Q. **Reference: Network Addition Policy Summary Report, section 2.3.3, page 6 (p. 9 pdf)**

Citation 1:

> If acceleration of the Transmission Expansion Plan is necessary, Hydro will determine the Expansion Advancement Cost. This amount will reflect the difference between the cost of acceleration of the Transmission Expansion Plan and the value of the acceleration of the Transmission Expansion Plan to existing customers. The value to existing customers will be determined based upon the forecast reduction in Expected Unserved Energy ("EUE") resulting from the capital advancement.
>
> EUE is a measure of the amount of customer demand not served due to capacity shortfalls. For the purposes of Network Additions Policy analysis, EUE is valued using the approximate cost of backup generation based on the projected costs of gas turbine fuel. Such approach serves as a proxy for reliability to customers.

Citation 2 :

> The following procedure is used to determine the EUE for the study period.
>
> 1. Prepare a set of cases to reflect a range of loading conditions for the Transmission Expansion Plan and the accelerated plan scenarios.
>
> 2. Assess system capacity in consideration of applicable Transmission Planning Criteria. Assessments will include a review of equipment ratings, voltages, and the transient stability metrics for the Labrador Integrated Transmission System, as applicable. Identify transfer limits for each case for all contingency conditions.
>
> 3. Prepare profiles of peak loads for the study period, based on historical load data, as well as peak load and energy forecasts.
>
> 4. Determine the capacity shortfall for the various peak load profiles, measured as the difference between transmission transfer capability and expected loads.
>
> 5. Calculate EUE based on the probability associated with the set of possible peak load levels and capacity shortfall multiplied by the expected unavailability of each system element. The assumed unavailability of each element is based on CEA reliability data.
>
> 6. Multiply the EUE by the cost of backup energy to determine the proxy value power outage costs of EUE.

7. Calculate the CPV of the EUE cost for the Transmission Expansion Plan and the accelerated plan using appropriate discount rates.

a) Please confirm or correct the following statement: In the process described in points 5 and 6 of Citation 2, the EUE for the Transmission Expansion Plan is based on the Baseline Load Forecast and on the physical characteristics of the system as it exists today and following planned improvements, and is measured in MWh or in GWh.

b) Please confirm that EUE is calculated separately for Labrador East and for Labrador West or, in the alternative, explain why that is not the case.

c) Please confirm or correct the following statement : The « forecast reduction in Expected Unserved Energy ("EUE") resulting from the capital advancement » is calculated by comparing the value described above in question (a) with that resulting from a scenario in which the prospective load has been added and the required advancement of the Transmission Expansion Plan has taken place.

d) Please calculate the EUE for the Transmission Expansion Plan as described in question (a) above -- that is, the status quo EUE against which the EUE resulting from the capital advancement will be compared – for both Labrador East and Labrador West.

e) Please confirm or correct the following statement : The « cost of backup energy » used in step 6 is based on a forecast fuel price for each year of the planning period.

f) Please provide the forecast fuel prices used for the calculations required in step 6.

g) For the status quo (the scenario against which accelerated plan scenarios will be measured), please provide in Excel format with all formulas intact :

i) the EUE for each year of the study period (step 5),

ii) the unit cost of backup energy for each year of the study period (step 6),

iii) the proxy value power outage costs of EUE (step 6), and

iv) the CPV of the EUE cost for the Transmission Expansion Plan (step 7).

h) Please confirm or correct the following statement. The EUE cost identified in step 7 is not actually incurred by LIS customers. It is an estimate of the potential cost of providing unserved energy rather than an estimate of the cost to customers of outages.

i) Please confirm or correct the following statement : The reliability benefits associated with a new load will equal the CPV of the EUE cost for the accelerated plan minus the value provided in response to question (g) (iv), as long as they do not exceed 50% of the cost impacts resulting from the acceleration of the Transmission Expansion Plan.

