

- 1 Q. Please provide the detailed calculations of the mTRC test for each of the electrification programs  
2 described in Schedule F of the Electrification Conservation Demand Management Plan 2021-  
3 2025. In the response please also address the following:
- 4 a) Please explain the basis on which the proposed mTRC test should be approved given that  
5 the test includes significant non-energy benefits that accrue only to certain customers in the  
6 form of direct cost savings while including costs that will be paid for by all customers?
- 7 b) Excluding the forecast rate mitigation impact of \$0.7 million in 2034, are there other  
8 benefits to all customers associated with the proposed electrification programs?
- 9 c) Does the mTRC analyses include any costs associated with equipment replacement due to  
10 changing technologies or obsolescence?
- 11 d) Please show the impact of the elimination of federal incentives on the mTRC results as of  
12 2023, 2025, 2028 and 2030.
- 13 e) Please provide the mTRC calculations including the federal incentive and the recent  
14 provincial EV incentive announced May 31, 2021 in the Provincial Budget but excluding the  
15 utility EV incentive. What impact would this have on the utilities' proposed electrification  
16 program?
- 17  
18
- 19 A. *This Request for Information relates to the Electrification, Conservation and Demand*  
20 *Management Plan: 2021-2025 (the "2021 Plan") developed in partnership by Newfoundland and*  
21 *Labrador Hydro and Newfoundland Power ("Hydro" or, collectively, the "Utilities"). Accordingly,*  
22 *the response reflects collaboration between the Utilities.*

- 1 a) The modified Total Resource Cost (“mTRC”) test should be approved based on the following  
2 points:
- 3 ● The mTRC test ensures the benefits provided to customers outweigh the costs to both  
4 customers and the utility. This ensures that programs are economic from a customer  
5 perspective, which will encourage customer participation in electrification programs. It  
6 also ensures that individual programs are economic from a utility perspective, which  
7 confirms the appropriateness of utility investment in a particular area. The inclusion of  
8 non-electrical benefits is essential to the customer economics of electrification. The  
9 inclusion of non-electrical benefits is supported by the National Standard Practice  
10 Manual, (“Manual”) which is the authoritative source for evaluating the cost-  
11 effectiveness of customer programs.<sup>1</sup>
  - 12 ● The mTRC test is used in concert with a secondary assessment. The secondary  
13 assessment is a net present value (“NPV”) analysis that assesses the net revenue impact  
14 and customer rate impact of electrification programs. The combined use of the mTRC  
15 test and the NPV analysis ensures customer programs are sufficiently economic to  
16 enable customer participation, and that customer participation will provide a benefit to  
17 all customers. This, in turn, is consistent with the provincial policy goal of customer rate  
18 mitigation. Please refer to Hydro’s response to PUB-NLH-022 for more information.
  - 19 ● The mTRC test is consistent with sound public utility practice. Of the jurisdictions that  
20 undertake cost-effectiveness testing of electrification programs, all do so by way of an  
21 overall cost assessment. The mTRC test is an overall cost assessment that is comparable  
22 to the tests applied in these jurisdictions. The mTRC test is also consistent with the  
23 sound economic and regulatory practices prescribed by the Manual. Please refer to  
24 Hydro’s response to PUB-NLH-022 for more information.

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<sup>1</sup> “National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources,” National Energy Screening Project (“NESP”), August 2020, pp. 10-11 to 10-12.

1           b) The rate mitigating impact of electrification programs is the primary benefit provided to all  
2           customers.

3           The rate-mitigating benefit of electrification programs has increased since the Utilities  
4           developed the 2021 Plan. On July 28, 2021, the provincial and federal governments  
5           announced an agreement-in-principle that will mitigate rate impacts associated with the  
6           Muskrat Falls Project.<sup>2</sup> The updated rate mitigation target is now 9% higher than the  
7           previously indicated target of 13.5 ¢/kWh. This would increase the rate-mitigating benefit of  
8           electrification programs.<sup>3</sup> Any further increases in costs due to the Muskrat Falls Project  
9           would further increase the value of electrification programs for customers.

