

Site C Review - Responses to questions raised by Deloitte
August 15th, 2017

CONFIDENTIAL

No.	
50	Date/Source of Question: Request from [REDACTED] on August 15, 2017 at 4:10pm
	Response provided by: [REDACTED]
	Functional Approver: [REDACTED]
	Question: Provide share of stock over time and share of sales (year by year) of EVs in our current forecast?
	Revised Response: The table below show the annual sales of EV and the market share (i.e. total stock of EV as percentage of total vehicles). Following the table is an explanation of the EV model. The explanation was provided in the information response in the F17-F19 RRA.

	EV ENERGY GWh.	EV PEAK MW	EV ANNUAL SALES	TOTAL STOCK EV	TOTAL ALL CARS	EV MARKET SHARE
F16	10	3	1,456	4,167	3,021,538	0.1%
F17	14	5	1,791	5,927	3,071,180	0.2%
F18	20	6	2,333	8,211	3,121,161	0.3%
F19	28	9	3,039	11,171	3,171,542	0.4%
F20	38	12	3,956	15,007	3,222,140	0.5%
F21	51	16	5,196	20,024	3,272,704	0.6%
F22	71	22	10,172	29,934	3,322,981	0.9%
F23	106	32	15,512	45,056	3,373,032	1.3%
F24	160	49	21,541	66,021	3,422,790	1.9%
F25	232	72	27,482	92,663	3,472,187	2.7%
F26	323	101	33,652	125,114	3,521,093	3.6%
F27	433	138	40,410	163,839	3,569,694	4.6%
F28	563	184	46,703	208,213	3,617,985	5.8%
F29	708	237	48,386	253,429	3,665,899	6.9%
F30	856	299	50,067	299,258	3,713,431	8.1%
F31	1006	355	51,939	345,615	3,760,577	9.2%
F32	1158	412	53,963	392,326	3,807,206	10.3%
F33	1311	470	56,026	439,058	3,853,246	11.4%
F34	1464	528	59,020	486,344	3,898,757	12.5%
F35	1619	589	60,974	532,731	3,943,799	13.5%
F36	1770	648	63,355	578,268	3,988,366	14.5%

Energy and Peak demand do not include losses and do not include rate impacts as shown. They are based on the projections from the EV model.

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EV Model is described in BC Hydro's 2012 Load Forecast document and as well AMPC IR 1.13.1, exhibit B-10.

BC Hydro's in-house electric vehicle (EV) stock turn over model considers electric vehicles to be either battery plug-in vehicles or plug-in hybrid vehicles. For load forecasting purposes, the model combines both electric vehicle types rather than doing a separate forecast for each type of vehicle. The total stock of electric vehicle includes all light duty vehicles including passenger cars and service-type vehicles.

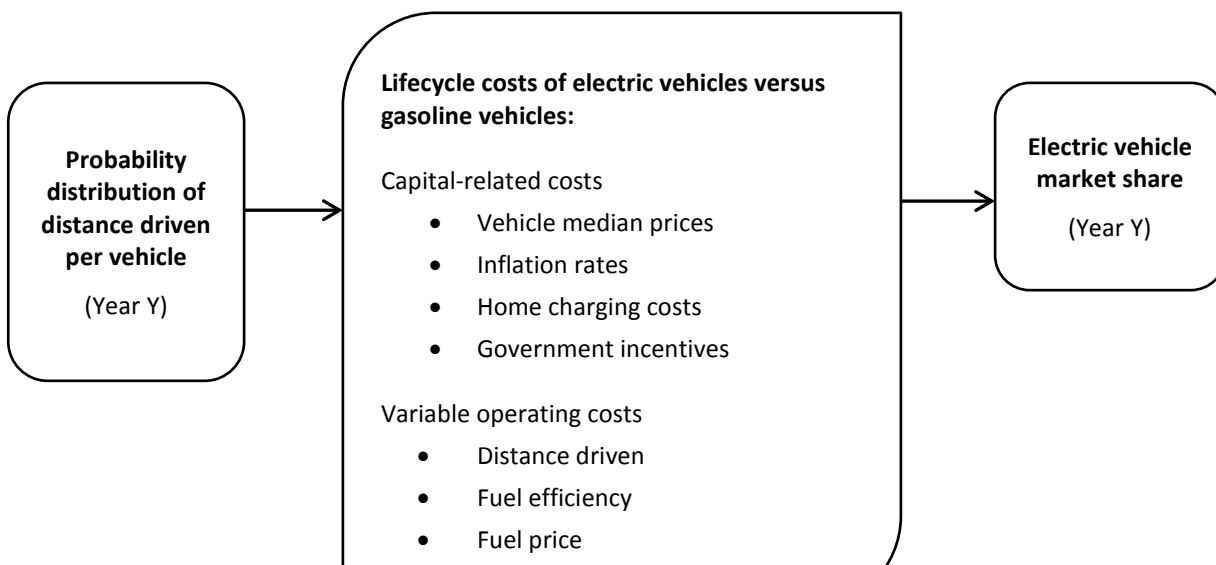
The diagram below shows the key inputs and calculations used by the electric vehicle stock turn over model. The key driver for determining the market share of EVs is a lifecycle comparison of the costs of electric vehicles relative to gasoline vehicles. The model considers the capital-related costs of vehicles based on median sales prices and factors in government incentives and home charging costs for EVs. Variable operating costs are also considered based on distance calculations, fuel efficiencies and the prices of electricity versus gasoline.

The EV stock turn over model randomly selects from a fitted probability distribution of total distance driven per vehicle and computes an EV market share based on the capital and operating cost of EVs relative to gasoline vehicles. The EV load forecast assumes that adoption rates (i.e., market share of EVs) will progressively increase over time due to a number of factors such as increased consumer preference for EVs and technological advances including battery life, improved distance driven per charge and car manufacturing economies of scale.

The EV market share is multiplied against a forecast of the total vehicle purchases to provide a forecast of the number of electric vehicles. The total vehicle purchase forecast is determined by the product of the driving population forecast and an estimate of the number of vehicles per driver.

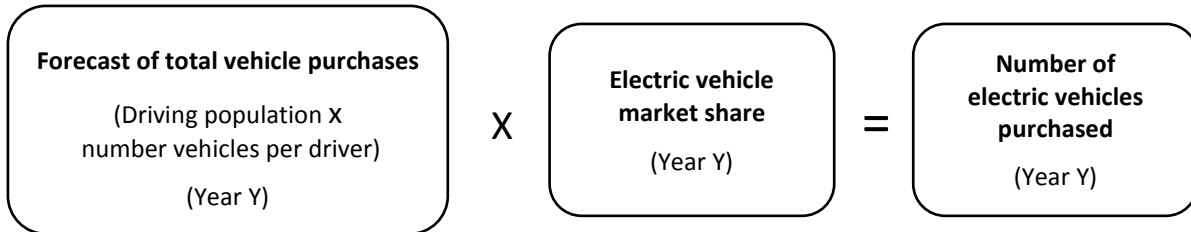
The EV stock turn over model keeps track of the survival period of the total number of electric vehicles and the distance driven by the number of EVs. The total number of electric vehicles times the distance driven by electric vehicles equals the total number of km per year driven by electric cars. This variable is multiplied by the average efficiency of electric vehicles to determine the EV load in GWh per year. The electric vehicle stock turn over model can reflect policy changes such as variations in incentives or electric vehicles and battery charging systems.

1) ELECTRIC VEHICLE MARKET SHARE



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2) NUMBER OF ELECTRIC VEHICLES



3) ELECTRIC VEHICLE LOAD