A. Please see responses below:

a) In the process described in points 5 and 6 of Citation 2, the Expected Unserved Energy ("EUE") for the Transmission Expansion Plan is based on the Baseline Load Forecast and on the physical characteristics of the system with all required transmission system upgrades to meet the Baseline Load Forecast and is measured in MWh or in GWh.

b) An EUE calculation is performed for each customer that would have a reliability impact as a result of a new customer interconnection.

c) The quoted statement is correct.

d) Please refer to Part g).

e) The quoted statement is correct.

f) Please refer to Part g).

g) Please refer to Table 1 and Table 2. Table 1 provides the calculated EUE for eastern Labrador and Table 2 provides the calculated EUE for western Labrador. Detailed calculations are provided in LAB-NLH-102, Attachment 1 and LAB-NLH-102, Attachment 2, respectively. The EUE Cumulative Present Value is calculated to be $571,500 for Labrador East and $5,028,000 for Labrador West.

Table 1: Calculated EUE Values for Eastern Labrador

Year	Baseline			
	Total EUE (MWh)	Total Fuel Consumed (L)[1]	Fuel Price Forecast ($/L)[2]	Power Outage Costs ($)
2019[3]	386.31	118,866	1.347	160,113
2020	71.07	21,867	1.495	32,692
2021	71.43	21,978	1.405	30,880
2022	71.97	22,145	1.355	30,006
2023	72.33	22,256	1.345	29,935
2024	72.88	22,423	1.365	30,608
2025	73.96	22,758	1.38	31,406
2026	74.87	23,038	1.405	32,368
2027	75.79	23,319	1.435	33,462
2028	76.70	23,600	1.455	34,338
2029	77.62	23,883	1.48	35,346
2030	78.72	24,223	1.51	36,576
2031	79.65	24,507	1.535	37,618
2032	80.57	24,792	1.565	38,799
2033	81.50	25,077	1.59	39,873
2034	82.62	25,421	1.62	41,183
2035	83.55	25,709	1.65	42,420
2036	84.49	25,997	1.68	43,676
2037	85.43	26,287	1.705	44,819
2038	86.57	26,636	1.735	46,213

[1] Assumed Generator Efficiency of 3.25 kWh/L.
[2] As per the "Labrador Interconnected System Transmission Expansion Study," Sec. 3.2, at p. 13, Table 4.
[3] Prior to Muskrat Falls to Happy Valley Interconnection.

Year	Baseline			
	Total EUE (MWh)	Total Fuel Consumed (L)[1]	Fuel Price Forecast ($/L)[2]	Power Outage Costs ($)
2039	87.51	26,927	1.765	47,527
2040	88.46	27,220	1.8	48,995
2041	89.61	27,572	1.835	50,594
2042	90.57	27,866	1.87	52,110
2043	91.53	28,162	1.91	53,790
2044	92.49	28,459	1.945	55,352

Table 2: Calculated EUE Values for Western Labrador

Year	Baseline			
	Total EUE (MWh)	Total Fuel Consumed (L)[4]	Fuel Price Forecast ($/L)[5]	Power Outage Costs ($)
2019	425	130,761	1.347	176,135
2020	645	198,523	1.495	296,791
2021	849	261,366	1.405	367,220
2022	855	263,146	1.355	356,563
2023	864	265,840	1.345	357,555
2024	873	268,577	1.365	366,607
2025	882	271,359	1.38	374,475
2026	891	274,162	1.405	385,198
2027	900	276,994	1.435	397,486
2028	910	279,850	1.455	407,182
2029	919	282,751	1.48	418,471
2030	925	284,722	1.51	429,930
2031	935	287,714	1.535	441,641
2032	945	290,742	1.565	455,012
2033	955	293,835	1.59	467,198
2034	962	295,920	1.62	479,390
2035	972	299,064	1.65	493,456
2036	979	301,179	1.68	505,981
2037	986	303,307	1.705	517,139
2038	996	306,546	1.735	531,858

[4] Assumed Generator Efficiency of 3.25 kWh/L
[5] As per the "Labrador Interconnected System Transmission Expansion Study," Section 3.2, at p. 13, Table 4.

Year	Baseline			
	Total EUE (MWh)	Total Fuel Consumed (L)[4]	Fuel Price Forecast ($/L)[5]	Power Outage Costs ($)
2039	1003	308,741	1.765	544,928
2040	1014	312,074	1.8	561,733
2041	1022	314,330	1.835	576,795
2042	1033	317,780	1.87	594,248
2043	1040	320,133	1.91	611,455
2044	1051	323,385	1.945	628,983

h) The quoted statement is correct.

i) The quoted statement is correct.