779.4	0.0
2029	1,415.8	7,250.5	8,666.3	1,254.1	73.6	0.0	1,327.7	4,086.3	2,398.4	0.0	6,484.7	7,812.4	853.9	853.9	0.0
2030	1,440.5	7,392.6	8,833.1	1,261.7	80.5	0.0	1,342.2	3,973.1	2,593.1	0.0	6,566.2	7,908.4	924.7	924.7	0.0
Cumulative Total From Year 2000 to Year															
2005	4,271	21,011	25,283	4,271	0	0	4,271	21,011	6	0	21,009	25,280	2	2	0
2010	8,765	44,163	52,928	8,755	4	0	8,760	44,163	246	0	44,081	52,841	87	87	0
2015	13,667	69,875	83,541	13,615	25	0	13,640	69,875	1,438	0	69,395	83,035	506	506	0
2020	18,965	98,444	117,409	18,787	88	0	18,875	98,444	4,448	0	96,974	115,849	1,559	1,559	0
2025	25,095	130,420	155,514	24,588	247	0	24,835	130,420	10,213	0	127,096	151,932	3,583	3,583	0
2030	32,055	165,989	198,044	30,824	580	0	31,403	165,989	21,152	0	159,173	190,577	7,467	7,467	0

Exhibit 4-5: Heavy Vehicle (Class 3-8) CO2 Emissions and Emission Reductions (1,000 tons)

	OPERATIONAL EMISSIONS			UPSTREAM EMISSIONS					
	Reduction			Reduction			TOTAL REDUCTION		
Year	CLS 3-6	CLS 7&8	Total	CLS 3-6	CLS 7&8	Total	CLS 3-6	CLS 7&8	Total
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.5	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.5
2004	3.9	0.5	4.4	0.0	0.0	0.0	3.9	0.5	4.4
2005	22.9	163.0	185.9	0.0	0.0	0.0	22.9	163.0	185.9
2006	24.4	395.9	420.3	0.0	0.0	0.0	24.4	395.9	420.3
2007	41.8	712.7	754.4	0.0	0.0	0.0	41.8	712.7	754.4
2008	64.1	1,132.2	1,196.3	0.0	0.0	0.0	64.1	1,132.2	1,196.3
2009	92.4	1,686.5	1,779.0	0.0	0.0	0.0	92.4	1,686.5	1,779.0
2010	130.8	2,414.4	2,545.2	0.0	0.0	0.0	130.8	2,414.4	2,545.2
2011	181.2	3,383.3	3,564.5	0.0	0.0	0.0	181.2	3,383.3	3,564.5
2012	240.4	4,545.8	4,786.2	0.0	0.0	0.0	240.4	4,545.8	4,786.2
2013	311.7	5,973.6	6,285.3	0.0	0.0	0.0	311.7	5,973.6	6,285.3
2014	402.7	7,734.1	8,136.9	0.0	0.0	0.0	402.7	7,734.1	8,136.9
2015	525.0	9,921.5	10,446.5	0.0	0.0	0.0	525.0	9,921.5	10,446.5
2016	659.2	12,017.8	12,676.9	0.0	0.0	0.0	659.2	12,017.8	12,676.9
2017	801.9	13,996.1	14,798.0	0.0	0.0	0.0	801.9	13,996.1	14,798.0
2018	955.7	15,863.7	16,819.4	0.0	0.0	0.0	955.7	15,863.7	16,819.4
2019	1,133.6	17,583.9	18,717.5	0.0	0.0	0.0	1,133.6	17,583.9	18,717.5
2020	1,329.5	19,158.8	20,488.4	0.0	0.0	0.0	1,329.5	19,158.8	20,488.4
2021	1,632.9	21,449.5	23,082.3	0.0	0.0	0.0	1,632.9	21,449.5	23,082.3
2022	2,022.6	24,513.0	26,535.6	0.0	0.0	0.0	2,022.6	24,513.0	26,535.6
2023	2,494.7	28,494.0	30,988.7	0.0	0.0	0.0	2,494.7	28,494.0	30,988.7
2024	3,076.0	33,472.4	36,548.4	0.0	0.0	0.0	3,076.0	33,472.4	36,548.4
2025	3,828.4	39,265.5	43,093.9	0.0	0.0	0.0	3,828.4	39,265.5	43,093.9
2030	7,584.8	65,618.4	73,203.2	0.0	0.0	0.0	7,584.8	65,618.4	73,203.2
Cumulative Total From Year 2000 to Year									
2005	27.3	163.5	190.8	0.0	0.0	0.0	27.3	163.5	190.8
2010	380.7	6,505.3	6,886.1	0.0	0.0	0.0	380.7	6,505.3	6,886.1
2015	2,041.8	38,063.6	40,105.3	0.0	0.0	0.0	2,041.8	38,063.6	40,105.3
2020	6,921.6	116,683.9	123,605.5	0.0	0.0	0.0	6,921.6	116,683.9	123,605.5
2025	19,976.2	263,878.2	283,854.4	0.0	0.0	0.0	19,976.2	263,878.2	283,854.4
2030	47,944.4	528,771.1	576,715.5	0.0	0.0	0.0	47,944.4	528,771.1	576,715.5

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Appendix

Overview of Heavy Vehicle Market Penetration Model (HVMP)

The HVMP is a spreadsheet model that currently operates in Excel (Office 2000 and associated versions). It consists of nine spreadsheets linked to other models. It is operated by user specifying inputs and then initiating macros that perform iterative calculations to determine market shares by technology in percents of new vehicle sales. The spreadsheets are reproduced on the following pages. In some cases the spreadsheets take up several pages. These are presented in sequence with an arrow to indicate the relationship of the current page to the following page.

1. **Inputs**-user specifies incremental technology cost and relative fuel efficiency for current and advanced technology(ies). These inputs are specified by year to 2035 and separately for Class 7 & 8 and Classes 3 through 6 vehicles.
2. **Fuel Prices**—array of fuel price information. Typically linked to other AEO-source files.
3. **Market Data (6 pages)**—Distribution of vehicle usage patterns from 1997 VIUS
4. **Type 1 (7 pages)**—Contains macro in which calculations are performed to determine market distribution of conventional and new technologies for "Type 1" Class 7 and 8 vehicles. Calculations are performed separately for centrally refueled and non-centrally refueled vehicles.
5. **Type 2 (6 pages)**—Contains macro in which calculations are performed to determine market distribution of conventional and new technologies for "Type 2" Class 7 and 8 vehicles. Calculations are performed separately for centrally refueled and non-centrally refueled vehicles.
6. **Type 3 (6 pages)**—Contains macro in which calculations are performed to determine market distribution of conventional and new technologies for "Type 3" Class 7 and 8 vehicles. Calculations are performed separately for centrally refueled and non-centrally refueled vehicles.
7. **Med (6 pages)**—Contains macro in which calculations are performed to determine market distribution of conventional and new technologies for "Medium", i.e., Class 3 through 6 vehicles. Calculations are performed separately for centrally refueled and non-centrally refueled vehicles.
8. **New MPG (2 pages)**—Shows the effect of new technology penetrations on the fleet fuel economy by vehicle class.
9. **Market Penetration (1 page)**—Summarizes the market penetration of new technologies in units of new vehicle sales percentage. Lists market shares for each Class 7 & 8 vehicle type, Class 7 & 8 composite and Classes 3 through 6 (composite).

Inputs

COST AND EFFICIENCY ESTIMATES FOR HEAVY VEHICLE ADVANCED TECHNOLOGIES

Combined Run: Current and Enhanced Program

Cost: Incremental vehicle price of added technology

Efficiency Ratio: Ratio of advanced vehicle fuel mpg compared to conventional vehicle

(Run uses base fuel economies from S. Davis VIUS Analysis)

CLASS 7 & 8					**CLASS 3-6**				
	CURRENT		**ENHANCED**			**CURRENT**		**ENHANCED**	
Year	Cost	Efficiency Ratio	Cost	Efficiency Ratio	Year	Cost	Efficiency Ratio	Cost	Efficiency Ratio
1995	100,000	0.01	100,000	1.00	1995	20,000	1.00	100,000	1.00
1996	100,000	0.21	100,000	1.00	1996	19,000	1.00	100,000	1.00
1997	100,000	0.41	100,000	1.00	1997	18,000	1.00	100,000	1.00
1998	100,000	0.60	100,000	1.00	1998	17,000	1.00	100,000	1.00
1999	100,000	0.80	100,000	1.00	1999	16,000	1.00	100,000	1.00
2000	100,000	1.00	100,000	1.00	2000	15,000	1.00	100,000	1.00
2001	82,000	1.09	100,000	1.00	2001	14,000	1.20	100,000	1.20
2002	64,000	1.17	100,000	1.00	2002	13,000	1.40	100,000	1.40
2003	46,000	1.26	100,000	1.00	2003	12,000	1.60	100,000	1.60
2004	28,000	1.34	100,000	1.00	2004	11,000	1.80	100,000	1.80
2005	10,000	1.43	100,000	1.00	2005	10,000	2.00	100,000	2.00
2006	9,500	1.43	100,000	1.07	2006	9,800	2.00	100,000	2.10
2007	9,000	1.43	100,000	1.14	2007	9,600	2.00	100,000	2.20
2008	8,500	1.43	100,000	1.21	2008	9,400	2.00	100,000	2.30
2009	8,000	1.43	100,000	1.28	2009	9,200	2.00	100,000	2.40
2010	7,500	1.43	100,000	1.35	2010	9,000	2.00	100,000	2.50
2011	7,000	1.43	100,000	1.45	2011	8,800	2.00	100,000	2.50
2012	6,500	1.43	100,000	1.55	2012	8,600	2.00	100,000	2.50
2013	6,000	1.43	100,000	1.66	2013	8,400	2.00	100,000	2.50
2014	5,500	1.43	100,000	1.76	2014	8,200	2.00	100,000	2.50
2015	5,000	1.43	100,000	1.86	2015	8,000	2.00	100,000	2.50
2016	5,000	1.43	100,000	1.86	2016	7,800	2.00	100,000	2.50
2017	5,000	1.43	100,000	1.86	2017	7,600	2.00	100,000	2.50
2018	5,000	1.43	100,000	1.86	2018	7,400	2.00	100,000	2.50
2019	5,000	1.43	100,000	1.86	2019	7,200	2.00	100,000	2.50
2020	5,000	1.43	100,000	1.86	2020	7,000	2.00	100,000	2.50
2021	4,600	1.43	100,000	1.86	2021	6,800	2.00	100,000	2.50
2022	4,200	1.43	100,000	1.86	2022	6,600	2.00	100,000	2.50
2023	3,800	1.43	100,000	1.86	2023	6,400	2.00	100,000	2.50
2024	3,400	1.43	100,000	1.86	2024	6,200	2.00	100,000	2.50
2025	3,000	1.43	100,000	1.86	2025	6,000	2.00	100,000	2.50
2026	3,000	1.43	100,000	1.86	2026	6,000	2.00	100,000	2.50
2027	3,000	1.43	100,000	1.86	2027	6,000	2.00	100,000	2.50
2028	3,000	1.43	100,000	1.86	2028	6,000	2.00	100,000	2.50
2029	3,000	1.43	100,000	1.86	2029	6,000	2.00	100,000	2.50
2030	3,000	1.43	100,000	1.86	2030	6,000	2.00	100,000	2.50
2031	3,000	1.43	80,250	1.86	2031	6,000	2.00	100,000	2.50
2032	3,000	1.43	60,500	1.86	2032	6,000	2.00	100,000	2.50
2033	3,000	1.43	40,750	1.86	2033	6,000	2.00	100,000	2.50
2034	3,000	1.43	21,000	1.86	2034	6,000	2.00	100,000	2.50
2035	3,000	1.43	1,250	1.86	2035	6,000	2.00	100,000	2.50

Fuel Prices

Transportation Energy Prices												
AEO'01												
	2000 Dollars per Million Btu						2000 Dollars per Gallon Gasoline Equivalent					
Year	Gasoline	Diesel	LPG	CNG	Electricity	Ethanol	Gasoline	Diesel	LPG	CNG	Electricity	Ethanol
1995	9.23	8.03	12.62	5.77	15.14	18.96	1.15	1.11	1.58	0.72	1.89	2.37
1996	9.89	8.90	12.62	5.41	15.33	17.73	1.24	1.23	1.58	0.68	1.92	2.36
1997	9.59	8.37	12.64	6.17	15.40	16.50	1.20	1.16	1.58	0.77	1.93	2.36
1998	9.37	8.18	12.61	5.69	15.08	15.26	1.17	1.13	1.58	0.71	1.89	2.35
1999	9.56	8.46	12.73	5.56	14.91	14.03	1.20	1.17	1.59	0.70	1.86	2.34
2000	12.20	10.81	11.70	8.04	21.78	17.33	1.52	1.50	1.46	1.00	2.72	1.80
2001	12.15	10.46	11.90	8.26	21.03	16.89	1.52	1.45	1.49	1.03	2.63	1.76
2002	10.98	9.84	12.15	6.11	20.19	16.44	1.37	1.36	1.52	0.76	2.52	1.73
2003	10.93	9.23	12.40	6.39	18.25	16.00	1.37	1.28	1.55	0.80	2.28	1.69
2004	10.92	9.27	12.77	6.56	17.41	15.55	1.36	1.29	1.60	0.82	2.18	1.66
2005	11.02	9.23	13.04	6.64	16.56	15.11	1.38	1.28	1.63	0.83	2.07	1.62
2006	11.24	9.43	13.24	6.69	16.20	14.66	1.41	1.31	1.66	0.84	2.02	1.58
2007	11.22	9.87	13.29	6.73	16.67	14.22	1.40	1.37	1.66	0.84	2.08	1.55
2008	11.25	9.96	13.02	6.81	17.24	13.77	1.41	1.38	1.63	0.85	2.16	1.51
2009	11.29	10.01	13.03	6.85	17.73	13.33	1.41	1.39	1.63	0.86	2.22	1.48
2010	11.27	10.14	13.06	6.89	18.20	12.88	1.41	1.41	1.63	0.86	2.27	1.44
2011	11.30	10.19	13.02	6.95	18.59	12.69	1.41	1.41	1.63	0.87	2.32	1.43
2012	11.31	10.13	13.01	7.01	18.86	12.50	1.41	1.41	1.63	0.88	2.36	1.42
2013	11.29	10.14	13.05	7.06	19.11	12.30	1.41	1.41	1.63	0.88	2.39	1.41
2014	11.28	10.06	13.11	7.09	19.28	12.11	1.41	1.40	1.64	0.89	2.41	1.40
2015	11.28	10.09	12.99	7.13	19.27	11.92	1.41	1.40	1.62	0.89	2.41	1.39
2016	11.27	10.06	13.06	7.16	19.11	11.62	1.41	1.40	1.63	0.89	2.39	1.38
2017	11.26	10.02	13.17	7.19	18.86	11.31	1.41	1.39	1.65	0.90	2.36	1.37
2018	11.27	10.03	13.19	7.22	18.64	11.01	1.41	1.39	1.65	0.90	2.33	1.36
2019	11.28	9.97	13.17	7.24	18.28	10.70	1.41	1.38	1.65	0.90	2.29	1.35
2020	11.28	9.98	13.20	7.28	17.91	10.40	1.41	1.38	1.65	0.91	2.24	1.34
2021	11.42	10.11	13.33	7.31	17.90	10.18	1.43	1.40	1.67	0.91	2.24	1.34
2022	11.57	10.24	13.47	7.34	17.89	9.95	1.45	1.42	1.68	0.92	2.24	1.34
2023	11.71	10.37	13.60	7.37	17.88	9.73	1.46	1.44	1.70	0.92	2.24	1.34
2024	11.86	10.50	13.74	7.40	17.87	9.50	1.48	1.46	1.72	0.92	2.23	1.34
2025	12.00	10.62	13.87	7.43	17.86	9.28	1.50	1.47	1.73	0.93	2.23	1.34
2026	12.16	10.77	14.01	7.46	17.85	9.28	1.52	1.49	1.75	0.93	2.23	1.34
2027	12.32	10.91	14.15	7.49	17.84	9.28	1.54	1.51	1.77	0.94	2.23	1.34
2028	12.48	11.05	14.29	7.52	17.83	9.28	1.56	1.53	1.79	0.94	2.23	1.34
2029	12.64	11.19	14.44	7.55	17.82	9.28	1.58	1.55	1.80	0.94	2.23	1.34
2030	12.80	11.33	14.58	7.58	17.81	9.28	1.60	1.57	1.82	0.95	2.23	1.34
2031	12.96	11.47	14.72	7.61	17.80	9.28	1.62	1.59	1.84	0.95	2.23	1.34
2032	13.12	11.62	14.86	7.64	17.79	9.28	1.64	1.61	1.86	0.95	2.22	1.34
2033	13.28	11.76	15.01	7.67	17.78	9.28	1.66	1.63	1.88	0.96	2.22	1.34
2034	13.44	11.90	15.15	7.70	17.77	9.28	1.68	1.65	1.89	0.96	2.22	1.34
2035	13.60	12.04	15.29	7.73	17.76	9.28	1.70	1.67	1.91	0.97	2.22	1.34
	0.16	0.14	0.14	0.03	-0.01	0.00						
DOE/EIA-0383(97), Annual Energy Outlook 1997, Reference Case Forecast Table A3. Energy Prices by Sector and Source, pgs. 100 and 101.												
Prices Include Federal and State taxes and exclude county and local taxes.												
Ethanol: Programs goals as stated in 1997 Budget.												

