Modeling System Cost Inputs

For the CAFE Compliance and Effects Model, inputs defining up-front and operating costs[1] and savings associated with fuel-saving technologies are specified in a "technologies" input file that also defines technology efficacy. The model applies these inputs to estimate costs incurred for specific vehicle models, as well as average and total costs incurred at the OEM level and for the industry-wide total fleets. Basic categories, meaning, and application of these inputs are presented below, and in greater detail in the model documentation.

Technology Costs

The vehicle technology costs represent the costs arising from application of additional technology to a vehicle. Some technology costs have a cost basis associated with them. For instance, for mass reduction technologies, the technology input costs must be multiplied by the reduction of vehicle curb weight, in pounds, to get the full cost of applying the technology. Similarly, some engine technologies have costs determined on a per-cylinder or per-bank (configuration) basis.

The costs are specified independently for the 12 technology classes available to the modeling system: Subcompact PC, Subcompact Performance PC, Compact PC, Compact Performance PC, Midsize PC, Midsize Performance PC, Large PC, Large Performance PC, Minivan, Small LT, Midsize LT, and Large LT. The technologies input file contains worksheets corresponding to each of the technology classes. The costs are entered under the "Cost Table" section (cols.Q-AG), as a fully learned out table of costs, per technology, for each model year. The screenshots in Figure 2 and Figure 3 toward the end of this document provide example worksheets for the Compact PC and the Midsize LT technology classes. Note that, in order to conserve space, some of the input data in the below screenshots has been cropped.

The technology costs are further discussed in the FRIA on pages 274-282 and in the CAFE Model Documentation, in Section S2.2.5 on page 11.

Vehicle Maintenance Costs

The vehicle maintenance costs specify the changes in the amount buyers are expected to pay for maintaining a new vehicle as a consequence of applying additional technology. The maintenance costs may lead to increases in cost to consumers, such as for advanced diesel engines, or in cost saving to consumers, such as for of electric vehicles. In the case of electric vehicles, the cost savings result from avoiding traditional vehicle maintenance such as engine oil changes.

The user may include additional maintenance costs in the analysis, or modify existing ones, by entering appropriate data in the "Maint. Table" section (cols.AH-AX) in the technologies input file, on each worksheet corresponding to the various vehicle technology classes. The modeling system assumes that the data is provided as a fully learned out table of costs, per technology, for each model year, and incorporates appropriate discounting. The screenshots in Figure 2 and

[1] Other than outlays for fuel purchases, which the model calculates based on fuel economy and fuel prices.

Figure 3 toward the end of this document provide example worksheets for the Compact PC and the Midsize LT technology classes. Note that, in order to conserve space, some of the input data in the below screenshots has been cropped.

The maintenance costs are further discussed in the FRIA on pages 917-918 and in the CAFE Model Documentation, in Section S2.2.5 on page 11.

Post-Warranty Repair Costs

The vehicle post-warranty repair costs specify the increases in operating costs during the post-warranty period as a consequence of applying additional technology. NHTSA evaluated post-warranty repair costs as part of a sensitivity analysis only. However, repair costs during the warranty period remain a component of the indirect cost multiplier, and are included in the main analysis.

The user may include the operating costs during the post-warranty period in the analysis by entering appropriate data in the "Repair Table" section (cols.AY-BO) in the technologies input file, on each worksheet corresponding to the various vehicle technology classes. The modeling system assumes that the data is provided as a fully learned out table of costs, per technology, for each model year, and incorporates appropriate discounting. The screenshots in Figure 2 and Figure 3 toward the end of this document provide example worksheets for the Compact PC and the Midsize LT technology classes. Note that, since the post-warranty repair costs are not included as part of the reference case analysis for the recent final rule, the "Repair Table" appears blank. Also note that, in order to conserve space, some of the input data in the below screenshots has been cropped.

The repair costs are further discussed in the FRIA on page 917-918 and in the CAFE Model Documentation, in Section S2.2.5 on page 11.

Loss of Value

The loss of value specifies the loss in value to the consumer, due to decreased vehicle range, resulting from application of a certain technology to a vehicle. For the NPRM and the final rule, NHTSA attributed value losses to a vehicle whenever such vehicle was converted to a pure electric via the broad-market EV technology. During compliance simulation, the modeling system considers the influence of loss in value to the consumer when evaluating the effectiveness of a technology.

The user may ascribe loss in value for additional technologies by entering appropriate data under the "Loss of Value" column (col.K) in the technologies input file, on each worksheet corresponding to the various vehicle technology classes. The screenshots in Figure 2 and Figure 3 toward the end of this document provide example worksheets for the Compact PC and the Midsize LT technology classes. Note that, in order to conserve space, some of the input data in the below screenshots has been cropped.

The loss of value is further discussed in the FRIA on page 204.

Stranded Capital Costs

The stranded capital costs specify additional costs occurring when a specific technology replaces another technology for which the manufacturing process has not been fully depreciated. During compliance simulation, the modeling system considers the stranded capital cost of a technology being replaced when evaluating the effectiveness of a new technology.

The user may include additional stranded capital costs in the analysis, or modify existing ones, by entering appropriate data in the "Early Replacement Penalty Cost Table" section (cols.Y-AH) in the technologies input file, on the main technologies definitions worksheet. The screenshot in Figure 1 toward the end of this document shows an example of the technologies definitions worksheet. Note that, in order to conserve space, some of the input data in the below screenshots has been cropped.

The stranded capital costs are further discussed in the FRIA on pages 277-282.