10          In addition to the rate-mitigating impact of electrification, all customers will benefit from  
11          the Utilities’ management of system costs. The Utilities’ are pursuing transportation  
12          electrification in a manner that will achieve effective load management.<sup>4</sup> Without load  
13          management, transportation electrification will increase costs to customers materially.<sup>5</sup> This  
14          would be inconsistent with the provincial policy goal of customer rate mitigation.

15          c) The discount rate of 6% used in the 2021 Plan represents a long-term weighted average cost  
16          of capital for both Newfoundland Power and Hydro.

17          d) No, the costs included in Column H of the mTRC test analysis do not include costs associated  
18          with equipment replacement due to changing technologies or obsolescence.

19          The mTRC test analyzes the costs of electric vehicles (“EV”) adopted over the 2021 to 2025  
20          timeframe as a result of electrification programs.<sup>6</sup> This includes: (i) program administration

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<sup>2</sup>“Securing a Strong Future for Newfoundland and Labrador,” Government of Newfoundland and Labrador, July 28, 2021.

<sup>3</sup> Please refer to Hydro’s response to PUB-NLH-047.

<sup>4</sup> “Application for Approvals Required to Execute Programming Identified in the Electrification, Conservation and Demand Management Plan 2021–2025,” Newfoundland and Labrador Hydro, rev. 1, July 8, 2021 (originally filed June 16, 2021), sch. 3, sec 3.2.3, at p. 11.

<sup>5</sup> “Application for Approvals Required to Execute Programming Identified in the Electrification, Conservation and Demand Management Plan 2021–2025,” Newfoundland and Labrador Hydro, rev. 1, July 8, 2021 (originally filed June 16, 2021), sch. 3, sec 3.2.3, p. 12, Table 1 shows the impact of managed versus unmanaged EV charging.

<sup>6</sup> EV incentive programs are forecast to be discontinued in 2025, when cost parity is expected to be achieved between EVs and gasoline-powered vehicles.

1 costs and equipment costs related to the purchase of EVs to 2025 and (ii) the electricity  
2 supply costs and fuel and maintenance savings that result over the life of those vehicles.

3 It is not anticipated that there will be changes in technology or obsolescence that would  
4 result in additional costs for the majority of customers who purchase EVs over the 2021 to  
5 2025 timeframe.

6 e) Attachment 1 provides the mTRC test calculation for the residential and commercial EV and  
7 charging infrastructure programs based on elimination of the federal incentive as of 2023  
8 and as of 2025. EVs are forecast to reach cost parity with gasoline-powered vehicles in 2025.  
9 As a result, no federal incentives were assumed beyond 2025. Federal incentives are also  
10 not applicable to the Custom Electrification Program.

11 The requested analysis shows that:

- 12 ● The cost effectiveness of the residential program is reduced from a ratio of 2.0 to 1.5  
13 when the federal incentive is eliminated in 2023 and to 1.6 when the federal incentive is  
14 eliminated in 2025.
- 15 ● The cost effectiveness of the commercial program is reduced from a ratio of 2.3 to 1.8  
16 when the federal incentive is eliminated in 2023 and to 1.9 when the federal incentive is  
17 eliminated in 2025.

18 For information on how changes in federal incentives could impact the Utilities' proposed  
19 electrification programs, please refer to Hydro's response to PUB-NLH-026.

20 f) Attachment 2 provides the mTRC test calculations including the federal incentive and the  
21 provincial EV incentive announced May 31, 2021, but excluding the utility EV incentive.  
22 Since the provincial EV incentive is applicable only to residential customers, the requested  
23 analysis is provided for the residential program only.<sup>7</sup>

24 The provincial EV incentive was announced as part of Budget 2021. The provincial  
25 government has not announced a funding commitment for this incentive beyond the 2021

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<sup>7</sup> Exact program details are not known at this time.

1           fiscal year (i.e., beyond March 2022). The requested analysis therefore assumes a baseline  
2           adoption scenario for EVs beyond this period.

3           The requested analysis shows that the cost effectiveness of the Residential EV & Charging  
4           Infrastructure Program is reduced from a ratio of 2.0 to 1.4 when the utility incentive is  
5           excluded.