Market Data (1)

Class 7 & 8 Vehicle Distribution by Annual VMT and Type 1					
Vehicle Age 2 or Less					
Ref: 1997 VIUS Runs - Stacy Davis ORNL - 5/19/00					
	Vehilces		**Percent**		1
VMT (1000)	Central	Non-Central	Central	Non-Central	
0	0	0	0.00%	0.00%	
5	2095	1126	2.14%	1.15%	
10	5085	3421	5.21%	3.50%	
15	6669	3807	6.83%	3.90%	
20	8260	3799	8.46%	3.89%	
25	5560	3003	5.69%	3.07%	
30	6042	3743	6.19%	3.83%	
35	2646	2094	2.71%	2.14%	
40	2728	2095	2.79%	2.14%	
45	2230	1957	2.28%	2.00%	
50	3432	1853	3.51%	1.90%	
55	1922	1092	1.97%	1.12%	
60	2167	1445	2.22%	1.48%	
65	950	1281	0.97%	1.31%	
70	1280	862	1.31%	0.88%	
75	1166	745	1.19%	0.76%	
80	1156	1160	1.18%	1.19%	
85	606	768	0.62%	0.79%	
90	1084	1148	1.11%	1.18%	
95	474	474	0.49%	0.49%	
100	1643	1582	1.68%	1.62%	
105	320		0.33%	0.00%	
110	456	668	0.47%	0.68%	
115		342	0.00%	0.35%	
120	155	329	0.16%	0.34%	
125	233		0.24%	0.00%	
130			0.00%	0.00%	
135			0.00%	0.00%	
140		517	0.00%	0.53%	
145			0.00%	0.00%	
150			0.00%	0.00%	
155			0.00%	0.00%	
160			0.00%	0.00%	
165			0.00%	0.00%	
170			0.00%	0.00%	
175			0.00%	0.00%	
180			0.00%	0.00%	
185			0.00%	0.00%	
190			0.00%	0.00%	
195			0.00%	0.00%	
200			0.00%	0.00%	
201+			0.00%	0.00%	
Total	58359	39311	59.8%	40.2%	
	97670				
	17.8%				

Class 7 & 8 Vehicle Distribution by Annual VMT and Type 2					
Vehicle Age 2 or Less					
Ref: 1997 VIUS Runs - Stacy Davis ORNL - 5/19/00					
	Vehilces		**Percent**		1
VMT (1000)	Central	Non-Central	Central	Non-Central	
0	0	0	0.00%	0.00%	
5	970	1488	0.78%	1.20%	
10	2156	2814	1.74%	2.27%	
15	2410	4169	1.95%	3.37%	
20	1572	2699	1.27%	2.18%	
25	3204	2357	2.59%	1.90%	
30	2054	2286	1.66%	1.85%	
35	2077	1453	1.68%	1.17%	
40	2057	2285	1.66%	1.85%	
45	2370	1211	1.91%	0.98%	
50	1892	2537	1.53%	2.05%	
55	1812	966	1.46%	0.78%	
60	3026	1940	2.44%	1.57%	
65	2423	1833	1.96%	1.48%	
70	1441	1812	1.16%	1.46%	
75	1648	1261	1.33%	1.02%	
80	1732	3003	1.40%	2.43%	
85	1306	1311	1.06%	1.06%	
90	1734	2642	1.40%	2.13%	
95	1450	2314	1.17%	1.87%	
100	3201	7882	2.59%	6.37%	
105	924	2386	0.75%	1.93%	
110	1126	3835	0.91%	3.10%	
115	1387	1902	1.12%	1.54%	
120	1935	5453	1.56%	4.41%	
125	941	2464	0.76%	1.99%	
130	657	2841	0.53%	2.30%	
135	219	1269	0.18%	1.03%	
140	701	1342	0.57%	1.08%	
145	185	551	0.15%	0.45%	
150	585	1353	0.47%	1.09%	
155	575	349	0.46%	0.28%	
160	550	506	0.44%	0.41%	
165			0.00%	0.00%	
170			0.00%	0.00%	
175			0.00%	0.00%	
180		316	0.00%	0.26%	
185			0.00%	0.00%	
190			0.00%	0.00%	
195			0.00%	0.00%	
200			0.00%	0.00%	
201+	461	162	0.37%	0.13%	
Total	50781	72992	41.0%	59.0%	
	123773				
	22.6%				

Market Data (2)

VMT (1000)						VMT (1000)				
0	0.0%	0.0%	0.00	0.00		0	0.0%	0.0%	0.00	0.00
5	15.1%	13.5%	0.76	0.67		5	17.5%	17.6%	0.88	0.88
10	36.7%	41.0%	3.67	4.10		10	38.9%	33.2%	3.89	3.32
15	48.2%	45.6%	7.22	6.84		15	43.5%	49.2%	6.53	7.38
	13849	8354	11.65	11.60			5536	8471	11.30	11.58
20	36.7%	30.1%	7.34	6.01		20	17.6%	30.7%	3.53	6.14
25	24.7%	23.8%	6.18	5.94		25	36.0%	26.8%	8.99	6.70
30	26.8%	29.6%	8.05	8.88		30	23.1%	26.0%	6.92	7.80
35	11.8%	16.6%	4.11	5.80		35	23.3%	16.5%	8.16	5.78
	22508	12639	25.68	26.63			8907	8795	27.60	26.42
40	26.5%	29.9%	10.58	11.98		40	25.3%	32.6%	10.12	13.06
45	21.6%	28.0%	9.73	12.59		45	29.1%	17.3%	13.12	7.79
50	33.3%	26.5%	16.64	13.24		50	23.3%	36.2%	11.63	18.12
55	18.6%	15.6%	10.25	8.58		55	22.3%	13.8%	12.26	7.59
	10312	6997	47.21	46.39			8131	6999	47.13	46.56
60	39.0%	33.3%	23.37	20.01		60	35.4%	28.3%	21.26	17.00
65	17.1%	29.6%	11.10	19.22		65	28.4%	26.8%	18.45	17.40
70	23.0%	19.9%	16.11	13.93		70	16.9%	26.5%	11.81	18.53
75	21.0%	17.2%	15.72	12.90		75	19.3%	18.4%	14.48	13.81
	5563	4333	66.30	66.05			8538	6846	66.00	66.75
80	34.8%	32.7%	27.86	26.14		80	27.8%	32.4%	22.27	25.92
85	18.3%	21.6%	15.52	18.39		85	21.0%	14.1%	17.84	12.02
90	32.7%	32.3%	29.39	29.10		90	27.9%	28.5%	25.08	25.65
95	14.3%	13.4%	13.56	12.68		95	23.3%	25.0%	22.14	23.71
	3320	3550	86.32	86.32			6222	9270	87.33	87.30
100	67.9%	61.0%	67.92	61.03		100	48.2%	49.2%	48.22	49.25
105	13.2%	0.0%	13.89	0.00		105	13.9%	14.9%	14.62	15.65
110	18.9%	25.8%	20.74	28.35		110	17.0%	24.0%	18.66	26.36
115	0.0%	13.2%	0.00	15.17		115	20.9%	11.9%	24.03	13.67
	2419	2592	102.55	104.56			6638	16005	105.53	104.92
120	39.9%	100.0%	47.94	120.00		120	51.6%	45.3%	61.89	54.41
125	60.1%	0.0%	75.06	0.00		125	25.1%	20.5%	31.35	25.61
130	0.0%	0.0%	0.00	0.00		130	17.5%	23.6%	22.76	30.71
135	0.0%	0.0%	0.00	0.00		135	5.8%	10.6%	7.88	14.24
	388	329	123.00	120.00			3752	12027	123.88	124.97

Market Data (3)

140	#DIV/0!	100.0%	#DIV/0!	140.00		140	34.3%	37.3%	47.97	52.26
145	#DIV/0!	0.0%	#DIV/0!	0.00		145	9.0%	15.3%	13.11	22.22
150	#DIV/0!	0.0%	#DIV/0!	0.00		150	28.6%	37.6%	42.89	56.45
155	#DIV/0!	0.0%	#DIV/0!	0.00		155	28.1%	9.7%	43.56	15.05
	0	517	#DIV/0!	140.00			2046	3595	147.53	145.99
160	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		160	100.0%	100.0%	160.00	160.00
165	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		165	0.0%	0.0%	0.00	0.00
170	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		170	0.0%	0.0%	0.00	0.00
175	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		175	0.0%	0.0%	0.00	0.00
	0	0	#DIV/0!	167.50			550	506	160.00	160.00
180	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		180	#DIV/0!	100.0%	#DIV/0!	180.00
185	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		185	#DIV/0!	0.0%	#DIV/0!	0.00
190	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		190	#DIV/0!	0.0%	#DIV/0!	0.00
195	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		195	#DIV/0!	0.0%	#DIV/0!	0.00
	0	0	#DIV/0!	187.50			0	316	#DIV/0!	180.00
200	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		200	0.0%	0.0%	0.00	0.00
225	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		225	100.0%	100.0%	225.00	225.00
	0	0	#DIV/0!	#DIV/0!			461	162	225.00	225.00
Total						Total				
TYPE 1						**TYPE 2**				
VMT	Central	Non-Central	Central	Non-Central		VMT	Central	Non-Central	Central	Non-Central
0-19.9	11651	11605	14.18%	8.55%	#####	0-19.9	11301	11582	4.47%	6.84%
20-39.9	25683	26635	23.04%	12.94%	#####	20-39.9	27602	26417	7.20%	7.11%
40-59.9	47205	46388	10.56%	7.16%	#####	40-59.9	47127	46560	6.57%	5.65%
60-79.9	66299	66047	5.70%	4.44%	#####	60-79.9	66002	66748	6.90%	5.53%
80-99.9	86319	86318	3.40%	3.63%	7.03%	80-99.9	87332	87302	5.03%	7.49%
100-119.9	102547	104556	2.48%	2.65%	5.13%	100-119.9	105527	104924	5.36%	12.93%
120-139.9	123003	120000	0.40%	0.34%	0.73%	120-139.9	123881	124969	3.03%	9.72%
140-159.9	147500	140000	0.00%	0.53%	0.53%	140-159.9	147527	145986	1.65%	2.90%
160-179.9	167500	167500	0.00%	0.00%	0.00%	160-179.9	160000	160000	0.44%	0.41%
180-199.9	187500	187500	0.00%	0.00%	0.00%	180-199.9	187500	180000	0.00%	0.26%
200+	212500	212500	0.00%	0.00%	0.00%	200+	225000	225000	0.37%	0.13%
					#####					

Market Data (4)

Class 7 & 8 Vehicle Distribution by Annual VMT and Type 3
Vehicle Age 2 or Less
Ref: 1997 VIUS Runs - Stacy Davis ORNL - 5/19/00

	Vehilces		Percent	
VMT (1000)	Central	Non-Central	Central	Non-Central
0	0	0	0.00%	0.00%
5	992	2415	0.30%	0.74%
10	1668	2540	0.51%	0.78%
15	2253	4249	0.69%	1.30%
20	5372	3213	1.65%	0.98%
25	3705	4804	1.13%	1.47%
30	4236	4181	1.30%	1.28%
35	4565	2671	1.40%	0.82%
40	5572	3484	1.71%	1.07%
45	3993	3862	1.22%	1.18%
50	4782	9041	1.46%	2.77%
55	3047	3080	0.93%	0.94%
60	4099	4511	1.26%	1.38%
65	3120	2385	0.96%	0.73%
70	8200	3590	2.51%	1.10%
75	2998	2473	0.92%	0.76%
80	5837	5536	1.79%	1.70%
85	3746	6443	1.15%	1.97%
90	4599	7105	1.41%	2.18%
95	4050	4488	1.24%	1.37%
100	9632	12363	2.95%	3.79%
105	5394	3439	1.65%	1.05%
110	4371	8494	1.34%	2.60%
115	2009	5211	0.62%	1.60%
120	12702	17135	3.89%	5.25%
125	4001	10150	1.23%	3.11%
130	4358	13665	1.33%	4.18%
135	2412	3467	0.74%	1.06%
140	1899	4071	0.58%	1.25%
145	1205	1632	0.37%	0.50%
150	1094	9778	0.34%	2.99%
155	906	1378	0.28%	0.42%
160	2027	2619	0.62%	0.80%
165	678	1325	0.21%	0.41%
170	831	2235	0.25%	0.68%
175	689	1478	0.21%	0.45%
180	949	2309	0.29%	0.71%
185	516	601	0.16%	0.18%
190		958	0.00%	0.29%
195	1340		0.41%	0.00%
200	1639	1966	0.50%	0.60%
201+	1560	5171	0.48%	1.58%
Total	137046	189516	42.0%	58.0%
	326562			
	59.6%			

Class 3-6 Vehicle Distribution by Annual VMT and Primary Refueling
Vehicle Age 2 or Less
Ref: 1997 VIUS Runs - Stacy Davis ORNL - 5/19/00

	Vehilces		Percent	
VMT (1000)	Central	Non-Central	Central	Non-Central
0	11054	18352	2.96%	4.92%
5	16924	40557	4.53%	10.87%
10	19827	36129	5.31%	9.68%
15	20225	30780	5.42%	8.25%
20	19598	19704	5.25%	5.28%
25	17261	29072	4.62%	7.79%
30	9028	8932	2.42%	2.39%
35	7313	11853	1.96%	3.18%
40	5152	8780	1.38%	2.35%
45	3318	7572	0.89%	2.03%
50	1790	2504	0.48%	0.67%
55	2611	2031	0.70%	0.54%
60	2827		0.76%	0.00%
65	2390	1118	0.64%	0.30%
70	904		0.24%	0.00%
75	3241	2078	0.87%	0.56%
80			0.00%	0.00%
85	462		0.12%	0.00%
90			0.00%	0.00%
95	849	903	0.23%	0.24%
100	3841	2963	1.03%	0.79%
100+	980	300	0.26%	0.08%
Total	149595	223628	40.08%	59.92%
	373223			

Market Data (5)

VMT (1000)						VMT (1000)				
0	0.0%	0.0%	0.00	0.00		0	16.2%	14.6%	0.00	0.00
5	20.2%	26.2%	1.01	1.31		5	24.9%	32.2%	1.24	1.61
10	34.0%	27.6%	3.40	2.76		10	29.1%	28.7%	2.91	2.87
15	45.9%	46.2%	6.88	6.92		15	29.7%	24.5%	4.46	3.67
	4913	9204	11.28	11.00			68030	125818	8.62	8.15
20	30.0%	21.6%	6.01	4.32		20	36.8%	28.3%	7.37	5.67
25	20.7%	32.3%	5.18	8.08		25	32.4%	41.8%	8.11	10.45
30	23.7%	28.1%	7.11	8.44		30	17.0%	12.8%	5.09	3.85
35	25.5%	18.0%	8.94	6.29		35	13.7%	17.0%	4.81	5.96
	17878	14869	27.24	27.12			53200	69561	25.38	25.93
40	32.0%	17.9%	12.81	7.16		40	40.0%	42.0%	16.01	16.81
45	23.0%	19.8%	10.33	8.93		45	25.8%	36.3%	11.60	16.31
50	27.5%	46.4%	13.75	23.22		50	13.9%	12.0%	6.95	5.99
55	17.5%	15.8%	9.63	8.70		55	20.3%	9.7%	11.16	5.35
	17394	19467	46.52	48.01			12871	20887	45.72	44.47
60	22.3%	34.8%	13.35	20.89		60	30.2%	0.0%	18.12	0.00
65	16.9%	18.4%	11.01	11.96		65	25.5%	35.0%	16.59	22.74
70	44.5%	27.7%	31.17	19.39		70	9.7%	0.0%	6.76	0.00
75	16.3%	19.1%	12.21	14.31		75	34.6%	65.0%	25.96	48.76
	18417	12959	67.74	66.55			9362	3196	67.43	71.50
80	32.0%	23.5%	25.61	18.79		80	0.0%	0.0%	0.00	0.00
85	20.5%	27.3%	17.46	23.23		85	35.2%	0.0%	29.95	0.00
90	25.2%	30.1%	22.70	27.13		90	0.0%	0.0%	0.00	0.00
95	22.2%	19.0%	21.10	18.09		95	64.8%	100.0%	61.52	95.00
	18232	23572	86.88	87.24			1311	903	91.48	95.00
100	45.0%	41.9%	45.00	41.90		100	79.7%	90.8%	79.67	90.81
105	25.2%	11.7%	26.46	12.24		105	20.3%	9.2%	21.34	9.65
110	20.4%	28.8%	22.46	31.67		110	0.0%	0.0%	0.00	0.00
115	9.4%	17.7%	10.79	20.31		115	0.0%	0.0%	0.00	0.00
	21406	29507	104.71	106.11			4821	3263	101.02	100.46
120	54.1%	38.6%	64.94	46.29		120	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
125	17.0%	22.9%	21.31	28.56		125	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
130	18.6%	30.8%	24.14	39.99		130	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
135	10.3%	7.8%	13.87	10.54		135	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	23473	44417	124.25	125.39			0	0	127.50	127.50

Market Data (6)