Model Outputs

During modeling, each of the technology costs discussed above are accrued for each vehicle independently. Toward the end of the model simulation, these costs represent the cumulative sum of all technology application that went into improving a particular vehicle. The modeling system reports the various cost metrics for each individual vehicle as well as aggregated figures for each manufacturer, the overall industry, and for each regulatory class (Passenger Cars vs. Light Trucks). The vehicle-specific results may be found in the vehicles_report.csv output file, while the aggregated manufacturer-level and industry-level values are located in the compliance_report.csv output file.

The following screenshot is an excerpt from the vehicles_reports.csv, which presents some of the accrued costs on a vehicle-bases:

Footprint	Tech Cost	Price Increase	Tax Credit	Value Loss	Rel. Value Loss	Maint Cost	Repair Cost
43.0	19,897.91	19,897.91	0.00	3,597.00	900.02	-531.43	0.00
43.0	14,966.18	14,966.18	0.00	3,597.00	804.35	-534.70	0.00
45.8	26,003.23	26,003.23	0.00	3,597.00	1,046.69	-614.73	0.00
43.2	21,318.61	21,318.61	0.00	3,597.00	1,026.81	-555.45	0.00
45.8	1,468.67	1,468.67	0.00	0.00	0.00	0.00	0.00
51.0	584.79	584.79	0.00	0.00	0.00	20.25	0.00
51.0	584.79	584.79	0.00	0.00	0.00	20.25	0.00

The following screenshot is an excerpt from the compliance_reports.csv, which presents some of the accrued costs aggregated across all vehicles for a manufacturer:

Average FP	Tech Cost	Fines	Reg-Cost	Value Loss	Rel. Value Loss	Maint Cost	Repair Cost
44.0	666,982,438	38,017,678	700,773,089	11,254,484	2,992,920	53,673,095	0
45.5	20,260,114,665	592,315,526	20,867,329,659	11,254,484	40,767,404	1,322,398,811	0
48.6	32,581,814,809	731,886,166	33,313,700,975	11,254,484	40,769,506	2,052,473,435	0
43.7	830,569,101	50,558,948	881,128,049	11,457,710	2,641,369	68,017,665	0
45.5	21,947,278,177	653,946,975	22,599,656,983	11,457,710	114,558,787	1,399,679,376	0
48.6	35,075,508,219	785,982,472	35,861,490,691	11,457,710	157,392,945	2,164,309,207	0

Note, the stranded capital costs are not reported separately by the modeling system; instead, they are added to the base technology costs.

The following screenshot is an excerpt from the model's log file, which traces "line-by-line" application of each technology. The cost of applying a technology, along with the stranded capital cost resulting from some other technology being replaced, is shown. In one case, the multiyear capabilities of the model are demonstrated as well (shown in green), where the learning effect may also be observed.

Veh	Techs	Year	Sales	Cost	ERP-Cost
763	MR2	2020	2531.47402	48.0597	32.5321
764	DCT	2020	65754.21577	-50.048	31.5591
196	8SPD, HETRANS	2021	50635.27931	466.8243	16.0792
196	8SPD, HETRANS	2020	50828.96906	475.8891	16.0792
371	TRBDS2_MD	2024	13946.51393	277.9291	40.6626
337	CEGR1_SD	2024	4116.554669	313.9234	40.6626
1144	TRBDS2_SD	2025	3470.198046	45.4885	40.6626