140	37.2%	24.1%	52.09	33.81		140	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
145	23.6%	9.7%	34.23	14.04		145	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
150	21.4%	58.0%	32.15	87.00		150	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
155	17.8%	8.2%	27.51	12.67		155	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
	5104	16859	145.99	147.51			0	0	147.50	147.50		
160	48.0%	34.2%	76.76	54.73		160	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
165	16.0%	17.3%	26.48	28.55		165	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
170	19.7%	29.2%	33.44	49.62		170	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
175	16.3%	19.3%	28.54	33.78		175	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
	4225	7657	165.22	166.68			0	0	167.50	167.50		
180	33.8%	59.7%	60.90	107.45		180	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
185	18.4%	15.5%	34.03	28.74		185	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
190	0.0%	24.8%	0.00	47.06		190	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
195	47.8%	0.0%	93.16	0.00		195	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
	2805	3868	188.09	183.25			0	0	187.50	187.50		
200	51.2%	27.5%	102.47	55.09		200	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
225	48.8%	72.5%	109.72	163.02		225	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
	3199	7137	212.19	218.11			0	0	212.50	212.50		
Total						Total						
TYPE 3						CLS 3-6						
VMT	Central	Non-Central	Central	Non-Central		VMT	Central	Non-Central	Central	Non-Central		
0-19.9	11283	10996	1.50%	2.82%	4.32%	0-19.9	8618	8153	18.23%	33.71%	51.94%	
20-39.9	27236	27122	5.47%	4.55%	10.03%	20-39.9	25381	25930	14.25%	18.64%	32.89%	
40-59.9	46525	48009	5.33%	5.96%	11.29%	40-59.9	45723	44470	3.45%	5.60%	9.04%	
60-79.9	67741	66553	5.64%	3.97%	9.61%	60-79.9	67435	71502	2.51%	0.86%	3.36%	
80-99.9	86882	87237	5.58%	7.22%	12.80%	80-99.9	91476	95000	0.35%	0.24%	0.59%	
100-119.9	104710	106110	6.55%	9.04%	15.59%	100-119.9	101016	100460	1.29%	0.87%	2.17%	
120-139.9	124250	125390	7.19%	13.60%	20.79%	120-139.9	127500	127500	0.00%	0.00%	0.00%	
140-159.9	145986	147510	1.56%	5.16%	6.73%	140-159.9	147500	147500	0.00%	0.00%	0.00%	
160-179.9	165215	166680	1.29%	2.34%	3.64%	160-179.9	167500	167500	0.00%	0.00%	0.00%	
180-199.9	188086	183254	0.86%	1.18%	2.04%	180-199.9	187500	187500	0.00%	0.00%	0.00%	
200+	212191	218113	0.98%	2.19%	3.17%	200+	212500	212500	0.00%	0.00%	0.00%	
					100.00%						100.00%	

Type 1 (1)

TYPE 1:	Multi-stop or Step Van; Beverage; Utility; Winch or Crane; Wrecker; Pole, Logging,											
	Pipe; Service; Garbage; Dump; Cement Mixer; Yard Tractor and Other											
	Please enter one of the following alternative fuel types: LPG, CNG, Electricity, Ethanol, Gasoline											
	Fuel Type	**Ethanol**										
	Discount Rate	**10.0%**										
	Annual VMT	212500										
	Fuel Efficiency Escalation Factor:	1.00										
	Baseline	ADV. Diesel	ADV. Diesel	Ethanol	Ethanol	Ethanol	**ANNUAL DOLLAR SAVINGS**		**NPV of Advanced Diesel Savings**			
	Fuel Efficiency	Efficiency	Adjusted	Efficiency	Adjusted	Fuel	**OF TECHNOLOGY**		Payback Periods (years)			
Year	MPG	Improvement	MPG	Improvement	MPG	Cost	ADV. Diesel	Alt. Fuel	1	2	3	4
1995	4.50	0.01	0.05	1.00	4.50	2.37	-5206692.09	-59323.82	-4733356.45	-4915876.92	-4957087.20	-4973494.56
1996	4.52	0.21	0.94	1.00	4.52	2.36	-220849.77	-52889.05	-200772.52	-246103.83	-264151.92	-270541.73
1997	6.58	0.41	2.67	1.00	6.58	2.36	-54850.89	-38725.13	-49864.44	-69717.34	-76746.14	-76746.14
1998	6.58	0.60	3.97	1.00	6.58	2.35	-24022.01	-39253.23	-21838.19	-29569.87	-29569.87	-27035.85
1999	6.58	0.80	5.28	1.00	6.58	2.34	-9355.33	-37676.11	-8504.84	-8504.84	-5717.42	-1300.05
2000	6.58	1.00	6.58	1.00	6.58	1.80	0.00	-9727.36	0.00	3066.16	7925.27	13713.81
2001	6.58	1.09	7.15	1.00	6.58	1.76	3710.05	-10117.88	3372.78	8717.80	15085.19	22340.79
2002	6.58	1.17	7.71	1.00	6.58	1.73	6467.47	-11736.40	5879.52	12883.66	20864.82	29353.17
2003	6.58	1.26	8.28	1.00	6.58	1.69	8475.01	-13318.99	7704.55	16483.83	25821.01	34494.78
2004	6.58	1.34	8.84	1.00	6.58	1.66	10622.93	-11976.72	9657.21	19928.10	29469.26	38548.62
2005	6.58	1.43	9.41	1.00	6.58	1.62	12427.79	-10988.01	11297.99	21793.26	31780.56	40942.51
2006	6.58	1.43	9.41	1.07	7.04	1.58	12699.27	-5575.96	11544.79	22530.82	32608.97	41817.34
2007	6.58	1.43	9.41	1.14	7.50	1.55	13293.10	354.29	12084.63	23170.60	33299.80	42627.51
2008	6.58	1.43	9.41	1.21	7.96	1.51	13414.02	4254.21	12194.56	23336.68	33597.17	42972.05
2009	6.58	1.43	9.41	1.28	8.42	1.48	13481.97	7595.40	12256.33	23542.87	33855.24	43175.40
2010	6.58	1.43	9.41	1.35	8.88	1.44	13656.71	10968.66	12415.19	23758.80	34010.97	43336.35
2011	6.58	1.43	9.41	1.45	9.55	1.43	13725.77	13840.65	12477.97	23755.36	34013.28	43272.05
2012	6.58	1.43	9.41	1.55	10.23	1.42	13645.64	15869.61	12405.13	23688.84	33873.48	43159.03
2013	6.58	1.43	9.41	1.66	10.90	1.41	13653.29	17907.72	12412.08	23615.19	33829.29	43083.43
2014	6.58	1.43	9.41	1.76	11.57	1.40	13555.76	19362.47	12323.41	23558.93	33738.48	42959.39
2015	6.58	1.43	9.41	1.86	12.24	1.39	13594.98	21076.89	12359.07	23556.58	33699.58	42925.52
2016	6.58	1.43	9.41	1.86	12.24	1.38	13548.98	21097.56	12317.26	23474.56	33623.10	42799.37
2017	6.58	1.43	9.41	1.86	12.24	1.37	13500.33	21109.41	12273.03	23436.43	33530.33	42714.71
2018	6.58	1.43	9.41	1.86	12.24	1.36	13507.71	21307.57	12279.74	23383.03	33485.84	42788.13
2019	6.58	1.43	9.41	1.86	12.24	1.35	13434.98	21239.32	12213.62	23326.72	33559.23	42979.43
2020	6.58	1.43	9.41	1.86	12.24	1.34	13446.85	21452.43	12224.41	23480.18	33842.40	43380.50
2021	6.58	1.43	9.41	1.86	12.24	1.34	13619.48	22026.52	12381.35	23779.79	34271.70	43927.72
2022	6.58	1.43	9.41	1.86	12.24	1.34	13792.11	22600.62	12538.28	24079.39	34701.01	44474.93
2023	6.58	1.43	9.41	1.86	12.24	1.34	13964.74	23174.71	12695.22	24379.00	35130.31	45034.56
2024	6.58	1.43	9.41	1.86	12.24	1.34	14137.37	23748.81	12852.16	24678.60	35573.27	45607.83
2025	6.58	1.43	9.41	1.86	12.24	1.34	14310.00	24322.90	13009.09	24993.23	36031.24	46196.12
2026	6.58	1.43	9.41	1.86	12.24	1.34	14500.80	24957.43	13182.55	25324.37	36505.73	46800.93
2027	6.58	1.43	9.41	1.86	12.24	1.34	14691.60	25591.95	13356.00	25655.51	36980.23	47405.74
2028	6.58	1.43	9.41	1.86	12.24	1.34	14882.40	26226.47	13529.46	25986.65	37454.72	48010.55
2029	6.58	1.43	9.41	1.86	12.24	1.34	15073.20	26860.99	13702.91	26317.79	37929.21	48615.37
2030	6.58	1.43	9.41	1.86	12.24	1.34	15264.00	27495.51	13876.37	26648.93	38403.70	49220.18
2031	6.58	1.43	9.41	1.86	12.24	1.34	15454.80	28130.03				
2032	6.58	1.43	9.41	1.86	12.24	1.34	15645.60	28764.55				

Type 1 (2)

NPV of Alternative Fuel Savings				Cost Effectiveness Factor Adv. Diesel					Cost Effectiveness Factor Alt. Fuels				
Payback Periods (years)				Payback Periods (years)				Tech	Payback Periods (years)				
1	2	3	4	1	2	3	4	Cost	1	2	3	4	
-53930.74	-97640.70	-126735.46	-153545.95	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.00
-48080.95	-80085.19	-109576.72	-135310.01	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-35204.67	-67645.35	-95951.97	-102595.89	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-35684.75	-66822.03	-74130.34	-81040.99	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-34251.01	-42290.15	-49891.87	-57907.99	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-8843.06	-17204.94	-26022.68	-35119.72	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-9198.07	-18897.58	-28904.33	-37084.59	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-10669.46	-21676.89	-30675.17	-38180.13	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-12108.17	-22006.29	-30261.74	-34070.20	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-10887.93	-19968.93	-24158.23	-23916.24	0.00	0.00	-0.05	-0.38	100000	0.00	0.00	0.00	0.00	100.0
-9989.10	-14597.33	-14331.15	-11425.46	-0.13	-1.18	-2.18	-3.09	100000	0.00	0.00	0.00	0.00	98.6
-5069.05	-4776.25	-1580.00	3607.76	-0.22	-1.37	-2.43	-3.40	100000	0.00	0.00	0.00	0.00	97.6
322.08	3837.96	9544.49	17036.24	-0.34	-1.57	-2.70	-3.74	100000	0.00	0.00	0.00	0.00	95.9
3867.46	10144.65	18385.57	27838.92	-0.43	-1.75	-2.95	-4.06	100000	0.00	0.00	0.00	0.00	94.6
6904.91	15969.92	26368.60	37207.76	-0.53	-1.94	-3.23	-4.40	100000	0.00	0.00	0.00	0.00	93.0
9971.51	21410.07	33333.14	45564.35	-0.66	-2.17	-3.53	-4.78	100000	0.00	0.00	0.00	0.00	90.7
12582.41	25697.79	39152.13	52376.96	-0.78	-2.39	-3.86	-5.18	100000	0.00	0.00	0.00	0.00	88.1
14426.91	29226.69	43774.00	58169.80	-0.91	-2.64	-4.21	-5.64	100000	0.00	0.00	0.00	0.00	85.2
16279.75	32281.79	48117.17	62527.09	-1.07	-2.94	-4.64	-6.18	100000	0.00	0.00	0.00	0.00	80.9
17602.25	35021.16	50872.08	65290.08	-1.24	-3.28	-5.13	-6.81	100000	0.00	0.00	0.00	0.00	75.4
19160.81	36596.81	52456.62	67009.97	-1.47	-3.71	-5.74	-7.59	100000	0.00	0.00	0.00	0.00	66.4
19179.60	36625.39	52634.08	67140.82	-1.46	-3.69	-5.72	-7.56	100000	0.00	0.00	0.00	0.00	66.8
19190.37	36799.93	52757.34	67409.64	-1.45	-3.69	-5.71	-7.54	100000	0.00	0.00	0.00	0.00	67.2
19370.52	36923.67	53041.20	68085.61	-1.46	-3.68	-5.70	-7.56	100000	0.00	0.00	0.00	0.00	67.1
19308.47	37037.75	53586.60	69023.13	-1.44	-3.67	-5.71	-7.60	100000	0.00	0.00	0.00	0.00	67.7
19502.21	37705.94	54686.12	70514.76	-1.44	-3.70	-5.77	-7.68	100000	0.00	0.00	0.00	0.00	67.6
20024.11	38702.31	56113.81	72334.57	-1.69	-4.17	-6.45	-8.55	100000	0.00	0.00	0.00	0.00	55.7
20546.02	39698.67	57541.50	74154.38	-1.99	-4.73	-7.26	-9.59	100000	0.00	0.00	0.00	0.00	37.2
21067.92	40695.04	58969.19	76015.45	-2.34	-5.42	-8.24	-10.85	100000	0.00	0.00	0.00	0.00	6.1
21589.83	41691.40	60442.28	77921.93	-2.78	-6.26	-9.46	-12.41	100000	0.00	0.00	0.00	0.00	-51.2
22111.73	42737.70	61965.31	79878.34	-3.34	-7.33	-11.01	-14.40	100000	0.00	0.00	0.00	0.00	-171.2
22688.57	43838.94	63543.27	81889.69	-3.39	-7.44	-11.17	-14.60	100000	0.00	0.00	0.00	0.00	-187.9
23265.41	44940.17	65121.23	83901.03	-3.45	-7.55	-11.33	-14.80	100000	0.00	0.00	0.00	0.00	-205.6
23842.24	46041.41	66699.19	85912.38	-3.51	-7.66	-11.48	-15.00	100000	0.00	0.00	0.00	0.00	-224.4
24419.08	47142.64	68277.15	87923.73	-3.57	-7.77	-11.64	-15.21	100000	0.00	0.00	0.00	0.00	-244.3
24995.92	48243.88	69855.11	89935.07	-3.63	-7.88	-11.80	-15.41	100000	0.00	0.00	0.00	0.00	-265.4

Type 1 (3)

Tech. Adoption Factor Adv. Diesel								Tech. Adoption Factor Alt. Fuels						
Payback Periods (years)								Payback Periods (years)						
1		2		3		4		1		2		3		4
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	99.5	99.5	95.4	95.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
98.6	77.5	77.5	21.7	21.7	-110.7	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
97.6	70.6	70.6	-3.9	0.0	-190.2	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
95.9	61.7	61.7	-38.8	0.0	-309.5	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
94.6	52.7	52.7	-81.6	0.0	-467.2	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
93.0	40.2	40.2	-143.3	0.0	-702.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
90.7	22.6	22.6	-232.9	0.0	-1078.9	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
88.1	0.5	0.5	-364.2	0.0	-1669.9	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
85.2	-30.8	0.0	-564.4	0.0	-2704.2	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
80.9	-78.4	0.0	-923.6	0.0	-4722.7	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
75.4	-156.7	0.0	-1587.4	0.0	-8966.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
66.4	-299.1	0.0	-3000.4	0.0	-19576.5	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
66.8	-292.4	0.0	-2953.2	0.0	-19086.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
67.2	-289.4	0.0	-2896.9	0.0	-18763.7	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
67.1	-285.1	0.0	-2870.2	0.0	-19042.9	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
67.7	-280.7	0.0	-2914.3	0.0	-19789.9	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
67.6	-292.9	0.0	-3090.5	0.0	-21452.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
55.7	-536.8	0.0	-6219.4	0.0	-51531.9	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
37.2	-1026.6	0.0	-14143.1	0.0	-145961.9	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6.1	-2138.7	0.0	-37968.5	0.0	-515849.7	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-5113.9	0.0	-128599.3	0.0	-2462305.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-15160.2	0.0	-604899.5	0.0	-17917471.4	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-16942.3	0.0	-708572.8	0.0	-21919592.6	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-18932.3	0.0	-830011.3	0.0	-26815638.8	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-21154.6	0.0	-972259.3	0.0	-32805279.6	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-23636.3	0.0	-1138882.6	0.0	-40132783.3	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-26407.5	0.0	-1334058.1	0.0	-49096978.8	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Type 1 (4)

Market Penetration Advanced Diesel						**Market Penetration Alternative Fuels**					
16.4%	**61.7%**	**15.5%**	**6.4%**			**16.4%**	**61.7%**	**15.5%**	**6.4%**		
Payback Periods (years)				Final	Final	Payback Periods (years)				Final	Final
1	2	3	4	Step 1	Step 2	1	2	3	4	Step 1	Step 2
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	1.1%	2.2%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.3%	12.0%	78.2%	100.0%	26.1%	26.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.6%	18.0%	100.0%	100.0%	33.3%	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.0%	27.4%	100.0%	100.0%	39.1%	39.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.5%	38.4%	100.0%	100.0%	46.0%	46.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.0%	54.8%	100.0%	100.0%	56.2%	56.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.9%	77.2%	100.0%	100.0%	70.2%	70.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.1%	99.6%	100.0%	100.0%	84.2%	84.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.7%	100.0%	100.0%	100.0%	84.7%	84.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9.5%	100.0%	100.0%	100.0%	85.2%	85.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13.7%	100.0%	100.0%	100.0%	85.8%	85.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22.2%	100.0%	100.0%	100.0%	87.2%	87.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21.8%	100.0%	100.0%	100.0%	87.2%	87.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21.4%	100.0%	100.0%	100.0%	87.1%	87.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21.5%	100.0%	100.0%	100.0%	87.1%	87.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20.9%	100.0%	100.0%	100.0%	87.0%	87.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21.0%	100.0%	100.0%	100.0%	87.0%	87.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
34.6%	100.0%	100.0%	100.0%	89.3%	89.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
58.8%	100.0%	100.0%	100.0%	93.2%	93.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
94.7%	100.0%	100.0%	100.0%	99.1%	99.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.6%	100.0%	100.0%	100.0%	99.9%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Type 1 (5)

Class 7-8 Type 1 Market Penetration by Average Annual VMT - Centrally Refueled Advanced Diesels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%
0.0%	0.0%	0.0%	0.1%	0.5%	1.6%	3.1%	6.7%	11.8%	17.3%	26.1%	0.1%
0.0%	0.0%	0.0%	0.3%	0.7%	2.1%	4.2%	9.4%	15.7%	22.5%	33.3%	0.1%
0.0%	0.0%	0.1%	0.4%	1.6%	2.8%	5.9%	13.1%	20.1%	29.2%	39.1%	0.2%
0.0%	0.0%	0.1%	0.5%	1.9%	3.6%	7.9%	16.5%	24.9%	34.6%	46.0%	0.2%
0.0%	0.0%	0.1%	0.6%	2.4%	4.7%	10.6%	20.5%	31.2%	39.9%	56.2%	0.3%
0.0%	0.0%	0.3%	0.7%	3.1%	6.4%	14.3%	26.0%	36.7%	48.3%	70.2%	0.4%
0.0%	0.0%	0.3%	1.6%	4.1%	8.7%	18.0%	32.6%	42.9%	59.2%	84.2%	0.6%
0.0%	0.0%	0.4%	2.0%	5.5%	12.0%	22.6%	37.7%	52.3%	73.2%	84.7%	0.7%
0.0%	0.0%	0.5%	2.6%	7.9%	16.1%	29.3%	45.4%	66.0%	84.5%	85.2%	1.0%
0.0%	0.0%	0.6%	3.6%	11.5%	21.2%	36.1%	58.0%	83.2%	84.9%	85.8%	1.3%
0.0%	0.1%	1.5%	5.4%	16.6%	29.0%	45.2%	76.7%	84.8%	85.6%	87.2%	1.9%
0.0%	0.1%	1.5%	5.3%	16.5%	28.7%	44.7%	76.0%	84.8%	85.5%	87.2%	1.9%
0.0%	0.1%	1.5%	5.3%	16.2%	28.5%	44.5%	75.7%	84.8%	85.5%	87.1%	1.9%
0.0%	0.1%	1.5%	5.3%	16.1%	28.4%	44.3%	75.2%	84.8%	85.5%	87.1%	1.9%
0.0%	0.1%	1.5%	5.3%	16.2%	28.4%	44.0%	74.7%	84.7%	85.5%	87.0%	1.9%
0.0%	0.1%	1.6%	5.5%	16.5%	29.1%	44.8%	76.0%	84.7%	85.5%	87.0%	2.0%
0.0%	0.1%	2.1%	8.5%	22.6%	36.6%	59.1%	84.6%	85.3%	86.6%	89.3%	2.6%
0.0%	0.1%	3.1%	13.3%	31.7%	47.0%	79.7%	85.2%	86.4%	88.7%	93.2%	3.7%
0.0%	0.4%	4.9%	19.3%	40.3%	65.5%	84.8%	86.2%	88.7%	92.7%	99.1%	5.0%
0.0%	0.5%	8.5%	29.0%	56.5%	84.5%	85.6%	88.6%	93.1%	99.0%	99.9%	7.0%
0.0%	1.4%	15.2%	40.0%	83.6%	85.2%	87.5%	93.6%	99.9%	99.9%	#####	9.5%
0.0%	1.5%	15.8%	41.3%	84.4%	85.3%	87.8%	94.3%	99.9%	99.9%	#####	9.7%
0.0%	1.5%	16.3%	42.7%	84.5%	85.4%	88.1%	94.9%	99.9%	100.0%	#####	9.8%
0.0%	1.6%	17.1%	44.1%	84.5%	85.6%	88.4%	95.6%	99.9%	100.0%	#####	10.0%
0.0%	1.6%	17.8%	45.6%	84.6%	85.7%	88.8%	96.3%	99.9%	100.0%	#####	10.2%
0.0%	1.7%	18.5%	47.2%	84.6%	85.8%	89.1%	97.0%	99.9%	100.0%	#####	10.4%

Type 1 (6)

Class 7-8 Type 1 Market Penetration by Average Annual VMT - Centrally Refueled Alternative Fuels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Type 1 (7)

Class 7-8 Type 1 Market Penetration by Average Annual VMT - Non-Centrally Refueled Advanced Diesels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%
0.0%	0.0%	0.0%	0.1%	0.5%	1.8%	2.8%	5.3%	11.8%	17.3%	26.1%	0.1%
0.0%	0.0%	0.0%	0.3%	0.7%	2.3%	3.8%	7.5%	15.7%	22.5%	33.3%	0.2%
0.0%	0.0%	0.1%	0.4%	1.6%	3.0%	5.3%	10.5%	20.1%	29.2%	39.1%	0.2%
0.0%	0.0%	0.1%	0.5%	1.9%	3.9%	7.0%	13.9%	24.9%	34.6%	46.0%	0.3%
0.0%	0.0%	0.1%	0.6%	2.4%	5.1%	9.5%	17.4%	31.2%	39.9%	56.2%	0.4%
0.0%	0.0%	0.1%	0.7%	3.1%	7.0%	12.9%	21.8%	36.7%	48.3%	70.2%	0.5%
0.0%	0.0%	0.3%	1.6%	4.1%	9.5%	16.7%	27.5%	42.9%	59.2%	84.2%	0.7%
0.0%	0.0%	0.4%	2.0%	5.5%	13.0%	20.8%	34.0%	52.3%	73.2%	84.7%	0.9%
0.0%	0.0%	0.5%	2.6%	7.9%	17.3%	27.0%	39.8%	66.0%	84.5%	85.2%	1.2%
0.0%	0.0%	0.6%	3.6%	11.5%	22.6%	34.5%	49.7%	83.2%	84.9%	85.8%	1.6%
0.0%	0.1%	1.5%	5.3%	16.6%	30.9%	42.4%	66.1%	84.8%	85.6%	87.2%	2.3%
0.0%	0.1%	1.4%	5.2%	16.5%	30.6%	42.0%	65.4%	84.8%	85.5%	87.2%	2.2%
0.0%	0.1%	1.4%	5.2%	16.2%	30.4%	41.8%	65.0%	84.8%	85.5%	87.1%	2.2%
0.0%	0.1%	1.4%	5.2%	16.1%	30.2%	41.6%	64.6%	84.8%	85.5%	87.1%	2.2%
0.0%	0.1%	1.4%	5.2%	16.2%	30.2%	41.3%	64.1%	84.7%	85.5%	87.0%	2.2%
0.0%	0.1%	1.5%	5.4%	16.5%	31.0%	42.0%	65.4%	84.7%	85.5%	87.0%	2.3%
0.0%	0.1%	2.0%	8.3%	22.6%	38.1%	54.8%	84.4%	85.3%	86.6%	89.3%	3.0%
0.0%	0.3%	2.9%	13.1%	31.7%	49.6%	74.6%	84.8%	86.4%	88.7%	93.2%	4.0%
0.0%	0.4%	4.5%	19.1%	40.3%	69.4%	84.7%	85.7%	88.7%	92.7%	99.1%	5.3%
0.0%	0.6%	7.8%	28.7%	56.5%	84.6%	85.4%	87.4%	93.1%	99.0%	99.9%	7.0%
0.0%	1.6%	14.3%	39.7%	83.6%	85.4%	87.1%	91.3%	99.9%	99.9%	100.0%	9.1%
0.0%	1.6%	15.0%	40.9%	84.4%	85.5%	87.3%	91.9%	99.9%	99.9%	100.0%	9.2%
0.0%	1.7%	15.6%	42.2%	84.5%	85.6%	87.6%	92.4%	99.9%	100.0%	100.0%	9.3%
0.0%	1.8%	16.1%	43.6%	84.5%	85.7%	87.9%	93.0%	99.9%	100.0%	100.0%	9.5%
0.0%	1.8%	16.7%	45.1%	84.6%	85.9%	88.1%	93.6%	99.9%	100.0%	100.0%	9.6%
0.0%	1.9%	17.5%	46.7%	84.6%	86.0%	88.4%	94.2%	99.9%	100.0%	100.0%	9.7%

Type 2 (1)

TYPE 2: Platform with devices; Low-boy platform; Basic platform; Livestock; Automobile Transport; Oilfield; Grain; Tank truck for liquids or gases; Tank truck for dry bulk

Please enter one of the following alternative fuel types: LPG, CNG, Electricity (=Hybrid), Ethanol, Gasoline

Fuel Type	**Ethanol**
Discount Rate	**10.0%**
Annual VMT	225000
Fuel Efficiency Escalation Factor:	1.00

Year	Baseline Fuel Efficiency MPG	ADV. Diesel Efficiency Improvement	ADV. Diesel Adjusted MPG	Ethanol Efficiency Improvement	Ethanol Adjusted MPG	Ethanol Fuel Cost	**ANNUAL DOLLAR SAVINGS OF TECHNOLOGY** ADV. Diesel	Alt. Fuel	**NPV of Advanced Diesel Savings** Payback Periods (years) 1	2	3	4
1995	6.10	0.01	0.06	1.00	6.10	2.37	-4066943.68	-46337.79	-3697221.53	-3840500.98	-3882785.87	-3899621.07
1996	6.10	0.21	1.27	1.00	6.10	2.36	-173368.13	-41518.16	-157607.39	-204120.78	-222639.50	-229195.94
1997	6.79	0.41	2.76	1.00	6.79	2.36	-56281.20	-39734.95	-51164.73	-71535.32	-78747.40	-78747.40
1998	6.79	0.60	4.10	1.00	6.79	2.35	-24648.42	-40276.81	-22407.65	-30340.94	-30340.94	-27740.85
1999	6.79	0.80	5.45	1.00	6.79	2.34	-9599.28	-38658.57	-8726.62	-8726.62	-5866.51	-1333.95
2000	6.79	1.00	6.79	1.00	6.79	1.80	0.00	-9981.02	0.00	3146.11	8131.93	14071.42
2001	6.79	1.09	7.37	1.00	6.79	1.76	3806.80	-10381.72	3460.73	8945.12	15478.56	22923.36
2002	6.79	1.17	7.96	1.00	6.79	1.73	6636.12	-12042.45	6032.84	13219.62	21408.90	30118.59
2003	6.79	1.26	8.54	1.00	6.79	1.69	8696.00	-13666.30	7905.46	16913.67	26494.33	35394.28
2004	6.79	1.34	9.13	1.00	6.79	1.66	10899.93	-12289.03	9909.03	20447.76	30237.71	39553.83
2005	6.79	1.43	9.71	1.00	6.79	1.62	12751.86	-11274.54	11592.60	22361.55	32609.28	42010.14
2006	6.79	1.43	9.71	1.07	7.27	1.58	13030.42	-5721.36	11845.84	23118.35	33459.30	42907.78
2007	6.79	1.43	9.71	1.14	7.74	1.55	13639.73	363.53	12399.76	23774.80	34168.14	43739.08
2008	6.79	1.43	9.71	1.21	8.22	1.51	13763.81	4365.14	12512.55	23945.22	34473.26	44092.61
2009	6.79	1.43	9.71	1.28	8.69	1.48	13833.53	7793.46	12575.93	24156.78	34738.06	44301.26
2010	6.79	1.43	9.71	1.35	9.17	1.44	14012.82	11254.69	12738.93	24378.34	34897.85	44466.41
2011	6.79	1.43	9.71	1.45	9.86	1.43	14083.69	14201.57	12803.35	24374.82	34900.23	44400.43
2012	6.79	1.43	9.71	1.55	10.55	1.42	14001.47	16283.43	12728.61	24306.56	34756.78	44284.46
2013	6.79	1.43	9.71	1.66	11.24	1.41	14009.32	18374.69	12735.75	24230.99	34711.44	44206.89
2014	6.79	1.43	9.71	1.76	11.94	1.40	13909.24	19867.38	12644.77	24173.26	34618.26	44079.62
2015	6.79	1.43	9.71	1.86	12.63	1.39	13949.48	21626.50	12681.35	24170.85	34578.34	44044.87
2016	6.79	1.43	9.71	1.86	12.63	1.38	13902.29	21647.71	12638.45	24086.69	34499.87	43915.43
2017	6.79	1.43	9.71	1.86	12.63	1.37	13852.37	21659.86	12593.07	24047.57	34404.68	43828.55
2018	6.79	1.43	9.71	1.86	12.63	1.36	13859.94	21863.19	12599.95	23992.77	34359.03	43903.89
2019	6.79	1.43	9.71	1.86	12.63	1.35	13785.31	21793.16	12532.10	23934.99	34434.34	44100.18
2020	6.79	1.43	9.71	1.86	12.63	1.34	13797.50	22011.83	12543.18	24092.46	34724.88	44511.71
2021	6.79	1.43	9.71	1.86	12.63	1.34	13974.63	22600.90	12704.21	24399.88	35165.38	45073.19
2022	6.79	1.43	9.71	1.86	12.63	1.34	14151.76	23189.96	12865.24	24707.30	35605.89	45634.68
2023	6.79	1.43	9.71	1.86	12.63	1.34	14328.89	23779.03	13026.27	25014.71	36046.39	46208.90
2024	6.79	1.43	9.71	1.86	12.63	1.34	14506.02	24368.09	13187.29	25322.13	36500.89	46797.12
2025	6.79	1.43	9.71	1.86	12.63	1.34	14683.15	24957.16	13348.32	25644.96	36970.81	47400.75
2026	6.79	1.43	9.71	1.86	12.63	1.34	14878.93	25608.23	13526.30	25984.73	37457.67	48021.33
2027	6.79	1.43	9.71	1.86	12.63	1.34	15074.71	26259.29	13704.28	26324.51	37944.54	48641.92
2028	6.79	1.43	9.71	1.86	12.63	1.34	15270.48	26910.36	13882.26	26664.29	38431.40	49262.50
2029	6.79	1.43	9.71	1.86	12.63	1.34	15466.26	27561.43	14060.23	27004.06	38918.27	49883.08
2030	6.79	1.43	9.71	1.86	12.63	1.34	15662.03	28212.49	14238.21	27343.84	39405.13	50503.66
2031	6.79	1.43	9.71	1.86	12.63	1.34	15857.81	28863.56				
2032	6.79	1.43	9.71	1.86	12.63	1.34	16053.58	29514.63				
2033	6.79	1.43	9.71	1.86	12.63	1.34	16249.36	30165.69				
2034	6.79	1.43	9.71	1.86	12.63	1.34	16445.13	30816.76				
2035	6.79	1.43	9.71	1.86	12.63	1.34	16640.91	31467.83				

Type 2 (2)

NPV of Alternative Fuel Savings				Cost Effectiveness Factor Adv. Diesel					Cost Effectiveness Factor Alt. Fuels				
Payback Periods (years)				Payback Periods (years)				Tech Cost	Payback Periods (years)				
1	2	3	4	1	2	3	4		1	2	3	4	
-42125.27	-76437.79	-106291.24	-133800.85	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.00
-37743.78	-70582.58	-100843.14	-127247.46	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-36122.68	-69409.30	-98454.05	-105271.22	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-36615.28	-68564.51	-76063.40	-83154.25	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-35144.15	-43392.93	-51192.87	-59418.02	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-9073.65	-17653.59	-26701.25	-36035.52	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-9437.93	-19390.36	-29658.05	-38051.63	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-10947.68	-22242.14	-31475.07	-39175.73	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-12423.91	-22580.13	-31050.86	-34958.62	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-11171.85	-20489.64	-24788.19	-24539.89	0.00	0.00	-0.08	-0.41	100000	0.00	0.00	0.00	0.00	100.0
-10249.58	-14977.98	-14704.85	-11723.40	-0.16	-1.24	-2.26	-3.20	100000	0.00	0.00	0.00	0.00	82.7
-5201.24	-4900.80	-1621.20	3701.83	-0.25	-1.43	-2.52	-3.52	100000	0.00	0.00	0.00	0.00	72.0
330.48	3938.04	9793.38	17480.48	-0.38	-1.64	-2.80	-3.86	100000	0.00	0.00	0.00	0.00	54.1
3968.31	10409.19	18865.00	28564.86	-0.47	-1.82	-3.06	-4.19	100000	0.00	0.00	0.00	0.00	39.7
7084.96	16386.36	27056.20	38178.00	-0.57	-2.02	-3.34	-4.54	100000	0.00	0.00	0.00	0.00	22.8
10231.53	21968.37	34202.35	46752.51	-0.70	-2.25	-3.65	-4.93	100000	0.00	0.00	0.00	0.00	-1.1
12910.51	26367.89	40173.07	53742.76	-0.83	-2.48	-3.99	-5.34	100000	0.00	0.00	0.00	0.00	-29.1
14803.12	29988.81	44915.47	59686.66	-0.96	-2.74	-4.35	-5.81	100000	0.00	0.00	0.00	0.00	-60.7
16704.27	33123.59	49371.89	64157.57	-1.12	-3.04	-4.79	-6.37	100000	0.00	0.00	0.00	0.00	-107.3
18061.25	35934.39	52198.64	66992.62	-1.30	-3.40	-5.29	-7.01	100000	0.00	0.00	0.00	0.00	-166.6
19660.45	37551.12	53824.50	68757.35	-1.54	-3.83	-5.92	-7.81	100000	0.00	0.00	0.00	0.00	-264.7
19679.74	37580.45	54006.59	68891.61	-1.53	-3.82	-5.90	-7.78	100000	0.00	0.00	0.00	0.00	-260.8
19690.79	37759.54	54133.06	69167.44	-1.52	-3.81	-5.88	-7.77	100000	0.00	0.00	0.00	0.00	-256.6
19875.63	37886.51	54424.32	69861.03	-1.52	-3.80	-5.87	-7.78	100000	0.00	0.00	0.00	0.00	-257.2
19811.96	38003.56	54983.95	70823.00	-1.51	-3.79	-5.89	-7.82	100000	0.00	0.00	0.00	0.00	-251.1
20010.75	38689.18	56112.14	72353.54	-1.51	-3.82	-5.94	-7.90	100000	0.00	0.00	0.00	0.00	-252.1
20546.27	39711.53	57577.06	74220.80	-1.76	-4.30	-6.64	-8.80	100000	0.00	0.00	0.00	0.00	-382.3
21081.78	40733.87	59041.98	76088.06	-2.06	-4.88	-7.48	-9.87	100000	0.00	0.00	0.00	0.00	-587.1
21617.30	41756.22	60506.90	77997.66	-2.43	-5.58	-8.49	-11.16	100000	0.00	0.00	0.00	0.00	-933.6
22152.81	42778.56	62018.40	79953.85	-2.88	-6.45	-9.74	-12.76	100000	0.00	0.00	0.00	0.00	-1579.0
22688.33	43852.15	63581.14	81961.28	-3.45	-7.55	-11.32	-14.80	100000	0.00	0.00	0.00	0.00	-2948.3
23280.21	44982.10	65200.25	84025.08	-3.51	-7.66	-11.49	-15.01	100000	0.00	0.00	0.00	0.00	-3140.7
23872.08	46112.05	66819.36	86088.87	-3.57	-7.77	-11.65	-15.21	100000	0.00	0.00	0.00	0.00	-3344.9
24463.96	47242.00	68438.47	88152.67	-3.63	-7.89	-11.81	-15.42	100000	0.00	0.00	0.00	0.00	-3561.6
25055.84	48371.95	70057.57	90216.46	-3.69	-8.00	-11.97	-15.63	100000	0.00	0.00	0.00	0.00	-3791.5
25647.72	49501.90	71676.68	92280.26	-3.75	-8.11	-12.14	-15.83	100000	0.00	0.00	0.00	0.00	-4035.4