Technology Information				Phase-in Values																	Early Replacement Penalty Cost Table ($)									
Index	Technology	Abbr.	TechType	PV-1	PV-2	PV-3	PV-4	PV-5	PV-6	PV-7	PV-8	PV-9	PV-10	PV-11	PV-12	PV-13	PV-14	PV-15	PV-16	PV-17	ERC-1	ERC-2	ERC-3	ERC-4	ERC-5	ERC-6	ERC-7	ERC-8	ERC-9	ERC-10
1	Low Friction Lubricants - Level 1	LUB1	EngMod	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
2	Engine Friction Reduction - Level 1	EFR1	EngMod	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
3	Low Friction Lubricants and Engine Friction Reduction - Level 2	LUB2_EFR2	EngMod	0%	0%	0%	0%	0%	0%	0%	0%	12%	24%	36%	48%	60%	72%	84%	96%	100%										
4	Variable Valve Timing (VVT) - Coupled Cam Phasing (CCP) on SOHC	CCPS	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
5	Discrete Variable Valve Lift (DVVL) on SOHC	DVVLS	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
6	Cylinder Deactivation on SOHC	DEACS	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
7	Variable Valve Timing (VVT) - Intake Cam Phasing (ICP)	ICP	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
8	Variable Valve Timing (VVT) - Dual Cam Phasing (DCP)	DCP	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
9	Discrete Variable Valve Lift (DVVL) on DOHC	DVVLD	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
10	Continuously Variable Valve Lift (CVVL)	CVVL	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
11	Cylinder Deactivation on DOHC	DEACD	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
12	Stoichiometric Gasoline Direct Injection (GDI)	SGDI	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
13	Cylinder Deactivation on OHV	DEACO	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
14	Variable Valve Actuation - CCP and DVVL on OHV	VVA	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
15	Stoichiometric Gasoline Direct Injection (GDI) on OHV	SGDIO	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
16	Turbocharging and Downsizing - Level 1 (18 bar BMEP) - Small Displacement	TRBDS1_SD	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
17	Turbocharging and Downsizing - Level 1 (18 bar BMEP) - Medium Displacement	TRBDS1_MD	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
18	Turbocharging and Downsizing - Level 1 (18 bar BMEP) - Large Displacement	TRBDS1_LD	EngMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%	78.48	69.69	60.90	52.20	43.50	34.80	26.10	17.40	8.70	0.00
19	Turbocharging and Downsizing - Level 2 (24 bar BMEP) - Small Displacement	TRBDS2_SD	EngMod	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	45%	60%	75%	75%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
20	Turbocharging and Downsizing - Level 2 (24 bar BMEP) - Medium Displacement	TRBDS2_MD	EngMod	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	45%	60%	75%	75%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
21	Turbocharging and Downsizing - Level 2 (24 bar BMEP) - Large Displacement	TRBDS2_LD	EngMod	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	45%	60%	75%	75%	78.48	69.69	60.90	52.20	43.50	34.80	26.10	17.40	8.70	0.00
22	Cooled Exhaust Gas Recirculation (EGR) - Level 1 (24 bar BMEP) - Small Displacement	CEGR1_SD	EngMod	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	45%	60%	75%	75%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
23	Cooled Exhaust Gas Recirculation (EGR) - Level 1 (24 bar BMEP) - Medium Displacement	CEGR1_MD	EngMod	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	45%	60%	75%	75%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
24	Cooled Exhaust Gas Recirculation (EGR) - Level 1 (24 bar BMEP) - Large Displacement	CEGR1_LD	EngMod	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	45%	60%	75%	75%	78.48	69.69	60.90	52.20	43.50	34.80	26.10	17.40	8.70	0.00
25	Cooled Exhaust Gas Recirculation (EGR) - Level 2 (27 bar BMEP) - Small Displacement	CEGR2_SD	EngMod	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	9%	12%	15%	25%	35%	45%	50%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
26	Cooled Exhaust Gas Recirculation (EGR) - Level 2 (27 bar BMEP) - Medium Displacement	CEGR2_MD	EngMod	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	9%	12%	15%	25%	35%	45%	50%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
27	Cooled Exhaust Gas Recirculation (EGR) - Level 2 (27 bar BMEP) - Large Displacement	CEGR2_LD	EngMod	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	9%	12%	15%	25%	35%	45%	50%	78.48	69.69	60.90	52.20	43.50	34.80	26.10	17.40	8.70	0.00
28	Advanced Diesel - Small Displacement	ADSL_SD	EngMod	0%	0%	0%	0%	3%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