Type 2 (3)

Tech. Adoption Factor Adv. Diesel								Tech. Adoption Factor Alt. Fuels					
Payback Periods (years)								Payback Periods (years)					
1		2		3		4		1		2		3	
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	99.2	99.2	94.9	94.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
82.7	75.6	75.6	14.1	14.1	-135.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
72.0	68.1	68.1	-14.5	1.0	-226.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
54.1	58.4	58.4	-53.9	1.0	-364.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
39.7	48.5	48.5	-102.4	1.0	-548.5	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
22.8	34.6	34.6	-172.8	1.0	-824.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	15.1	15.1	-275.9	1.0	-1272.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-9.7	1.0	-428.3	1.0	-1981.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-44.8	1.0	-662.6	1.0	-3236.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-98.7	1.0	-1087.3	1.0	-5717.8	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-188.2	1.0	-1881.8	1.0	-11016.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-352.5	1.0	-3598.0	1.0	-24516.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-344.8	1.0	-3540.3	1.0	-23886.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-341.3	1.0	-3471.4	1.0	-23473.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-336.4	1.0	-3438.9	1.0	-23831.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-331.2	1.0	-3492.8	1.0	-24790.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-345.4	1.0	-3708.3	1.0	-26926.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-630.2	1.0	-7576.6	1.0	-66134.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-1209.9	1.0	-17569.8	1.0	-192415.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-2548.2	1.0	-48349.1	1.0	-702685.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-6202.4	1.0	-168972.5	1.0	-3493492.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-18865.5	1.0	-827409.5	1.0	-26771057.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-21141.1	1.0	-973217.7	1.0	-32923367.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-23689.5	1.0	-1144717.2	1.0	-40489547.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-26543.6	1.0	-1346434.8	1.0	-49794518.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-29740.0	1.0	-1583694.8	1.0	-61237875.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-33319.6	1.0	-1862759.7	1.0	-75311042.8	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Type 2 (4)

Market Penetration Advanced Diesel						**Market Penetration Alternative Fuels**					
16.4%	**61.7%**	**15.5%**	**6.4%**		adv	**16.4%**	**61.7%**	**15.5%**	**6.4%**		afv
Payback Periods (years)				Final	Final	Payback Periods (years)				Final	Final
1	2	3	4	Step 1	Step 2	1	2	3	4	Step 1	Step 2
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	1.2%	2.3%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.6%	13.6%	86.7%	99.8%	28.5%	28.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.2%	20.5%	99.4%	99.9%	34.8%	34.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.8%	31.4%	99.6%	100.0%	41.8%	41.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.1%	43.9%	99.8%	100.0%	49.9%	49.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12.1%	62.1%	99.9%	100.0%	62.2%	62.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
80.2%	85.7%	99.9%	100.0%	87.9%	87.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
84.0%	99.3%	100.0%	100.0%	96.9%	96.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
87.2%	99.6%	100.0%	100.0%	97.6%	97.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
90.4%	99.8%	100.0%	100.0%	98.3%	98.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
93.1%	99.9%	100.0%	100.0%	98.8%	98.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
95.6%	100.0%	100.0%	100.0%	99.2%	99.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
95.5%	100.0%	100.0%	100.0%	99.2%	99.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
95.4%	100.0%	100.0%	100.0%	99.2%	99.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
95.4%	99.9%	100.0%	100.0%	99.2%	99.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
95.3%	99.9%	100.0%	100.0%	99.2%	99.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
95.3%	100.0%	100.0%	100.0%	99.2%	99.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
97.1%	100.0%	100.0%	100.0%	99.5%	99.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
98.4%	100.0%	100.0%	100.0%	99.7%	99.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.2%	100.0%	100.0%	100.0%	99.9%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.7%	100.0%	100.0%	100.0%	99.9%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Type 2 (5)

Class 7-8 Type 2 Market Penetration by Average Annual VMT - Centrally Refueled Advanced Diesels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%
0.0%	0.0%	0.0%	0.1%	0.5%	1.6%	2.8%	5.8%	8.4%	15.8%	28.5%	0.4%
0.0%	0.0%	0.0%	0.3%	0.6%	2.1%	3.8%	8.2%	11.8%	20.3%	34.8%	0.6%
0.0%	0.0%	0.1%	0.3%	1.5%	2.8%	5.3%	11.5%	15.7%	26.3%	41.8%	0.8%
0.0%	0.0%	0.1%	0.4%	1.8%	3.5%	7.0%	15.0%	19.3%	32.6%	49.9%	1.0%
0.0%	0.0%	0.1%	0.5%	2.2%	4.7%	9.5%	18.6%	24.2%	37.3%	62.2%	1.3%
0.0%	0.0%	0.1%	0.6%	2.9%	6.3%	12.9%	23.4%	30.7%	44.7%	87.9%	1.8%
0.0%	0.0%	0.3%	1.4%	3.8%	8.6%	16.7%	29.5%	36.1%	54.7%	96.9%	2.3%
0.0%	0.0%	0.4%	1.8%	5.1%	11.8%	20.8%	35.4%	42.5%	70.0%	97.6%	2.8%
0.0%	0.0%	0.4%	2.3%	7.2%	16.0%	27.0%	42.1%	53.0%	95.2%	98.3%	3.5%
0.0%	0.0%	0.6%	3.1%	10.5%	21.0%	34.5%	53.5%	70.7%	97.4%	98.8%	4.5%
0.0%	0.1%	1.4%	4.6%	15.5%	28.8%	42.6%	76.0%	96.8%	98.3%	99.2%	6.1%
0.0%	0.1%	1.4%	4.5%	15.4%	28.5%	42.3%	74.6%	96.7%	98.2%	99.2%	6.0%
0.0%	0.1%	1.4%	4.5%	15.3%	28.3%	42.1%	73.7%	96.7%	98.2%	99.2%	6.0%
0.0%	0.1%	1.4%	4.5%	15.2%	28.1%	41.8%	73.3%	96.7%	98.2%	99.2%	6.0%
0.0%	0.1%	1.4%	4.6%	15.3%	28.1%	41.6%	72.1%	96.7%	98.2%	99.2%	5.9%
0.0%	0.1%	1.4%	4.7%	15.6%	28.9%	42.3%	73.5%	96.7%	98.2%	99.2%	6.1%
0.0%	0.1%	1.9%	7.2%	21.2%	36.4%	55.7%	96.9%	97.7%	98.8%	99.5%	7.7%
0.0%	0.3%	2.7%	11.4%	29.8%	47.0%	86.3%	97.9%	98.5%	99.3%	99.7%	10.1%
0.0%	0.4%	4.2%	17.3%	38.6%	67.2%	97.3%	98.7%	99.1%	99.6%	99.9%	12.4%
0.0%	0.6%	7.3%	25.8%	54.0%	96.9%	98.3%	99.3%	99.5%	99.8%	99.9%	15.6%
0.0%	1.6%	13.4%	37.0%	92.2%	98.2%	99.1%	99.6%	99.8%	99.9%	100.0%	18.9%
0.0%	1.6%	14.1%	38.1%	94.9%	98.3%	99.2%	99.7%	99.8%	99.9%	100.0%	19.2%
0.0%	1.7%	14.9%	39.3%	96.6%	98.4%	99.2%	99.7%	99.8%	99.9%	100.0%	19.4%
0.0%	1.8%	15.4%	40.5%	96.8%	98.5%	99.3%	99.7%	99.8%	99.9%	100.0%	19.5%
0.0%	1.9%	15.9%	41.8%	96.9%	98.5%	99.3%	99.7%	99.8%	100.0%	100.0%	19.7%
0.0%	1.9%	16.5%	43.1%	97.0%	98.6%	99.4%	99.8%	99.9%	100.0%	100.0%	19.8%

Type 2 (6)

Class 7-8 Type 2 Market Penetration by Average Annual VMT - Non-Centrally Refueled Advanced Diesels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%
0.0%	0.0%	0.0%	0.1%	0.5%	1.6%	2.9%	5.6%	8.4%	14.0%	28.5%	0.8%
0.0%	0.0%	0.0%	0.3%	0.6%	2.1%	4.0%	7.8%	11.8%	17.7%	34.8%	1.1%
0.0%	0.0%	0.1%	0.4%	1.5%	2.7%	5.5%	11.0%	15.7%	22.9%	41.8%	1.5%
0.0%	0.0%	0.1%	0.4%	1.8%	3.5%	7.3%	14.5%	19.3%	28.5%	49.9%	2.0%
0.0%	0.0%	0.1%	0.5%	2.2%	4.6%	9.9%	18.0%	24.2%	34.4%	62.2%	2.5%
0.0%	0.0%	0.1%	0.7%	2.9%	6.2%	13.4%	22.6%	30.7%	40.2%	87.9%	3.4%
0.0%	0.0%	0.3%	1.5%	3.8%	8.4%	17.1%	28.5%	36.1%	48.3%	96.9%	4.4%
0.0%	0.0%	0.3%	1.8%	5.1%	11.5%	21.4%	34.7%	42.5%	60.4%	97.6%	5.5%
0.0%	0.0%	0.4%	2.4%	7.2%	15.7%	27.8%	41.0%	53.0%	86.6%	98.3%	7.2%
0.0%	0.0%	0.5%	3.3%	10.5%	20.6%	35.1%	51.8%	70.7%	97.0%	98.8%	9.2%
0.0%	0.1%	1.3%	4.8%	15.5%	28.2%	43.6%	72.1%	96.8%	97.9%	99.2%	12.3%
0.0%	0.1%	0.7%	4.8%	15.4%	28.0%	43.2%	71.0%	96.7%	97.9%	99.2%	12.1%
0.0%	0.1%	0.7%	4.7%	15.3%	27.8%	43.0%	70.4%	96.7%	97.9%	99.2%	12.0%
0.0%	0.1%	0.7%	4.7%	15.2%	27.6%	42.8%	70.0%	96.7%	97.9%	99.2%	12.0%
0.0%	0.1%	0.7%	4.8%	15.2%	27.6%	42.5%	69.0%	96.7%	97.8%	99.2%	11.9%
0.0%	0.1%	0.8%	5.0%	15.6%	28.3%	43.2%	70.4%	96.7%	97.9%	99.2%	12.2%
0.0%	0.1%	1.8%	7.6%	21.1%	36.0%	57.3%	96.7%	97.7%	98.6%	99.5%	15.9%
0.0%	0.1%	2.6%	12.0%	29.8%	46.2%	89.0%	97.8%	98.5%	99.1%	99.7%	21.3%
0.0%	0.3%	4.0%	17.9%	38.6%	65.8%	97.4%	98.6%	99.1%	99.5%	99.9%	25.8%
0.0%	0.5%	6.9%	26.8%	53.9%	96.8%	98.4%	99.2%	99.5%	99.8%	99.9%	31.7%
0.0%	1.4%	12.7%	37.9%	92.1%	98.1%	99.1%	99.6%	99.8%	99.9%	100.0%	35.8%
0.0%	1.4%	13.5%	39.1%	94.9%	98.2%	99.2%	99.7%	99.8%	99.9%	100.0%	36.2%
0.0%	1.5%	14.2%	40.3%	96.6%	98.3%	99.2%	99.7%	99.8%	99.9%	100.0%	36.4%
0.0%	1.6%	14.9%	41.6%	96.8%	98.4%	99.3%	99.7%	99.8%	99.9%	100.0%	36.6%
0.0%	1.6%	15.4%	43.0%	96.9%	98.5%	99.3%	99.7%	99.8%	99.9%	100.0%	36.7%
0.0%	1.7%	16.0%	44.4%	97.0%	98.6%	99.4%	99.7%	99.9%	99.9%	100.0%	36.8%

Type 3 (1)

TYPE 3: Insulated; Non-refrigerated; Insulated Refrigerated; Drop Frame, Open Top, Basic Enclosed

Please enter one of the following alternative fuel types: LPG, CNG, Electricity, Ethanol, Gasoline

Fuel Type	**Ethanol**
Discount Rate	**10.0%**
Annual VMT	218113

Fuel Efficiency Escalation Factor: 1.00

Year	Baseline Fuel Efficiency MPG	ADV. Diesel Efficiency Improvement	ADV. Diesel Adjusted MPG	Ethanol Efficiency Improvement	Ethanol Adjusted MPG	Ethanol Fuel Cost	**ANNUAL DOLLAR SAVINGS OF TECHNOLOGY**		**NPV of Advanced Diesel Savings** Payback Periods (years)			
							ADV. Diesel	Alt. Fuel	1	2	3	4
1995	7.00	0.01	0.07	1.00	7.00	2.37	-3435577.02	-39144.15	-3123251.84	-3244288.08	-3284049.03	-3299879.35
1996	7.00	0.21	1.46	1.00	7.00	2.36	-146453.85	-35072.73	-133139.87	-176876.91	-194290.27	-200455.36
1997	7.00	0.41	2.84	1.00	7.00	2.36	-52921.83	-37363.20	-48110.75	-67265.44	-74047.04	-74047.04
1998	7.00	0.60	4.23	1.00	7.00	2.35	-23177.18	-37872.72	-21070.16	-28529.92	-28529.92	-26085.02
1999	7.00	0.80	5.61	1.00	7.00	2.34	-9026.31	-36351.07	-8205.73	-8205.73	-5516.35	-1254.33
2000	7.00	1.00	7.00	1.00	7.00	1.80	0.00	-9385.26	0.00	2958.33	7646.54	13231.51
2001	7.00	1.09	7.60	1.00	7.00	1.76	3579.57	-9762.04	3254.16	8411.20	14554.66	21555.09
2002	7.00	1.17	8.20	1.00	7.00	1.73	6240.02	-11323.64	5672.74	12430.55	20131.02	28186.71
2003	7.00	1.26	8.81	1.00	7.00	1.69	8176.95	-12850.57	7433.59	15904.11	24765.37	33134.09
2004	7.00	1.34	9.41	1.00	7.00	1.66	10249.33	-11555.51	9317.57	19064.95	28270.55	37030.60
2005	7.00	**1.42**	**9.94**	**1.00**	**7.00**	**1.62**	11794.34	-10601.57	10722.12	20848.28	30484.34	39324.07
2006	7.00	1.43	10.01	1.07	7.49	1.58	12252.65	-5379.86	11138.77	21738.43	31462.14	40346.66
2007	7.00	1.43	10.01	1.14	7.98	1.55	12825.59	341.83	11659.63	22355.71	32128.67	41128.34
2008	7.00	1.43	10.01	1.21	8.47	1.51	12942.26	4104.59	11765.69	22515.95	32415.58	41460.76
2009	7.00	1.43	10.01	1.28	8.96	1.48	13007.82	7328.27	11825.29	22714.88	32664.58	41656.95
2010	7.00	1.43	10.01	1.35	9.45	1.44	13176.41	10582.91	11978.55	22923.22	32814.83	41812.25
2011	7.00	1.43	10.01	1.45	10.16	1.43	13243.05	13353.89	12039.13	22919.91	32817.06	41750.20
2012	7.00	1.43	10.01	1.55	10.88	1.42	13165.73	15311.49	11968.85	22855.72	32682.18	41641.16
2013	7.00	1.43	10.01	1.66	11.59	1.41	13173.12	17277.92	11975.56	22784.66	32639.55	41568.22
2014	7.00	1.43	10.01	1.76	12.31	1.40	13079.01	18681.51	11890.01	22730.38	32551.93	41448.55
2015	7.00	**1.43**	**10.01**	**1.86**	**13.02**	**1.39**	13116.85	20335.63	11924.41	22728.11	32514.39	41415.87
2016	7.00	1.43	10.01	1.86	13.02	1.38	13072.48	20355.58	11884.07	22648.98	32440.61	41294.15
2017	7.00	1.43	10.01	1.86	13.02	1.37	13025.54	20367.01	11841.40	22612.19	32351.09	41212.47
2018	7.00	1.43	10.01	1.86	13.02	1.36	13032.66	20558.20	11847.87	22560.66	32308.17	41283.31
2019	7.00	1.43	10.01	1.86	13.02	1.35	12962.48	20492.35	11784.07	22506.34	32378.98	41467.88
2020	7.00	1.43	10.01	1.86	13.02	1.34	12973.94	20697.96	11794.49	22654.40	32652.19	41854.85
2021	7.00	1.43	10.01	1.86	13.02	1.34	13140.50	21251.87	11945.90	22943.47	33066.39	42382.82
2022	7.00	1.43	10.01	1.86	13.02	1.34	13307.05	21805.77	12097.32	23232.54	33480.60	42910.78
2023	7.00	1.43	10.01	1.86	13.02	1.34	13473.61	22359.68	12248.74	23521.61	33894.81	43450.73
2024	7.00	1.43	10.01	1.86	13.02	1.34	13640.17	22913.58	12400.16	23810.68	34322.19	44003.84
2025	7.00	1.43	10.01	1.86	13.02	1.34	13806.73	23467.49	12551.57	24114.23	34764.05	44571.44
2026	7.00	1.43	10.01	1.86	13.02	1.34	13990.82	24079.69	12718.93	24433.73	35221.86	45154.98
2027	7.00	1.43	10.01	1.86	13.02	1.34	14174.91	24691.90	12886.28	24753.22	35679.66	45738.52
2028	7.00	1.43	10.01	1.86	13.02	1.34	14359.00	25304.10	13053.64	25072.72	36137.47	46322.06
2029	7.00	1.43	10.01	1.86	13.02	1.34	14543.09	25916.31	13220.99	25392.21	36595.27	46905.60
2030	7.00	1.43	10.01	1.86	13.02	1.34	14727.18	26528.52	13388.34	25711.71	37053.07	47489.14
2031	7.00	1.43	10.01	1.86	13.02	1.34	14911.27	27140.72				
2032	7.00	1.43	10.01	1.86	13.02	1.34	15095.36	27752.93				
2033	7.00	1.43	10.01	1.86	13.02	1.34	15279.45	28365.13				
2034	7.00	1.43	10.01	1.86	13.02	1.34	15463.54	28977.34				
2035	7.00	1.43	10.01	1.86	13.02	1.34	15647.63	29589.54				

Type 3 (2)

NPV of Alternative Fuel Savings				Cost Effectiveness Factor Adv. Diesel					Cost Effectiveness Factor Alt. Fuels				
Payback Periods (years)				Payback Periods (years)				Tech Cost	Payback Periods (years)				
1	2	3	4	1	2	3	4		1	2	3	4	
-35585.59	-64571.32	-92642.85	-118510.43	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.00
-31884.30	-62762.98	-91217.32	-116045.59	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-33966.55	-65266.32	-92577.42	-98987.68	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-34429.75	-64471.96	-71523.24	-78190.85	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-33046.43	-40802.84	-48137.21	-55871.41	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-8532.05	-16599.86	-25107.48	-33884.59	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-8874.59	-18232.97	-27887.79	-35780.36	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-10294.22	-20914.53	-29596.35	-36837.37	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-11682.34	-21232.34	-29197.46	-32871.97	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-10505.01	-19266.64	-23308.60	-23075.13	0.00	0.00	-0.01	-0.32	100000	0.00	0.00	0.00	0.00	100.0
-9637.79	-14083.95	-13827.13	-11023.64	-0.07	-1.08	-2.05	-2.93	100000	0.00	0.00	0.00	0.00	92.5
-4890.78	-4608.27	-1524.43	3480.87	-0.17	-1.29	-2.31	-3.25	100000	0.00	0.00	0.00	0.00	81.2
310.75	3702.98	9208.82	16437.09	-0.30	-1.48	-2.57	-3.57	100000	0.00	0.00	0.00	0.00	65.6
3731.45	9787.87	17738.96	26859.85	-0.38	-1.65	-2.81	-3.88	100000	0.00	0.00	0.00	0.00	53.2
6662.07	15408.27	25441.24	35899.19	-0.48	-1.84	-3.08	-4.21	100000	0.00	0.00	0.00	0.00	38.7
9620.82	20657.09	32160.84	43961.89	-0.60	-2.06	-3.38	-4.57	100000	0.00	0.00	0.00	0.00	18.3
12139.90	24794.02	37775.18	50534.90	-0.72	-2.27	-3.69	-4.96	100000	0.00	0.00	0.00	0.00	-5.4
13919.53	28198.81	42234.50	56124.01	-0.84	-2.52	-4.03	-5.41	100000	0.00	0.00	0.00	0.00	-32.0
15707.20	31146.47	46424.93	60328.06	-1.00	-2.80	-4.44	-5.93	100000	0.00	0.00	0.00	0.00	-70.7
16983.19	33789.50	49082.95	62993.89	-1.16	-3.13	-4.92	-6.54	100000	0.00	0.00	0.00	0.00	-119.6
18486.94	35309.73	50611.76	64653.29	-1.38	-3.55	-5.50	-7.28	100000	0.00	0.00	0.00	0.00	-199.4
18505.07	35337.31	50782.99	64779.54	-1.38	-3.53	-5.49	-7.26	100000	0.00	0.00	0.00	0.00	-196.2
18515.46	35505.71	50901.91	65038.90	-1.37	-3.52	-5.47	-7.24	100000	0.00	0.00	0.00	0.00	-192.9
18689.27	35625.09	51175.78	65691.09	-1.37	-3.51	-5.46	-7.26	100000	0.00	0.00	0.00	0.00	-193.4
18629.41	35735.16	51702.00	66595.64	-1.36	-3.50	-5.48	-7.29	100000	0.00	0.00	0.00	0.00	-188.4
18816.33	36379.86	52762.86	68034.82	-1.36	-3.53	-5.53	-7.37	100000	0.00	0.00	0.00	0.00	-189.2
19319.88	37341.18	54140.34	69790.62	-1.60	-3.99	-6.19	-8.21	100000	0.00	0.00	0.00	0.00	-293.8
19823.43	38302.50	55517.82	71546.43	-1.88	-4.53	-6.97	-9.22	100000	0.00	0.00	0.00	0.00	-455.6
20326.98	39263.83	56895.30	73342.05	-2.22	-5.19	-7.92	-10.43	100000	0.00	0.00	0.00	0.00	-723.8
20830.53	40225.15	58316.58	75181.48	-2.65	-6.00	-9.09	-11.94	100000	0.00	0.00	0.00	0.00	-1211.3
21334.08	41234.65	59786.04	77069.09	-3.18	-7.04	-10.59	-13.86	100000	0.00	0.00	0.00	0.00	-2214.0
21890.63	42297.16	61308.51	79009.70	-3.24	-7.14	-10.74	-14.05	100000	0.00	0.00	0.00	0.00	-2352.5
22447.18	43359.66	62830.97	80950.30	-3.30	-7.25	-10.89	-14.25	100000	0.00	0.00	0.00	0.00	-2498.9
23003.73	44422.17	64353.44	82890.91	-3.35	-7.36	-11.05	-14.44	100000	0.00	0.00	0.00	0.00	-2653.7
23560.28	45484.67	65875.90	84831.52	-3.41	-7.46	-11.20	-14.64	100000	0.00	0.00	0.00	0.00	-2817.4
24116.83	46547.18	67398.36	86772.13	-3.46	-7.57	-11.35	-14.83	100000	0.00	0.00	0.00	0.00	-2990.6

Type 3 (3)

Tech. Adoption Factor Adv. Diesel								Tech. Adoption Factor Alt. Fuels						
Payback Periods (years)								Payback Periods (years)						
1		2		3		4		1		2		3		4
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	99.9	99.9	96.2	96.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
92.5	80.4	80.4	32.4	32.4	-77.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
81.2	73.7	73.7	9.1	9.1	-147.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
65.6	65.9	65.9	-20.6	1.0	-245.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
53.2	58.0	58.0	-56.7	1.0	-373.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
38.7	47.1	47.1	-108.3	1.0	-561.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
18.3	31.8	31.8	-182.3	1.0	-860.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	12.8	12.8	-289.7	1.0	-1322.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-13.8	1.0	-451.5	1.0	-2118.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-54.0	1.0	-737.7	1.0	-3644.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-119.4	1.0	-1258.0	1.0	-6785.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-236.6	1.0	-2344.0	1.0	-14446.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-231.2	1.0	-2308.0	1.0	-14095.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-228.7	1.0	-2265.1	1.0	-13865.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-225.2	1.0	-2244.8	1.0	-14065.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-221.6	1.0	-2278.4	1.0	-14598.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-231.5	1.0	-2412.5	1.0	-15781.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-429.3	1.0	-4760.4	1.0	-36800.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-819.0	1.0	-10549.0	1.0	-100543.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-1684.5	1.0	-27399.1	1.0	-339987.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-3937.0	1.0	-88975.0	1.0	-1536196.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-11282.0	1.0	-396458.2	1.0	-10425055.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-12562.1	1.0	-461836.6	1.0	-12663543.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-13986.2	1.0	-537993.3	1.0	-15382677.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-15570.3	1.0	-626705.3	1.0	-18685662.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-17332.3	1.0	-730042.3	1.0	-22697863.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-19292.4	1.0	-850415.6	1.0	-27571561.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Type 3 (4)

Market Penetration Advanced Diesel						**Market Penetration Alternative Fuels**					
16.4%	**61.7%**	**15.5%**	**6.4%**			**16.4%**	**61.7%**	**15.5%**	**6.4%**		
Payback Periods (years)				Final	Final	Payback Periods (years)				Final	Final
1	2	3	4	Step 1	Step 2	1	2	3	4	Step 1	Step 2
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	1.0%	1.9%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	9.8%	65.0%	99.7%	22.7%	22.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.7%	15.1%	91.8%	99.8%	30.2%	30.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.7%	22.8%	99.4%	99.9%	36.3%	36.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.9%	31.8%	99.6%	100.0%	42.1%	42.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.3%	45.7%	99.8%	100.0%	51.1%	51.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15.3%	65.8%	99.9%	100.0%	65.0%	65.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
80.8%	88.1%	99.9%	100.0%	89.5%	89.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
84.3%	99.4%	100.0%	100.0%	97.0%	97.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
88.0%	99.6%	100.0%	100.0%	97.8%	97.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
91.1%	99.8%	100.0%	100.0%	98.4%	98.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
94.1%	99.9%	100.0%	100.0%	99.0%	99.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
94.0%	99.9%	100.0%	100.0%	99.0%	99.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
93.9%	99.9%	100.0%	100.0%	98.9%	98.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
93.9%	99.9%	100.0%	100.0%	98.9%	98.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
93.8%	99.9%	100.0%	100.0%	98.9%	98.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
93.8%	99.9%	100.0%	100.0%	98.9%	98.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
96.1%	100.0%	100.0%	100.0%	99.3%	99.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
97.7%	100.0%	100.0%	100.0%	99.6%	99.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
98.8%	100.0%	100.0%	100.0%	99.8%	99.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.5%	100.0%	100.0%	100.0%	99.9%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.8%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.8%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Type 3 (5)

Class 7-8 Type 3 Market Penetration by Average Annual VMT - Centrally Refueled Advanced Diesels

(thousands of miles)

0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Final Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.1%	0.4%	1.4%	2.5%	4.8%	8.2%	14.4%	20.8%	0.8%
0.0%	0.0%	0.0%	0.3%	0.6%	1.8%	3.4%	6.8%	11.8%	18.6%	27.7%	1.1%
0.0%	0.0%	0.0%	0.3%	0.7%	2.4%	4.7%	9.6%	15.8%	24.0%	34.4%	1.5%
0.0%	0.0%	0.1%	0.4%	1.6%	3.0%	6.2%	12.8%	19.4%	29.8%	39.4%	1.9%
0.0%	0.0%	0.1%	0.5%	2.0%	4.0%	8.4%	16.2%	24.4%	35.3%	47.1%	2.3%
0.0%	0.0%	0.1%	0.6%	2.5%	5.3%	11.5%	20.4%	30.9%	41.6%	59.2%	3.0%
0.0%	0.0%	0.3%	1.4%	3.3%	7.2%	15.3%	25.7%	36.2%	50.3%	78.7%	3.9%
0.0%	0.0%	0.3%	1.8%	4.4%	10.0%	19.0%	32.5%	42.7%	63.3%	96.7%	4.9%
0.0%	0.0%	0.4%	2.3%	6.1%	14.0%	24.7%	38.2%	53.3%	89.5%	97.6%	6.2%
0.0%	0.0%	0.5%	3.1%	9.0%	18.5%	32.6%	47.3%	71.2%	97.2%	98.2%	7.7%
0.0%	0.1%	0.7%	4.5%	13.6%	25.3%	39.8%	64.1%	96.8%	98.1%	98.8%	9.6%
0.0%	0.1%	0.7%	4.5%	13.4%	25.1%	39.5%	63.3%	96.8%	98.0%	98.8%	9.6%
0.0%	0.1%	0.7%	4.4%	13.3%	24.9%	39.3%	62.9%	96.7%	98.0%	98.8%	9.5%
0.0%	0.1%	0.7%	4.4%	13.3%	24.7%	39.1%	62.5%	96.7%	98.0%	98.8%	9.5%
0.0%	0.1%	0.7%	4.5%	13.4%	24.8%	38.9%	61.9%	96.7%	98.0%	98.8%	9.5%
0.0%	0.1%	0.7%	4.6%	13.8%	25.4%	39.5%	63.1%	96.7%	98.0%	98.8%	9.6%
0.0%	0.1%	1.7%	7.1%	18.9%	33.8%	51.2%	93.5%	97.7%	98.6%	99.2%	12.0%
0.0%	0.1%	2.3%	11.2%	26.5%	42.4%	72.7%	97.5%	98.5%	99.2%	99.6%	14.9%
0.0%	0.3%	3.6%	17.0%	35.8%	59.0%	97.0%	98.4%	99.1%	99.5%	99.8%	18.7%
0.0%	0.5%	6.0%	25.4%	48.5%	95.0%	98.1%	99.1%	99.5%	99.8%	99.9%	22.4%
0.0%	1.4%	11.1%	36.7%	78.5%	97.9%	99.0%	99.6%	99.8%	99.9%	#####	25.3%
0.0%	1.4%	11.8%	37.7%	87.8%	98.0%	99.0%	99.6%	99.8%	99.9%	#####	26.0%
0.0%	1.5%	12.5%	38.9%	90.2%	98.1%	99.1%	99.6%	99.8%	99.9%	#####	26.2%
0.0%	1.6%	13.1%	40.0%	92.9%	98.2%	99.2%	99.6%	99.8%	99.9%	#####	26.5%
0.0%	1.6%	13.8%	41.3%	95.5%	98.3%	99.2%	99.7%	99.8%	99.9%	#####	26.7%
0.0%	1.7%	14.6%	42.6%	96.6%	98.4%	99.3%	99.7%	99.9%	99.9%	#####	26.9%

Type 3 (6)

Class 7-8 Type 3 Market Penetration by Average Annual VMT - Non-Centrally Refueled Advanced Diesels

(thousands of miles)

0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Final Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%
0.0%	0.0%	0.0%	0.1%	0.5%	1.5%	2.6%	5.0%	8.6%	12.9%	22.7%	1.6%
0.0%	0.0%	0.0%	0.3%	0.6%	1.9%	3.6%	7.1%	12.3%	17.0%	30.2%	2.2%
0.0%	0.0%	0.1%	0.3%	0.7%	2.5%	4.9%	10.0%	16.2%	22.0%	36.3%	2.9%
0.0%	0.0%	0.1%	0.4%	1.6%	3.2%	6.5%	13.3%	20.0%	27.4%	42.1%	3.7%
0.0%	0.0%	0.1%	0.5%	2.0%	4.2%	8.8%	16.8%	25.1%	33.6%	51.1%	4.7%
0.0%	0.0%	0.1%	0.6%	2.6%	5.7%	12.0%	21.1%	31.8%	39.0%	65.0%	6.1%
0.0%	0.0%	0.3%	0.7%	3.3%	7.7%	15.7%	26.6%	36.9%	46.6%	89.5%	7.9%
0.0%	0.0%	0.3%	1.7%	4.4%	10.6%	19.6%	33.4%	43.7%	57.9%	97.0%	9.6%
0.0%	0.0%	0.4%	2.1%	6.2%	14.8%	25.4%	39.1%	54.8%	79.9%	97.8%	11.7%
0.0%	0.0%	0.5%	2.9%	9.1%	19.3%	33.4%	48.8%	74.0%	96.9%	98.4%	14.6%
0.0%	0.1%	1.3%	4.2%	13.8%	26.5%	40.7%	66.5%	96.9%	97.8%	99.0%	18.2%
0.0%	0.1%	0.7%	4.1%	13.6%	26.2%	40.4%	65.7%	96.9%	97.8%	99.0%	18.0%
0.0%	0.1%	0.7%	4.1%	13.5%	26.0%	40.2%	65.2%	96.8%	97.8%	98.9%	18.0%
0.0%	0.1%	0.7%	4.1%	13.5%	25.9%	40.0%	64.8%	96.8%	97.8%	98.9%	17.9%
0.0%	0.1%	0.7%	4.1%	13.6%	25.9%	39.8%	64.1%	96.8%	97.7%	98.9%	17.8%
0.0%	0.1%	0.8%	4.3%	14.1%	26.6%	40.4%	65.4%	96.8%	97.8%	98.9%	18.1%
0.0%	0.1%	1.8%	6.5%	19.1%	34.7%	52.6%	95.6%	97.8%	98.5%	99.3%	22.6%
0.0%	0.1%	2.6%	10.4%	26.9%	43.9%	75.8%	97.6%	98.5%	99.1%	99.6%	27.5%
0.0%	0.3%	4.0%	16.0%	36.1%	61.6%	97.1%	98.5%	99.1%	99.5%	99.8%	33.0%
0.0%	0.5%	6.9%	23.9%	49.1%	96.6%	98.2%	99.1%	99.5%	99.7%	99.9%	37.8%
0.0%	0.8%	12.7%	35.4%	80.6%	98.0%	99.0%	99.6%	99.8%	99.9%	100.0%	41.2%
0.0%	1.4%	13.5%	36.3%	88.3%	98.1%	99.1%	99.6%	99.8%	99.9%	100.0%	41.9%
0.0%	1.5%	14.2%	37.4%	91.1%	98.2%	99.1%	99.6%	99.8%	99.9%	100.0%	42.2%
0.0%	1.5%	14.9%	38.4%	93.8%	98.3%	99.2%	99.7%	99.8%	99.9%	100.0%	42.5%
0.0%	1.6%	15.4%	39.6%	96.4%	98.4%	99.2%	99.7%	99.9%	99.9%	100.0%	42.8%
0.0%	1.7%	16.0%	40.8%	96.7%	98.5%	99.3%	99.7%	99.9%	99.9%	100.0%	42.9%