29	Advanced Diesel - Medium Displacement	ADSL_MD	EngMod	0%	0%	0%	0%	3%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	73.38	65.16	56.93	48.80	40.66	32.53	24.40	16.27	8.14	0.00
30	Advanced Diesel - Large Displacement	ADSL_LD	EngMod	0%	0%	0%	0%	3%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	78.48	69.69	60.90	52.20	43.50	34.80	26.10	17.40	8.70	0.00
31	6-Speed Manual/Improved Internals	6MAN	TrMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
32	High Efficiency Gearbox (Manual)	HETRANSM	TrMod	0%	0%	0%	0%	0%	0%	0%	0%	12%	24%	36%	48%	60%	72%	84%	96%	100%										
33	Improved Auto. Trans. Controls/Externals	IATC	TrMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
34	6-Speed Trans with Improved Internals (Auto)	NAUTO	TrMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%	79.99	67.61	55.23	47.34	39.45	31.56	23.67	15.78	7.89	0.00
35	6-speed DCT	DCT	TrMod	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%	36.18	32.16	28.14	24.12	20.10	16.08	12.06	8.04	4.02	0.00
36	8-Speed Trans (Auto or DCT)	8SPD	TrMod	0%	0%	0%	0%	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%	65.10	56.68	48.26	41.36	34.47	27.58	20.68	13.79	6.89	0.00
37	High Efficiency Gearbox (Auto or DCT)	HETRANS	TrMod	0%	0%	0%	0%	0%	0%	0%	0%	12%	24%	36%	48%	60%	72%	84%	96%	100%										
38	Shift Optimizer	SHFTOPT	TrMod	0%	0%	0%	0%	0%	0%	0%	0%	20%	40%	60%	80%	100%	100%	100%	100%	100%										
39	Electric Power Steering	EPS	ELEC	5%	20%	35%	50%	65%	80%	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
40	Improved Accessories - Level 1	IACC1	ELEC	5%	20%	35%	50%	65%	80%	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
41	Improved Accessories - Level 2 (w/ Alternator Regen and 70% efficient alternator)	IACC2	ELEC	0%	0%	0%	0%	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%										
42	12V Micro-Hybrid (Stop-Start)	MHEV	ELEC	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
43	Integrated Starter Generator	ISG	ELEC	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	35%	40%	45%	50%										
44	Strong Hybrid - Level 1	SHEV1	ELEC	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	35%	40%	45%	50%										
45	Conversion from SHEV1 to SHEV2	SHEV1_2	ELEC	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	35%	40%	45%	50%										
46	Strong Hybrid - Level 2	SHEV2	ELEC	0%	0%	0%	3%	6%	9%	12%	15%	18%	21%	24%	27%	30%	35%	40%	45%	50%										
47	Plug-in Hybrid - 30 mi range	PHEV1	ELEC	0%	0%	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%										
48	Plug-in Hybrid	PHEV2	ELEC	0%	0%	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%										
49	Electric Vehicle (Early Adopter) - 75 mile range	EV1	ELEC	0%	0%	0%	1%	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%										
50	Electric Vehicle (Early Adopter) - 100 mile range	EV2	ELEC	0%	0%	0%	1%	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%										
51	Electric Vehicle (Early Adopter) - 150 mile range	EV3	ELEC	0%	0%	0%	1%	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%										
52	Electric Vehicle (Broad Market) - 150 mile range	EV4	ELEC	0%	0%	0%	0%	0%	0%	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%										
53	Fuel Cell Vehicle	FCV	ELEC	0%	0%	0%	0%	0%	0%	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%										
54	Mass Reduction - Level 1	MR1	MR	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
55	Mass Reduction - Level 2	MR2	MR	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
56	Mass Reduction - Level 3	MR3	MR	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
57	Mass Reduction - Level 4	MR4	MR	0%	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%	100%	100%	100%										
58	Mass Reduction - Level 5	MR5	MR	0%	0%	0%	0%	0%	0%	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%										
59	Low Rolling Resistance Tires - Level 1	ROLL1	ROLL	20%	35%	50%	65%	80%	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
60	Low Rolling Resistance Tires - Level 2	ROLL2	ROLL	0%	0%	0%	0%	0%	0%	0%	0%	15%	30%	45%	60%	75%	90%	100%	100%	100%										
61	Low Rolling Resistance Tires - Level 3	ROLL3	ROLL	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
62	Low Drag Brakes	LDB	DLR	20%	35%	50%	65%	80%	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
63	Secondary Axle Disconnect	SAX	DLR	15%	25%	35%	45%	55%	65%	75%	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%										
64	Aero Drag Reduction, Level 1	AERO1	AERO	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
65	Aero Drag Reduction, Level 2	AERO2	AERO	0%	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	100%	100%	100%	100%	100%										