Med (1)

Classes 3-6

Please enter one of the following alternative fuel types: LPG, CNG, Electricity, Ethanol, Gasoline

Fuel Type	**Ethanol**
Discount Rate	**10.0%**
Annual VMT	212500

	Baseline	ADV. Diesel	ADV. Diesel	Ethanol	Ethanol	Ethanol	**ANNUAL DOLLAR SAVINGS**		**NPV of Advanced Diesel Savings**			
	Fuel Efficiency	Efficiency	Adjusted	Efficiency	Adjusted	Fuel	**OF TECHNOLOGY**		Payback Periods (years)			
Year	MPG	Improvement	MPG	Improvement	MPG	Cost	ADV. Diesel	Alt. Fuel	1	2	3	4
1995	8.82	1.00	8.82	1.00	8.82	2.37	0.00	-30269.13	0.00	0.00	0.00	0.00
1996	8.86	1.00	8.86	1.00	8.86	2.36	0.00	-26997.80	0.00	0.00	0.00	0.00
1997	8.90	1.00	8.90	1.00	8.90	2.36	0.00	-28630.49	0.00	0.00	0.00	0.00
1998	8.92	1.00	8.92	1.00	8.92	2.35	0.00	-28964.24	0.00	0.00	0.00	3890.66
1999	8.94	1.00	8.94	1.00	8.94	2.34	0.00	-27722.96	0.00	0.00	4279.73	10539.81
2000	9.00	1.00	9.00	1.00	9.00	1.80	0.00	-7111.78	0.00	4707.70	11593.79	19281.49
2001	9.02	1.20	10.82	1.20	10.82	1.76	5696.32	-454.63	5178.47	12753.17	21209.64	30340.63
2002	9.04	1.40	12.66	1.40	12.66	1.73	9165.38	3063.11	8332.16	17634.29	27678.37	37885.35
2003	9.06	1.60	14.49	1.60	14.49	1.69	11255.57	5209.32	10232.34	21280.83	32508.51	42915.68
2004	9.08	1.80	16.34	1.80	16.34	1.66	13368.68	8546.41	12153.34	24503.79	35951.68	46821.71
2005	9.10	2.00	18.20	2.00	18.20	1.62	14944.04	10970.97	13585.49	26178.17	38135.21	49080.17
2006	9.12	2.00	18.24	2.10	19.15	1.58	15237.15	12896.83	13851.95	27004.69	39044.15	50020.53
2007	9.14	2.00	18.28	2.20	20.11	1.55	15914.81	15468.28	14468.01	27711.41	39785.43	50879.80
2008	9.16	2.00	18.32	2.30	21.07	1.51	16024.52	16796.38	14567.74	27849.16	40052.97	51179.09
2009	9.18	2.00	18.36	2.40	22.03	1.48	16070.52	17903.10	14609.56	28033.75	40272.49	51309.51
2010	9.20	2.00	18.40	2.50	23.00	1.44	16243.26	19180.60	14766.60	28229.22	40369.94	51389.03
2011	9.22	2.00	18.44	2.50	23.05	1.43	16289.76	19394.85	14808.87	28163.67	40284.67	51201.16
2012	9.24	2.00	18.48	2.50	23.10	1.42	16159.30	19254.71	14690.27	28023.38	40031.51	50955.68
2013	9.26	2.00	18.52	2.50	23.15	1.41	16133.06	19322.55	14666.41	27875.36	39891.94	50755.38
2014	9.28	2.00	18.56	2.50	23.20	1.40	15982.83	19141.96	14529.84	27748.08	39697.86	50498.65
2015	9.30	2.00	18.60	2.50	23.25	1.39	15994.07	19283.84	14540.06	27684.82	39565.69	50348.78
2016	9.32	2.00	18.64	2.50	23.30	1.38	15905.15	19224.95	14459.23	27528.19	39389.59	50091.21
2017	9.34	2.00	18.68	2.50	23.35	1.37	15813.44	19160.00	14375.85	27423.40	39195.18	49882.86
2018	9.36	2.00	18.72	2.50	23.40	1.36	15787.53	19226.20	14352.30	27301.25	39057.71	49828.74
2019	9.38	2.00	18.76	2.50	23.45	1.35	15668.23	19105.18	14243.85	27175.95	39024.09	49877.38
2020	9.40	2.00	18.80	2.50	23.51	1.34	15647.84	19181.50	14225.31	27258.26	39196.88	50131.35
2021	9.45	2.00	18.90	2.50	23.62	1.34	15769.87	19485.84	14336.25	27468.74	39496.65	50511.22
2022	9.50	2.00	18.99	2.50	23.74	1.34	15890.31	19786.68	14445.74	27676.44	39792.47	50886.06
2023	9.54	2.00	19.09	2.50	23.86	1.34	16009.16	20084.04	14553.78	27881.40	40084.36	51269.94
2024	9.59	2.00	19.18	2.50	23.98	1.34	16126.43	20377.96	14660.39	28083.64	40387.78	51664.16
2025	9.64	2.00	19.28	2.50	24.10	1.34	16242.13	20668.45	14765.58	28300.13	40704.15	52070.14
2026	9.69	2.00	19.38	2.50	24.22	1.34	16376.81	20996.59	14888.01	28532.43	41035.03	52489.47
2027	9.74	2.00	19.47	2.50	24.34	1.34	16509.75	21320.96	15008.86	28761.72	41361.60	52903.33
2028	9.78	2.00	19.57	2.50	24.46	1.34	16640.95	21641.57	15128.14	28988.02	41683.91	53311.77
2029	9.83	2.00	19.67	2.50	24.58	1.34	16770.45	21958.47	15245.86	29211.35	42001.99	53714.84
2030	9.88	2.00	19.77	2.50	24.71	1.34	16898.24	22271.68	15362.04	29431.75	42315.88	54112.58
2031	9.93	2.00	19.86	2.50	24.83	1.34	17024.35	22581.23				
2032	9.98	2.00	19.96	2.50	24.96	1.34	17148.78	22887.15				
2033	10.03	2.00	20.06	2.50	25.08	1.34	17271.55	23189.47				
2034	10.08	2.00	20.16	2.50	25.21	1.34	17392.68	23488.21				
2035	10.13	2.00	20.27	2.50	25.33	1.34	17512.18	23783.40				

Med (2)

NPV of Alternative Fuel Savings				Cost Effectiveness Factor Adv. Diesel					Cost Effectiveness Factor Alt. Fuels				
Payback Periods (years)				Payback Periods (years)				Tech	Payback Periods (years)				
1	2	3	4	1	2	3	4	Cost	1	2	3	4	
-27517.39	-49829.62	-71340.14	-91123.10	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.00
-24543.46	-48205.02	-69966.28	-88901.44	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-26027.72	-49965.10	-70793.78	-75651.22	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-26331.12	-49242.66	-54585.85	-54896.37	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-25202.69	-31080.20	-31421.77	-29329.63	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-6465.26	-6840.99	-4539.63	-981.60	0.00	0.00	0.00	0.00	100000	0.00	0.00	0.00	0.00	100.0
-413.30	2118.19	6032.03	11869.34	0.00	0.00	0.00	-0.40	100000	0.00	0.00	0.00	0.00	100.0
2784.64	7089.86	13510.90	21004.23	0.00	0.00	-0.52	-1.08	100000	0.00	0.00	0.00	0.00	100.0
4735.74	11798.89	20041.54	28850.25	0.00	-0.44	-1.20	-1.90	100000	0.00	0.00	0.00	0.00	100.0
7769.46	16836.38	26525.96	37091.01	-0.07	-1.15	-2.15	-3.11	100000	0.00	0.00	0.00	0.00	99.3
9973.61	20632.15	32253.70	43725.85	-0.70	-2.27	-3.77	-5.14	100000	0.00	0.00	0.00	0.00	89.9
11724.39	24508.10	37127.46	49355.52	-0.82	-2.55	-4.14	-5.58	100000	0.00	0.00	0.00	0.00	87.2
14062.07	27943.37	41394.23	54494.84	-1.01	-2.85	-4.53	-6.07	100000	0.00	0.00	0.00	0.00	82.6
15269.43	30065.38	44476.05	57722.99	-1.14	-3.10	-4.89	-6.53	100000	0.00	0.00	0.00	0.00	78.7
16275.54	32127.27	46698.91	59850.14	-1.28	-3.38	-5.29	-7.02	100000	0.00	0.00	0.00	0.00	73.9
17436.90	33465.70	47932.05	61129.62	-1.46	-3.70	-5.73	-7.56	100000	0.00	0.00	0.00	0.00	66.9
17631.68	33544.66	48061.98	61136.20	-1.64	-4.03	-6.19	-8.14	100000	0.00	0.00	0.00	0.00	58.2
17504.28	33473.33	47854.97	61026.09	-1.83	-4.39	-6.70	-8.80	100000	0.00	0.00	0.00	0.00	48.0
17565.96	33385.75	47873.99	61004.88	-2.06	-4.81	-7.31	-9.57	100000	0.00	0.00	0.00	0.00	31.9
17401.78	33338.83	47782.82	60869.36	-2.30	-5.31	-8.02	-10.48	100000	0.00	0.00	0.00	0.00	10.0
17530.76	33419.15	47814.33	60946.09	-2.64	-5.92	-8.89	-11.59	100000	0.00	0.00	0.00	0.00	-29.4
17477.22	33311.93	47756.86	60805.96	-2.81	-6.24	-9.37	-12.18	100000	0.00	0.00	0.00	0.00	-55.3
17418.18	33307.60	47661.61	60762.83	-2.99	-6.62	-9.89	-12.86	100000	0.00	0.00	0.00	0.00	-89.5
17478.37	33267.77	47679.11	60988.20	-3.22	-7.03	-10.49	-13.66	100000	0.00	0.00	0.00	0.00	-140.6
17368.34	33220.82	47860.82	61375.38	-3.45	-7.49	-11.20	-14.59	100000	0.00	0.00	0.00	0.00	-205.4
17437.72	33541.72	48407.75	62125.42	-3.74	-8.09	-12.07	-15.71	100000	0.00	0.00	0.00	0.00	-311.7
17714.40	34067.03	49156.46	63074.89	-4.12	-8.81	-13.11	-17.04	100000	0.00	0.00	0.00	0.00	-505.6
17987.89	34586.27	49896.54	64013.37	-4.56	-9.64	-14.30	-18.57	100000	0.00	0.00	0.00	0.00	-842.1
18258.22	35099.51	50628.02	64968.98	-5.06	-10.62	-15.70	-20.36	100000	0.00	0.00	0.00	0.00	-1472.3
18525.42	35606.78	51381.84	65944.34	-5.66	-11.77	-17.36	-22.48	100000	0.00	0.00	0.00	0.00	-2772.5
18789.50	36142.06	52160.81	66942.30	-6.38	-13.15	-19.35	-25.04	100000	0.00	0.00	0.00	0.00	-5805.7
19087.81	36708.44	52968.07	67966.01	-6.44	-13.27	-19.52	-25.24	100000	0.00	0.00	0.00	0.00	-6179.2
19382.69	37268.29	53766.01	68977.87	-6.50	-13.38	-19.68	-25.45	100000	0.00	0.00	0.00	0.00	-6571.0
19674.16	37821.66	54554.70	69977.99	-6.56	-13.49	-19.84	-25.66	100000	0.00	0.00	0.00	0.00	-6981.5
19962.25	38368.60	55334.21	70966.45	-6.62	-13.61	-20.00	-25.86	100000	0.00	0.00	0.00	0.00	-7411.5
20246.98	38909.16	56104.62	71943.34	-6.68	-13.72	-20.16	-26.06	100000	0.00	0.00	0.00	0.00	-7861.3

Med (3)

Tech. Adoption Factor Adv. Diesel								Tech. Adoption Factor Alt. Fuels						
Payback Periods (years)								Payback Periods (years)						
1		2		3		4		1		2		3		4
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	95.0	95.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	93.2	93.2	80.5	80.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	94.5	94.5	76.9	76.9	43.2	43.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
99.3	78.4	78.4	23.8	23.8	-113.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
89.9	13.0	13.0	-322.5	1.0	-1588.7	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
87.2	-18.5	1.0	-516.4	1.0	-2545.1	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
82.6	-62.7	1.0	-813.7	1.0	-4202.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
78.7	-111.0	1.0	-1219.7	1.0	-6718.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
73.9	-183.8	1.0	-1878.6	1.0	-11045.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
66.9	-296.4	1.0	-2964.5	1.0	-19181.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
58.2	-452.2	1.0	-4786.5	1.0	-34284.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48.0	-695.7	1.0	-8000.8	1.0	-66177.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
31.9	-1114.1	1.0	-14854.1	1.0	-143753.8	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
10.0	-1906.2	1.0	-30370.0	1.0	-354775.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-3618.6	1.0	-72583.5	1.0	-1076988.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-5040.5	1.0	-116695.8	1.0	-1952118.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-7371.6	1.0	-196727.5	1.0	-3832033.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-11187.8	1.0	-358555.6	1.0	-8521342.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-17835.0	1.0	-727566.4	1.0	-21622850.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-32379.5	1.0	-1737833.4	1.0	-66521400.5	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-66916.8	1.0	-4918477.1	1.0	-251336958.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-154300.6	1.0	-16311365.0	1.0	-1162858457.9	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-408222.2	1.0	-65949471.1	1.0	-6971250963.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-1286955.5	1.0	-345556399.1	1.0	-58150120847.2	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-5140337.8	1.0	-2538043738.8	1.0	-745750918714.0	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-5773453.1	1.0	-2994663628.5	1.0	-919704851360.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-6474786.9	1.0	-3525845693.9	1.0	-1131142380474.8	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-7250474.7	1.0	-4142403269.6	1.0	-1387425697821.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-8107067.1	1.0	-4856492592.8	1.0	-1697209043686.4	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.0	-9051543.6	1.0	-5681745483.2	1.0	-2070634752658.5	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Med (4)

Market Penetration Advanced Diesel						Market Penetration Alternative Fuels					
16.4%	**61.7%**	**15.5%**	**6.4%**			**16.4%**	**61.7%**	**15.5%**	**6.4%**		
Payback Periods (years)				Final	Final	Payback Periods (years)				Final	Final
1	2	3	4	Step 1	Step 2	1	2	3	4	Step 1	Step 2
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	2.3%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	3.0%	9.8%	1.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.5%	12.5%	50.9%	6.7%	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.1%	11.3%	75.7%	99.8%	25.3%	25.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.3%	87.9%	99.9%	100.0%	76.8%	76.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.6%	99.4%	100.0%	100.0%	84.1%	84.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8.4%	99.7%	100.0%	100.0%	84.8%	84.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11.1%	99.8%	100.0%	100.0%	85.3%	85.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15.0%	99.9%	100.0%	100.0%	86.0%	86.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21.7%	99.9%	100.0%	100.0%	87.1%	87.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31.5%	100.0%	100.0%	100.0%	88.8%	88.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
44.5%	100.0%	100.0%	100.0%	90.9%	90.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
65.7%	100.0%	100.0%	100.0%	94.4%	94.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
90.9%	100.0%	100.0%	100.0%	98.5%	98.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.5%	100.0%	100.0%	100.0%	99.9%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.6%	100.0%	100.0%	100.0%	99.9%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.7%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.8%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99.9%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	#####	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Med (5)