Figure 1. Main Technologies Sheet

Compact PC			Availability			Misc Attributes				FC Improvements			Off-Cycle Credit		Cost Table ($)															Maint. Table ($)					Repair Table ($)				
Index	Abbr.	TechType	Applicable	Year Avail.	Year Retired	Electric Range	Delta Weight	Loss of Value		FC	FCG	FCG Share	Off-Cycle Credit PC	Off-Cycle Credit LT	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2011	2012	…	2024	2025	2011	2012	…	2024	2025
1	LUB1	EngMod	TRUE	2007						0.5%					4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02	3.86	3.86	3.86	3.86	3.86	3.86	3.86										
2	EFR1	EngMod	TRUE	2007						2.0%					15.12	15.12	15.12	15.12	15.12	15.12	15.12	15.12	14.52	14.52	14.52	14.52	14.52	14.52	14.52										
3	LUB2_EFR2	EngMod	TRUE	2017						1.0%					15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.09										
4	CCPS	EngMod	TRUE	2007						4.1%					53.38	52.05	50.76	49.50	48.29	47.11	46.34	45.59	42.96	42.25	41.55	40.86	40.19	39.53	38.89										
5	DVVLS	EngMod	TRUE	2007						2.8%					46.48	45.40	44.35	43.33	42.34	41.39	40.77	40.16	36.63	36.05	35.49	34.94	34.40	33.87	33.35										
6	DEACS	EngMod	TRUE	2007						0.4%					36.91	36.07	35.25	34.46	33.70	32.95	32.47	32.00	29.06	28.61	28.18	27.75	27.33	26.92	26.51										
7	ICP	EngMod	TRUE	2007						2.2%					53.38	52.05	50.76	49.50	48.29	47.11	46.34	45.59	42.96	42.25	41.55	40.86	40.19	39.53	38.89										
8	DCP	EngMod	TRUE	2007						2.0%					50.45	49.28	48.14	47.04	45.97	44.93	44.26	43.60	39.76	39.14	38.53	37.93	37.34	36.77	36.20										
9	DVVLD	EngMod	TRUE	2007						2.8%					46.48	45.40	44.35	43.33	42.34	41.39	40.77	40.16	36.63	36.05	35.49	34.94	34.40	33.87	33.35										
10	CVVL	EngMod	TRUE	2007						3.6%					74.82	73.08	71.39	69.75	68.17	66.63	65.63	64.65	58.96	58.04	57.13	56.24	55.37	54.52	53.68										
11	DEACD	EngMod	TRUE	2007						0.4%					36.91	36.07	35.25	34.46	33.70	32.95	32.47	32.00	29.06	28.61	28.18	27.75	27.33	26.92	26.51										
12	SGDI	EngMod	TRUE	2007						1.6%					76.28	74.55	72.86	71.23	69.64	68.11	67.11	66.14	60.06	59.14	58.24	57.35	56.48	55.63	54.79										
13	DEACO	EngMod	TRUE	2007						4.7%					236.83	231.33	225.99	220.81	215.78	210.91	207.75	204.67	186.65	183.72	180.85	178.04	175.28	172.58	169.93										
14	VVA	EngMod	TRUE	2007						2.7%					59.20	57.82	56.49	55.19	53.94	52.72	51.93	51.16	46.65	45.92	45.20	44.50	43.81	43.14	42.48										
15	SGDIO	EngMod	TRUE	2007						1.6%					76.28	74.55	72.86	71.23	69.64	68.11	67.11	66.14	60.06	59.14	58.24	57.35	56.48	55.63	54.79										
16	TRBDS1_SD	EngMod	TRUE	2007						7.2%					553.27	541.97	531.01	520.38	510.07	500.07	493.60	487.26	431.88	425.91	420.06	414.33	408.71	403.20	397.81			…					…		
17	TRBDS1_MD	EngMod	TRUE	2007						6.7%					-6.01	-1.20	3.47	7.99	12.38	16.64	19.39	22.09	-34.68	-31.95	-29.27	-26.64	-24.07	-21.54	-17.82										
18	TRBDS1_LD	EngMod	TRUE	2007						6.7%					706.24	690.06	674.36	659.14	644.37	630.05	620.79	611.71	540.44	531.88	523.48	515.25	507.19	499.29	492.79										
19	TRBDS2_SD	EngMod	TRUE	2012						2.9%					15.70	17.66	19.56	21.41	23.20	24.93	26.06	27.16	17.77	18.85	19.91	20.95	21.97	22.97	4.83										
20	TRBDS2_MD	EngMod	TRUE	2012						2.9%					298.22	291.43	284.85	278.46	272.27	266.26	262.37	258.57	254.83	251.18	247.59	244.08	240.64	237.27	214.21										
21	TRBDS2_LD	EngMod	TRUE	2012						2.9%					502.69	491.25	480.15	469.39	458.95	448.82	442.27	435.85	429.56	423.40	417.35	411.43	405.63	399.95	361.09										
22	CEGR1_SD	EngMod	TRUE	2012						3.6%					343.46	335.64	328.06	320.71	313.57	306.65	302.18	297.79	293.49	289.28	285.15	281.11	277.15	273.26	246.71										
23	CEGR1_MD	EngMod	TRUE	2012						3.6%					343.46	335.64	328.06	320.71	313.57	306.65	302.18	297.79	293.49	289.28	285.15	281.11	277.15	273.26	246.71										
24	CEGR1_LD	EngMod	TRUE	2012						3.6%					343.46	335.64	328.06	320.71	313.57	306.65	302.18	297.79	293.49	289.28	285.15	281.11	277.15	273.26	246.71										
25	CEGR2_SD	EngMod	TRUE	2017						1.0%					596.44	582.86	569.70	556.92	544.54	532.52	524.75	517.13	509.67	502.36	495.19	488.16	481.28	474.53	428.43										
26	CEGR2_MD	EngMod	TRUE	2017						1.0%					596.44	582.86	569.70	556.92	544.54	532.52	524.75	517.13	509.67	502.36	495.19	488.16	481.28	474.53	428.43										
27	CEGR2_LD	EngMod	TRUE	2017						1.0%					-384.63	-368.59	-353.04	-337.95	-323.31	-309.11	-299.93	-290.94	-313.93	-305.22	-296.67	-288.30	-280.10	-272.06	-288.88										
28	ADSL_SD	EngMod	TRUE	2017						5.5%					1,064.45	1,031.15	998.86	967.53	937.15	907.68	888.62	869.94	947.01	928.84	911.04	893.59	876.50	859.74	702.14	344.64	347.12		377.31	379.19					
29	ADSL_MD	EngMod	TRUE	2017						5.5%					998.21	971.09	944.78	919.26	894.51	870.50	854.97	839.75	957.42	942.49	927.85	913.51	899.46	885.69	728.60	344.64	347.12		377.31	379.19					
30	ADSL_LD	EngMod	TRUE	2017						5.5%					1,948.27	1,903.16	1,859.39	1,816.94	1,775.76	1,735.82	1,709.99	1,684.68	1,860.67	1,835.88	1,811.58	1,787.77	1,764.44	1,741.57	1,501.98	344.64	347.12		377.31	379.19					
31	6MAN	TrMod	TRUE	2007						2.0%					321.60	313.57	305.78	298.23	290.90	283.79	279.19	274.69	258.83	254.53	250.32	246.19	242.14	238.17	234.29										
32	HETRANSM	TrMod	TRUE	2017						3.4%					291.84	284.48	277.34	270.42	263.70	257.19	250.87	244.74	238.79	233.02	227.43	222.00	218.49	215.05	201.94										
33	IATC	TrMod	TRUE	2007						2.3%					71.70	69.91	68.17	66.49	64.86	63.27	62.25	61.24	57.71	56.75	55.81	54.89	53.98	53.10	52.23										
34	NAUTO	TrMod	TRUE	2007						1.9%					-49.12	-47.21	-45.37	-43.58	-41.84	-40.15	-39.06	-37.99	-39.96	-38.93	-37.92	-36.92	-35.95	-35.00	-34.07										
35	DCT	TrMod	TRUE	2007						4.0%					-143.52	-136.92	-130.51	-124.30	-118.27	-112.43	-108.65	-104.95	-122.61	-119.00	-115.46	-112.00	-108.60	-105.27	-102.01			…					…		
36	8SPD	TrMod	TRUE	2014						3.8%					292.52	285.86	279.40	273.14	267.07	261.17	257.36	253.63	230.33	226.79	223.32	219.92	216.59	213.32	210.12										
37	HETRANS	TrMod	TRUE	2017						2.2%					291.84	284.48	277.34	270.42	263.70	257.19	250.87	244.74	238.79	233.02	227.43	222.00	218.49	215.05	201.94										
38	SHFTOPT	TrMod	TRUE	2017						3.3%					1.94	1.89	1.84	1.80	1.75	1.71	1.67	1.63	1.59	1.55	1.51	1.48	1.45	1.43	1.34										
39	EPS	ELEC	TRUE	2007						1.5%					126.04	122.89	119.84	116.88	114.01	111.22	109.42	107.65	101.44	99.75	98.10	96.48	94.90	93.34	91.82										
40	IACC1	ELEC	TRUE	2007						1.2%					102.51	99.95	97.46	95.06	92.72	90.45	88.99	87.55	82.50	81.13	79.78	78.47	77.18	75.91	74.68										
41	IACC2	ELEC	TRUE	2014						1.8%					62.40	60.84	59.33	57.87	56.44	55.07	54.17	53.30	52.44	51.60	50.78	49.97	49.18	48.41	45.46			…					…		
42	MHEV	ELEC	TRUE	2007						1.7%			2.5	4.4	511.32	511.32	511.32	426.80	359.18	359.18	351.07	343.20	310.61	303.30	296.21	289.34	282.67	276.19	269.92										
43	ISG	ELEC	TRUE	2012						7.5%					1,188.09	1,175.46	1,163.21	1,065.16	1,133.37	973.51	975.85	960.20	923.83	908.98	894.51	880.40	866.66	853.26	724.49										
44	SHEV1	ELEC	TRUE	2012	2016					7.8%					2,231.15	2,195.08	2,160.10	2,065.85	2,032.93	1,952.75	1,932.10	1,906.07	1,577.80	1,553.71	1,530.15	1,507.12	1,484.60	1,462.59	1,402.79										
45	SHEV1_2	ELEC	TRUE	2017						10.1%					1,374.62	1,346.23	1,318.68	1,291.96	1,266.05	1,240.91	1,222.53	1,204.58	1,176.60	1,159.51	1,142.82	1,126.52	1,112.36	1,098.49	989.05										
46	SHEV2	ELEC	TRUE	2017						3.0%					2,215.31	2,179.24	2,144.26	2,052.44	2,019.53	1,941.29	1,920.65	1,894.85	1,566.80	1,542.93	1,519.59	1,496.77	1,474.45	1,452.63	1,394.57										
47	PHEV1	ELEC	TRUE	2017		30				40.7%	0.0%	50.0%			14,792.19	14,749.99	14,709.06	12,710.15	12,671.64	11,066.93	11,042.77	9,632.62	9,359.52	8,231.61	8,231.37	8,230.92	8,230.27	8,229.43	6,571.35										
48	PHEV2	ELEC	FALSE	2020		0				0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
49	EV1	ELEC	TRUE	2017		75				68.5%			-2.5	-4.4	4,491.66	4,573.95	4,653.78	3,339.19	3,414.30	2,373.54	2,416.11	1,567.07	2,242.33	1,568.43	1,606.60	1,644.13	1,684.80	1,724.66	503.39	-603.90	-613.58	…	-666.36	-671.08			…		
50	EV2	ELEC	FALSE	2017		100				0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
51	EV3	ELEC	FALSE	2017		150				0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
52	EV4	ELEC	TRUE	2017		150		3,597		0.0%					12,297.44	12,297.44	12,297.44	10,269.08	10,269.08	8,646.39	8,646.39	7,348.23	7,348.23	6,309.71	6,309.71	6,309.71	6,309.71	6,309.71	4,632.56										
53	FCV	ELEC	FALSE	2017						0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
54	MR1	MR	FALSE	2007			0.0%			0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
55	MR2	MR	FALSE	2007			0.0%			0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
56	MR3	MR	FALSE	2007			0.0%			0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			…					…		
57	MR4	MR	FALSE	2011			0.0%			0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
58	MR5	MR	FALSE	2016			0.0%			0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
59	ROLL1	ROLL	TRUE	2007						1.9%					6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.44	6.44	6.44	6.44	6.44	6.44	6.44	19.71	19.71		21.31	21.53					
60	ROLL2	ROLL	TRUE	2017						2.0%					73.16	73.16	73.16	73.16	73.16	73.16	73.16	73.16	60.39	60.39	50.17	48.95	47.76	46.60	43.52	124.84	124.84	…	134.93	136.38			…		
61	ROLL3	ROLL	FALSE							0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
62	LDB	DLR	FALSE	2007						0.8%					73.77	73.77	73.77	73.77	73.77	73.77	73.77	73.77	70.84	70.84	70.84	70.84	70.84	70.84	70.84										
63	SAX	DLR	TRUE	2007						1.4%					112.51	109.70	106.97	104.33	101.76	99.28	97.67	96.09	90.55	89.04	87.57	86.12	84.71	83.32	81.96			…					…		
64	AERO1	AERO	TRUE	2007						2.3%					56.35	54.94	53.58	52.25	50.97	49.72	48.92	48.13	45.35	44.60	43.86	43.13	42.43	41.73	41.05										
65	AERO2	AERO	TRUE	2011						2.5%			0.6	1.0	187.46	183.10	178.88	174.77	170.80	166.94	164.44	162.00	159.60	157.25	154.95	152.70	150.49	148.32	134.51			…					…		