Classes 3-6 Market Penetration by Average Annual VMT - Centrally Refueled Advanced Diesels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.5%	0.7%	1.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.6%	1.0%	2.5%	3.9%	6.7%	0.0%
0.0%	0.0%	0.0%	0.3%	0.6%	1.5%	3.5%	6.6%	11.6%	16.8%	25.3%	0.0%
0.0%	0.0%	0.3%	1.6%	4.9%	7.5%	18.6%	29.8%	39.2%	53.0%	76.8%	0.2%
0.0%	0.0%	0.3%	2.0%	6.7%	10.5%	23.9%	35.6%	48.5%	68.0%	84.1%	0.2%
0.0%	0.0%	0.4%	2.6%	9.4%	14.4%	30.7%	42.7%	61.6%	84.3%	84.8%	0.3%
0.0%	0.0%	0.5%	3.3%	12.4%	17.6%	35.4%	50.7%	74.0%	84.3%	85.3%	0.4%
0.0%	0.0%	0.6%	4.3%	15.9%	21.8%	41.0%	62.0%	84.0%	84.8%	86.0%	0.5%
0.0%	0.1%	1.4%	5.7%	19.7%	27.4%	49.7%	76.4%	84.5%	85.4%	87.1%	0.6%
0.0%	0.1%	1.7%	7.7%	24.6%	33.6%	60.6%	84.1%	85.0%	86.3%	88.8%	0.8%
0.0%	0.1%	2.1%	10.5%	30.9%	38.6%	74.4%	84.6%	85.7%	87.4%	90.9%	1.0%
0.0%	0.1%	2.8%	14.6%	36.7%	46.6%	84.1%	85.2%	86.7%	89.3%	94.4%	1.2%
0.0%	0.3%	3.8%	19.0%	44.6%	59.4%	84.7%	86.0%	88.3%	92.1%	98.5%	1.6%
0.0%	0.4%	5.7%	25.8%	58.3%	78.0%	85.5%	87.6%	91.4%	96.9%	99.9%	2.1%
0.0%	0.5%	7.0%	30.1%	67.0%	84.0%	86.0%	88.7%	93.5%	99.4%	99.9%	2.4%
0.0%	0.5%	8.7%	34.3%	77.3%	84.4%	86.7%	90.2%	95.9%	99.9%	#####	2.6%
0.0%	0.6%	11.1%	38.2%	84.1%	84.7%	87.7%	92.4%	98.9%	99.9%	#####	2.8%
0.0%	1.4%	14.3%	43.7%	84.4%	85.2%	89.0%	94.9%	99.9%	100.0%	#####	3.2%
0.0%	1.7%	17.9%	52.8%	84.9%	85.8%	91.2%	98.3%	99.9%	100.0%	#####	3.6%
0.0%	2.3%	22.8%	66.6%	85.6%	86.9%	94.6%	99.9%	100.0%	100.0%	#####	4.2%
0.0%	3.0%	30.0%	83.3%	86.6%	88.7%	99.0%	99.9%	100.0%	100.0%	#####	5.0%
0.0%	4.3%	36.6%	84.5%	88.4%	91.7%	99.9%	100.0%	100.0%	100.0%	#####	5.5%
0.0%	6.5%	46.0%	85.2%	91.5%	96.3%	100.0%	100.0%	100.0%	100.0%	#####	6.2%
0.1%	10.3%	62.3%	86.3%	96.4%	99.9%	100.0%	100.0%	100.0%	100.0%	#####	7.4%
0.1%	10.7%	63.9%	86.4%	96.9%	99.9%	100.0%	100.0%	100.0%	100.0%	#####	7.5%
0.1%	11.1%	65.4%	86.6%	97.3%	99.9%	100.0%	100.0%	100.0%	100.0%	#####	7.7%
0.1%	11.5%	67.0%	86.7%	97.7%	99.9%	100.0%	100.0%	100.0%	100.0%	#####	7.8%
0.1%	11.8%	68.5%	86.8%	98.2%	99.9%	100.0%	100.0%	100.0%	100.0%	#####	7.9%
0.1%	12.2%	70.0%	87.0%	98.6%	99.9%	100.0%	100.0%	100.0%	100.0%	#####	8.0%

Med (6)

Classes 3-6 Market Penetration by Average Annual VMT - Non-Centrally Refueled Advanced Diesels											
(thousands of miles)											Final
0-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100-119.9	120-139.9	140-159.9	160-179.9	180-199.9	200+	Step 3
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.5%	0.7%	1.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.6%	1.0%	2.5%	3.9%	6.7%	0.0%
0.0%	0.0%	0.0%	0.3%	0.7%	1.5%	3.5%	6.6%	11.6%	16.8%	25.3%	0.0%
0.0%	0.0%	0.1%	1.9%	5.7%	7.4%	18.6%	29.8%	39.2%	53.0%	76.8%	0.1%
0.0%	0.0%	0.3%	2.5%	8.0%	10.3%	23.9%	35.6%	48.5%	68.0%	84.1%	0.1%
0.0%	0.0%	0.4%	3.2%	11.1%	14.1%	30.7%	42.7%	61.6%	84.3%	84.8%	0.2%
0.0%	0.0%	0.5%	4.2%	14.5%	17.3%	35.4%	50.7%	74.0%	84.3%	85.3%	0.2%
0.0%	0.0%	0.6%	5.5%	17.9%	21.4%	41.0%	62.0%	84.0%	84.8%	86.0%	0.3%
0.0%	0.1%	0.7%	7.5%	22.3%	26.9%	49.7%	76.4%	84.5%	85.4%	87.1%	0.4%
0.0%	0.1%	1.6%	10.1%	27.9%	33.3%	60.6%	84.1%	85.0%	86.3%	88.8%	0.5%
0.0%	0.1%	1.9%	13.6%	34.1%	38.2%	74.4%	84.6%	85.7%	87.4%	90.9%	0.7%
0.0%	0.3%	2.5%	17.7%	39.9%	45.9%	84.1%	85.2%	86.7%	89.3%	94.4%	0.8%
0.0%	0.3%	3.4%	23.0%	49.5%	58.4%	84.7%	86.0%	88.3%	92.1%	98.5%	1.1%
0.0%	0.4%	5.0%	31.3%	65.4%	76.8%	85.5%	87.6%	91.4%	96.9%	99.9%	1.5%
0.0%	0.5%	6.1%	34.9%	74.7%	84.0%	86.0%	88.7%	93.5%	99.4%	99.9%	1.6%
0.0%	0.6%	7.7%	38.7%	83.9%	84.3%	86.7%	90.2%	95.9%	99.9%	100.0%	1.8%
0.0%	0.7%	9.8%	44.0%	84.3%	84.7%	87.7%	92.4%	98.9%	99.9%	100.0%	2.0%
0.0%	1.5%	12.8%	51.5%	84.7%	85.1%	89.0%	94.9%	99.9%	100.0%	100.0%	2.4%
0.0%	1.9%	16.3%	63.1%	85.2%	85.8%	91.2%	98.3%	99.9%	100.0%	100.0%	2.8%
0.0%	2.4%	20.8%	78.6%	86.0%	86.8%	94.6%	99.9%	100.0%	100.0%	100.0%	3.3%
0.0%	3.3%	27.3%	84.3%	87.3%	88.6%	99.0%	99.9%	100.0%	100.0%	100.0%	3.9%
0.0%	4.7%	34.7%	84.9%	89.5%	91.5%	99.9%	100.0%	100.0%	100.0%	100.0%	4.6%
0.0%	7.2%	42.7%	85.8%	93.1%	96.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5.5%
0.0%	11.3%	57.2%	87.3%	98.5%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	7.2%
0.1%	11.8%	58.7%	87.5%	98.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	7.4%
0.1%	12.2%	60.1%	87.6%	99.3%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	7.5%
0.1%	12.6%	61.6%	87.8%	99.8%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	7.7%
0.1%	13.0%	63.0%	88.0%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	7.8%
0.1%	13.4%	64.5%	88.2%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	8.0%

New MPG (1)

	Class 3-6				Class 7&8 Type 1				Class 7&8 Type 2			
Year	Conventional	Hybrid	Ethanol	New Average	Conv. Diesel	Adv. Diesel	Ethanol	New Average	Conv. Diesel	Adv. Diesel	Ethanol	New Average
2000	9.00	9.00	9.00	9.00	6.58	6.58	6.58	6.58	6.79	6.79	6.79	6.79
2001	9.02	10.82	10.82	9.02	6.58	7.15	6.58	6.58	6.79	7.37	6.79	6.79
2002	9.04	12.66	12.66	9.04	6.58	7.71	6.58	6.58	6.79	7.96	6.79	6.79
2003	9.06	14.49	14.49	9.06	6.58	8.28	6.58	6.58	6.79	8.54	6.79	6.79
2004	9.08	16.34	16.34	9.08	6.58	8.84	6.58	6.58	6.79	9.13	6.79	6.79
2005	9.10	18.20	18.20	9.11	6.58	9.41	6.58	6.58	6.79	9.71	6.79	6.82
2006	9.12	18.24	19.15	9.14	6.58	9.41	7.04	6.59	6.79	9.71	7.27	6.82
2007	9.14	18.28	20.11	9.16	6.58	9.41	7.50	6.59	6.79	9.71	7.74	6.84
2008	9.16	18.32	21.07	9.19	6.58	9.41	7.96	6.59	6.79	9.71	8.22	6.85
2009	9.18	18.36	22.03	9.21	6.58	9.41	8.42	6.59	6.79	9.71	8.69	6.87
2010	9.20	18.40	23.00	9.25	6.58	9.41	8.88	6.60	6.79	9.71	9.17	6.90
2011	9.22	18.44	23.05	9.28	6.58	9.41	9.55	6.60	6.79	9.71	9.86	6.93
2012	9.24	18.48	23.10	9.31	6.58	9.41	10.23	6.61	6.79	9.71	10.55	6.96
2013	9.26	18.52	23.15	9.36	6.58	9.41	10.90	6.62	6.79	9.71	11.24	7.02
2014	9.28	18.56	23.20	9.40	6.58	9.41	11.57	6.64	6.79	9.71	11.94	7.08
2015	9.30	18.60	23.25	9.47	6.58	9.41	12.24	6.63	6.79	9.71	12.63	7.19
2016	9.32	18.64	23.30	9.51	6.58	9.41	12.24	6.66	6.79	9.71	12.63	7.18
2017	9.34	18.68	23.35	9.55	6.58	9.41	12.24	6.66	6.79	9.71	12.63	7.18
2018	9.36	18.72	23.40	9.59	6.58	9.41	12.24	6.66	6.79	9.71	12.63	7.18
2019	9.38	18.76	23.45	9.65	6.58	9.41	12.24	6.66	6.79	9.71	12.63	7.18
2020	9.40	18.80	23.51	9.71	6.58	9.41	12.24	6.66	6.79	9.71	12.63	7.18
2021	9.45	18.90	23.62	9.82	6.58	9.41	12.24	6.69	6.79	9.71	12.63	7.31
2022	9.50	18.99	23.74	9.94	6.58	9.41	12.24	6.74	6.79	9.71	12.63	7.50
2023	9.54	19.09	23.86	10.05	6.58	9.41	12.24	6.79	6.79	9.71	12.63	7.67
2024	9.59	19.18	23.98	10.19	6.58	9.41	12.24	6.87	6.79	9.71	12.63	7.92
2025	9.64	19.28	24.10	10.40	6.58	9.41	12.24	6.97	6.79	9.71	12.63	8.13
2026	9.69	19.38	24.22	10.47	6.58	9.41	12.24	6.98	6.79	9.71	12.63	8.15
2027	9.74	19.47	24.34	10.54	6.58	9.41	12.24	6.98	6.79	9.71	12.63	8.16
2028	9.78	19.57	24.46	10.60	6.58	9.41	12.24	6.99	6.79	9.71	12.63	8.17
2029	9.83	19.67	24.58	10.67	6.58	9.41	12.24	7.00	6.79	9.71	12.63	8.18
2030	9.88	19.77	24.71	10.74	6.58	9.41	12.24	7.00	6.79	9.71	12.63	8.19

New MPG (2)

	Class 7&8 Type 3				Class 7&8			
Year	Conv. Diesel	Adv. Diesel	Ethanol	New Average	Conv. Diesel	Adv. Dsl	Ethanol	New Average
2000	7.00	7.00	7.00	7.00	6.87	6.87	6.87	6.87
2001	7.00	7.60	7.00	7.00	6.87	7.46	6.87	6.87
2002	7.00	8.20	7.00	7.00	6.87	8.06	6.87	6.87
2003	7.00	8.81	7.00	7.00	6.87	8.65	6.87	6.87
2004	7.00	9.41	7.00	7.00	6.87	9.24	6.87	6.87
2005	7.00	9.94	7.00	7.05	6.87	9.79	6.87	6.91
2006	7.00	10.01	7.49	7.07	6.87	9.83	7.35	6.92
2007	7.00	10.01	7.98	7.09	6.87	9.83	7.84	6.94
2008	7.00	10.01	8.47	7.12	6.87	9.83	8.32	6.96
2009	7.00	10.01	8.96	7.15	6.87	9.83	8.80	6.98
2010	7.00	10.01	9.45	7.20	6.87	9.83	9.28	7.01
2011	7.00	10.01	10.16	7.26	6.87	9.83	9.98	7.06
2012	7.00	10.01	10.88	7.32	6.87	9.83	10.68	7.10
2013	7.00	10.01	11.59	7.40	6.87	9.83	11.38	7.16
2014	7.00	10.01	12.31	7.50	6.87	9.83	12.08	7.24
2015	7.00	10.01	13.02	7.64	6.87	9.83	12.79	7.34
2016	7.00	10.01	13.02	7.63	6.87	9.83	12.79	7.34
2017	7.00	10.01	13.02	7.63	6.87	9.83	12.79	7.34
2018	7.00	10.01	13.02	7.63	6.87	9.83	12.79	7.33
2019	7.00	10.01	13.02	7.63	6.87	9.83	12.79	7.33
2020	7.00	10.01	13.02	7.64	6.87	9.83	12.79	7.34
2021	7.00	10.01	13.02	7.81	6.87	9.83	12.79	7.47
2022	7.00	10.01	13.02	8.02	6.87	9.83	12.79	7.64
2023	7.00	10.01	13.02	8.29	6.87	9.83	12.79	7.84
2024	7.00	10.01	13.02	8.55	6.87	9.83	12.79	8.05
2025	7.00	10.01	13.02	8.75	6.87	9.83	12.79	8.23
2026	7.00	10.01	13.02	8.79	6.87	9.83	12.79	8.26
2027	7.00	10.01	13.02	8.81	6.87	9.83	12.79	8.28
2028	7.00	10.01	13.02	8.83	6.87	9.83	12.79	8.29
2029	7.00	10.01	13.02	8.85	6.87	9.83	12.79	8.30
2030	7.00	10.01	13.02	8.86	6.87	9.83	12.79	8.31

Market Penetration

Market Penetration of Advanced Diesels and Alternative Fuels in Heavy Vehicles

	Class 7-8 Type 1		Class 7-8 Type 2		Class 7-8 Type 3		CLASS 7-8 Final		CLASS 3-6 Final	
Year	Current	Enhanced	Current	Enhanced	Current	Enhanced	Current	Enhanced	Current	Enhanced
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2004	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2005	0.2%	0.0%	1.2%	0.0%	2.4%	0.0%	1.8%	0.0%	0.3%	0.0%
2006	0.3%	0.0%	1.7%	0.0%	3.3%	0.0%	2.4%	0.0%	0.4%	0.0%
2007	0.4%	0.0%	2.3%	0.0%	4.4%	0.0%	3.2%	0.0%	0.5%	0.0%
2008	0.5%	0.0%	3.0%	0.0%	5.6%	0.0%	4.1%	0.0%	0.6%	0.0%
2009	0.7%	0.0%	3.9%	0.0%	7.1%	0.0%	5.2%	0.0%	0.8%	0.0%
2010	0.9%	0.0%	5.1%	0.0%	9.1%	0.0%	6.7%	0.0%	1.0%	0.0%
2011	1.2%	0.0%	6.6%	0.0%	11.8%	0.0%	8.7%	0.0%	1.3%	0.0%
2012	1.6%	0.0%	8.3%	0.0%	14.5%	0.0%	10.8%	0.0%	1.6%	0.0%
2013	2.2%	0.0%	10.7%	0.0%	17.9%	0.0%	13.5%	0.0%	2.0%	0.0%
2014	2.9%	0.0%	13.8%	0.0%	22.4%	0.0%	17.0%	0.0%	2.7%	0.0%
2015	2.6%	0.0%	18.4%	0.0%	27.8%	0.0%	21.2%	0.0%	3.6%	0.0%
2016	4.2%	0.0%	18.1%	0.0%	27.6%	0.0%	21.3%	0.0%	4.0%	0.0%
2017	4.1%	0.0%	18.0%	0.0%	27.5%	0.0%	21.2%	0.0%	4.4%	0.0%
2018	4.1%	0.0%	17.9%	0.0%	27.4%	0.0%	21.1%	0.0%	4.8%	0.0%
2019	4.1%	0.0%	17.9%	0.0%	27.3%	0.0%	21.1%	0.0%	5.6%	0.0%
2020	4.2%	0.0%	18.2%	0.0%	27.7%	0.0%	21.4%	0.0%	6.4%	0.0%
2021	5.6%	0.0%	23.7%	0.0%	34.6%	0.0%	27.0%	0.0%	7.5%	0.0%
2022	7.7%	0.0%	31.3%	0.0%	42.4%	0.0%	33.7%	0.0%	8.9%	0.0%
2023	10.3%	0.0%	38.2%	0.0%	51.7%	0.0%	41.3%	0.0%	10.1%	0.0%
2024	14.0%	0.0%	47.4%	0.0%	60.3%	0.0%	49.1%	0.0%	11.7%	0.0%
2025	18.6%	0.0%	54.7%	0.0%	66.5%	0.0%	55.3%	0.0%	14.6%	0.0%
2026	18.9%	0.0%	55.3%	0.0%	67.8%	0.0%	56.3%	0.0%	14.9%	0.0%
2027	19.2%	0.0%	55.8%	0.0%	68.4%	0.0%	56.8%	0.0%	15.2%	0.0%
2028	19.5%	0.0%	56.1%	0.0%	69.0%	0.0%	57.2%	0.0%	15.4%	0.0%
2029	19.8%	0.0%	56.4%	0.0%	69.5%	0.0%	57.7%	0.0%	15.7%	0.0%
2030	20.1%	0.0%	56.7%	0.0%	69.8%	0.0%	58.0%	0.0%	16.0%	0.0%