Figure 2. Compact PC Sheet

Midsize LT			Availability			Misc Attributes				FC Improvements			Off-Cycle Credit		Cost Table ($)															Maint. Table ($)					Repair Table ($)				
Index	Abbr.	TechType	Applicable	Year Avail.	Year Retired	Electric Range	Delta Weight	Loss of Value		FC	FCG	FCG Share	Off-Cycle Credit PC	Off-Cycle Credit LT	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2011	2012	…	2024	2025	2011	2012	…	2024	2025
1	LUB1	EngMod	TRUE	2007						0.7%					4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02	3.86	3.86	3.86	3.86	3.86	3.86	3.86										
2	EFR1	EngMod	TRUE	2007						2.6%					15.12	15.12	15.12	15.12	15.12	15.12	15.12	15.12	14.52	14.52	14.52	14.52	14.52	14.52	14.52										
3	LUB2_EFR2	EngMod	TRUE	2017						1.3%					15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.09										
4	CCPS	EngMod	TRUE	2007						5.0%					53.38	52.05	50.76	49.50	48.29	47.11	46.34	45.59	42.96	42.25	41.55	40.86	40.19	39.53	38.89										
5	DVVLS	EngMod	TRUE	2007						3.5%					46.48	45.40	44.35	43.33	42.34	41.39	40.77	40.16	36.63	36.05	35.49	34.94	34.40	33.87	33.35										
6	DEACS	EngMod	TRUE	2007						0.7%					36.91	36.07	35.25	34.46	33.70	32.95	32.47	32.00	29.06	28.61	28.18	27.75	27.33	26.92	26.51										
7	ICP	EngMod	TRUE	2007						2.5%					53.38	52.05	50.76	49.50	48.29	47.11	46.34	45.59	42.96	42.25	41.55	40.86	40.19	39.53	38.89										
8	DCP	EngMod	TRUE	2007						2.6%					50.45	49.28	48.14	47.04	45.97	44.93	44.26	43.60	39.76	39.14	38.53	37.93	37.34	36.77	36.20										
9	DVVLD	EngMod	TRUE	2007						3.5%					46.48	45.40	44.35	43.33	42.34	41.39	40.77	40.16	36.63	36.05	35.49	34.94	34.40	33.87	33.35										
10	CVVL	EngMod	TRUE	2007						4.5%					74.82	73.08	71.39	69.75	68.17	66.63	65.63	64.65	58.96	58.04	57.13	56.24	55.37	54.52	53.68										
11	DEACD	EngMod	TRUE	2007						0.7%					36.91	36.07	35.25	34.46	33.70	32.95	32.47	32.00	29.06	28.61	28.18	27.75	27.33	26.92	26.51										
12	SGDI	EngMod	TRUE	2007						1.5%					76.28	74.55	72.86	71.23	69.64	68.11	67.11	66.14	60.06	59.14	58.24	57.35	56.48	55.63	54.79										
13	DEACO	EngMod	TRUE	2007						5.9%					236.83	231.33	225.99	220.81	215.78	210.91	207.75	204.67	186.65	183.72	180.85	178.04	175.28	172.58	169.93										
14	VVA	EngMod	TRUE	2007						3.3%					59.20	57.82	56.49	55.19	53.94	52.72	51.93	51.16	46.65	45.92	45.20	44.50	43.81	43.14	42.48										
15	SGDIO	EngMod	TRUE	2007						1.5%					76.28	74.55	72.86	71.23	69.64	68.11	67.11	66.14	60.06	59.14	58.24	57.35	56.48	55.63	54.79										
16	TRBDS1_SD	EngMod	TRUE	2007						8.7%					553.27	541.97	531.01	520.38	510.07	500.07	493.60	487.26	431.88	425.91	420.06	414.33	408.71	403.20	397.81			…					…		
17	TRBDS1_MD	EngMod	TRUE	2007						7.9%					-6.01	-1.20	3.47	7.99	12.38	16.64	19.39	22.09	-34.68	-31.95	-29.27	-26.64	-24.07	-21.54	-17.82										
18	TRBDS1_LD	EngMod	TRUE	2007						7.9%					706.24	690.06	674.36	659.14	644.37	630.05	620.79	611.71	540.44	531.88	523.48	515.25	507.19	499.29	492.79										
19	TRBDS2_SD	EngMod	TRUE	2012						3.4%					15.70	17.66	19.56	21.41	23.20	24.93	26.06	27.16	17.77	18.85	19.91	20.95	21.97	22.97	4.83										
20	TRBDS2_MD	EngMod	TRUE	2012						3.4%					298.22	291.43	284.85	278.46	272.27	266.26	262.37	258.57	254.83	251.18	247.59	244.08	240.64	237.27	214.21										
21	TRBDS2_LD	EngMod	TRUE	2012						3.4%					502.69	491.25	480.15	469.39	458.95	448.82	442.27	435.85	429.56	423.40	417.35	411.43	405.63	399.95	361.09										
22	CEGR1_SD	EngMod	TRUE	2012						3.5%					343.46	335.64	328.06	320.71	313.57	306.65	302.18	297.79	293.49	289.28	285.15	281.11	277.15	273.26	246.71										
23	CEGR1_MD	EngMod	TRUE	2012						3.5%					343.46	335.64	328.06	320.71	313.57	306.65	302.18	297.79	293.49	289.28	285.15	281.11	277.15	273.26	246.71										
24	CEGR1_LD	EngMod	TRUE	2012						3.5%					343.46	335.64	328.06	320.71	313.57	306.65	302.18	297.79	293.49	289.28	285.15	281.11	277.15	273.26	246.71										
25	CEGR2_SD	EngMod	TRUE	2017						1.1%					596.44	582.86	569.70	556.92	544.54	532.52	524.75	517.13	509.67	502.36	495.19	488.16	481.28	474.53	428.43										
26	CEGR2_MD	EngMod	TRUE	2017						1.1%					596.44	582.86	569.70	556.92	544.54	532.52	524.75	517.13	509.67	502.36	495.19	488.16	481.28	474.53	428.43										
27	CEGR2_LD	EngMod	TRUE	2017						1.1%					-384.63	-368.59	-353.04	-337.95	-323.31	-309.11	-299.93	-290.94	-313.93	-305.22	-296.67	-288.30	-280.10	-272.06	-288.88										
28	ADSL_SD	EngMod	TRUE	2017						3.4%					1,064.45	1,031.15	998.86	967.53	937.15	907.68	888.62	869.94	947.01	928.84	911.04	893.59	876.50	859.74	702.14	372.25	376.22		405.25	406.83					
29	ADSL_MD	EngMod	TRUE	2017						3.4%					998.21	971.09	944.78	919.26	894.51	870.50	854.97	839.75	957.42	942.49	927.85	913.51	899.46	885.69	728.60	372.25	376.22		405.25	406.83					
30	ADSL_LD	EngMod	TRUE	2017						3.4%					1,948.27	1,903.16	1,859.39	1,816.94	1,775.76	1,735.82	1,709.99	1,684.68	1,860.67	1,835.88	1,811.58	1,787.77	1,764.44	1,741.57	1,501.98	372.25	376.22		405.25	406.83					
31	6MAN	TrMod	TRUE	2007						2.2%					321.60	313.57	305.78	298.23	290.90	283.79	279.19	274.69	258.83	254.53	250.32	246.19	242.14	238.17	234.29										
32	HETRANSM	TrMod	TRUE	2017						3.7%					291.84	284.48	277.34	270.42	263.70	257.19	250.87	244.74	238.79	233.02	227.43	222.00	218.49	215.05	201.94										
33	IATC	TrMod	TRUE	2007						2.9%					71.70	69.91	68.17	66.49	64.86	63.27	62.25	61.24	57.71	56.75	55.81	54.89	53.98	53.10	52.23										
34	NAUTO	TrMod	TRUE	2007						2.0%					-49.12	-47.21	-45.37	-43.58	-41.84	-40.15	-39.06	-37.99	-39.96	-38.93	-37.92	-36.92	-35.95	-35.00	-34.07										
35	DCT	TrMod	FALSE	2007						0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			…					…		
36	8SPD	TrMod	TRUE	2014						4.9%					91.30	89.22	87.20	85.25	83.35	81.51	80.32	79.16	71.89	70.78	69.70	68.64	67.60	66.58	65.58										
37	HETRANS	TrMod	TRUE	2017						3.1%					291.84	284.48	277.34	270.42	263.70	257.19	250.87	244.74	238.79	233.02	227.43	222.00	218.49	215.05	201.94										
38	SHFTOPT	TrMod	TRUE	2017						4.1%					1.94	1.89	1.84	1.80	1.75	1.71	1.67	1.63	1.59	1.55	1.51	1.48	1.45	1.43	1.34										
39	EPS	ELEC	TRUE	2007						1.0%					126.04	122.89	119.84	116.88	114.01	111.22	109.42	107.65	101.44	99.75	98.10	96.48	94.90	93.34	91.82										
40	IACC1	ELEC	TRUE	2007						0.9%					102.51	99.95	97.46	95.06	92.72	90.45	88.99	87.55	82.50	81.13	79.78	78.47	77.18	75.91	74.68										
41	IACC2	ELEC	TRUE	2014						2.3%					62.40	60.84	59.33	57.87	56.44	55.07	54.17	53.30	52.44	51.60	50.78	49.97	49.18	48.41	45.46			…					…		
42	MHEV	ELEC	TRUE	2007						2.1%			2.5	4.4	617.79	617.79	617.79	515.67	433.97	433.97	424.17	414.66	375.29	366.46	357.89	349.58	341.52	333.71	326.12										
43	ISG	ELEC	TRUE	2012						5.7%					1,188.09	1,175.46	1,163.21	1,065.16	1,133.37	973.51	975.85	960.20	923.83	908.98	894.51	880.40	866.66	853.26	724.49										
44	SHEV1	ELEC	TRUE	2012	2016					-0.3%					3,178.66	3,129.60	3,082.01	2,926.68	2,881.91	2,751.14	2,723.05	2,685.05	2,261.14	2,225.85	2,191.37	2,157.67	2,124.74	2,092.55	1,991.84										
45	SHEV1_2	ELEC	TRUE	2017						17.1%					1,688.56	1,651.42	1,615.39	1,580.44	1,546.54	1,513.65	1,490.27	1,467.41	1,445.08	1,423.25	1,401.92	1,381.07	1,362.45	1,344.21	1,228.61										
46	SHEV2	ELEC	TRUE	2017						-0.3%					3,178.66	3,129.60	3,082.01	2,926.68	2,881.91	2,751.14	2,723.05	2,685.05	2,261.14	2,225.85	2,191.37	2,157.67	2,124.74	2,092.55	1,991.84										
47	PHEV1	ELEC	FALSE	2017		30				40.7%	0.0%	50.0%			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
48	PHEV2	ELEC	FALSE	2020		0				0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
49	EV1	ELEC	FALSE	2017		75				68.5%			-2.5	-4.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-656.67	-666.58	…	-720.99	-725.52			…		
50	EV2	ELEC	FALSE	2017		100				0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
51	EV3	ELEC	FALSE	2017		150				0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
52	EV4	ELEC	FALSE	2017		150			3,597	0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
53	FCV	ELEC	FALSE	2017						0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
54	MR1	MR	TRUE	2007			1.5%			0.5%					0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.06										
55	MR2	MR	TRUE	2007			6.0%			3.3%					0.56	0.55	0.53	0.52	0.51	0.49	0.48	0.47	0.44	0.43	0.42	0.41	0.40	0.39	0.39										
56	MR3	MR	TRUE	2007			2.5%			1.3%					1.09	1.06	1.04	1.01	0.99	0.96	0.94	0.91	0.86	0.83	0.81	0.79	0.78	0.77	0.75			…					…		
57	MR4	MR	TRUE	2011			5.0%			2.7%					1.72	1.68	1.64	1.60	1.57	1.53	1.50	1.46	1.43	1.40	1.37	1.34	1.32	1.30	1.18										
58	MR5	MR	TRUE	2016			5.0%			2.8%					2.41	2.35	2.30	2.25	2.19	2.14	2.10	2.05	2.00	1.96	1.91	1.87	1.85	1.82	1.65										
59	ROLL1	ROLL	TRUE	2007						1.9%					6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.44	6.44	6.44	6.44	6.44	6.44	6.44	21.15	21.29		23.19	23.36					
60	ROLL2	ROLL	TRUE	2017						2.0%					73.16	73.16	73.16	73.16	73.16	73.16	73.16	73.16	60.39	60.39	50.17	48.95	47.76	46.60	43.52	133.94	134.85	…	146.90	147.92			…		
61	ROLL3	ROLL	FALSE							0.0%					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
62	LDB	DLR	TRUE	2007						0.8%					73.77	73.77	73.77	73.77	73.77	73.77	73.77	73.77	70.84	70.84	70.84	70.84	70.84	70.84	70.84										
63	SAX	DLR	TRUE	2007						1.3%					112.51	109.70	106.97	104.33	101.76	99.28	97.67	96.09	90.55	89.04	87.57	86.12	84.71	83.32	81.96			…					…		
64	AERO1	AERO	TRUE	2007						2.3%					56.35	54.94	53.58	52.25	50.97	49.72	48.92	48.13	45.35	44.60	43.86	43.13	42.43	41.73	41.05										
65	AERO2	AERO	TRUE	2011						2.5%			0.6	1.0	187.46	183.10	178.88	174.77	170.80	166.94	164.44	162.00	159.60	157.25	154.95	152.70	150.49	148.32	134.51			…					…		

Figure 3. Midsize LT Sheet