Table 1 shows the mTRC calculation for the Residential EV & Charging Infrastructure Program with the elimination of the federal incentive as of 2023.

<b>Table 1: mTRC Analysis Residential EV &amp; Charging Infrastructure Program Removal of Federal Incentive as of 2023</b>								
Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
	A	B	C	D	E	F	G	H
(\$000s)								
2021	90	7	159	19	933	378	166	1,330
2022	495	42	880	106	4,161	414	922	4,681
2023	1436	121	2,431	277	12,360	375	2,552	13,012
2024	3119	249	5,274	607	10,232	434	5,523	11,273
2025	5738	453	9,817	1,133	15,941	420	10,270	17,493
2026	5738	462	10,013	1,206			10,475	1,206
2027	5738	471	10,213	1,244			10,684	1,244
2028	5738	481	10,417	1,307			10,898	1,307
2029	5738	490	10,626	1,392			11,116	1,392
2030	5738	500	10,838	1,420			11,338	1,420
2031	5648	501	10,861	1,425			11,362	1,425
2032	5243	470	10,204	1,346			10,674	1,346
2033	4302	384	8,538	1,128			8,922	1,128
2034	2619	238	5,303	701			5,541	701

Column G ("Total Benefits") is the sum of Column B ("Maintenance Savings") and Column C ("Fuel Savings").

Column H ("Total Costs") is the sum of Column D ("Electricity Supply Cost"), Column E ("Incremental Equipment Costs") and Column F ("Program Administration Costs").

$$\begin{aligned}
 \text{mTRC} &= \text{NPV Column G} / \text{NPV Column H} \\
 &= \$67,330,993 / \$44,720,135 \\
 &= 1.5
 \end{aligned}$$

Table 1 provides the mTRC calculations including the federal incentive and the provincial EV incentive announced May 31, 2021, but excluding the utility EV incentive.

<b>Table 1: mTRC Analysis Residential EV and Charging Infrastructure Program With Federal and Provincial Incentive and No Utility Incentive</b>								
Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
	A	B	C	D	E	F	G	H
(\$000s)								
2021	113	12	314	270	1,176	0	326	1,446
2022	405	40	981	700	3,034	0	1,021	3,734
2023	796	77	1,883	958	4,387	0	1,960	5,345
2024	1302	129	3,155	1,319	2,016	0	3,284	3,335
2025	1950	200	4,913	1,794	2,684	0	5,113	4,478
2026	1950	204	5,011	1,848			5,215	1,848
2027	1950	208	5,111	1,891			5,319	1,891
2028	1950	212	5,213	1,949			5,425	1,949
2029	1950	216	5,318	2,018			5,534	2,018
2030	1950	221	5,424	2,059			5,645	2,059
2031	1837	210	5,150	1,764			5,360	1,764
2032	1545	181	4,447	1,273			4,628	1,273
2033	1154	140	3,460	975			3,600	975
2034	648	82	2,025	562			2,107	562

Column G ("Total Benefits") is the sum of Column B ("Maintenance Savings") and Column C ("Fuel Savings").

Column H ("Total Costs") is the sum of Column D ("Electricity Supply Cost"), Column E ("Incremental Equipment Costs") and Column F ("Program Administration Costs").

$$\begin{aligned}
 \text{mTRC} &= \text{NPV Column G} / \text{NPV Column H} \\
 &= \$34,072,111 / \$23,558,082 \\
 &= 1.4
 \end{aligned}$$

Table 2 shows the mTRC calculation for the Commercial EV & Charging Infrastructure Program with the elimination of the federal incentive as of 2023.

<b>Table 2: mTRC Analysis Commercial EV &amp; Charging Infrastructure Program Removal of Federal Incentive as of 2023</b>								
Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
	A	B	C	D	E	F	G	H
(\$000s)								
2021	16	1	35	5	160	240	36	405
2022	97	5	213	30	805	263	218	1,098
2023	266	13	594	77	2,162	212	607	2,451
2024	620	31	1,416	183	2,068	248	1,447	2,499
2025	1242	63	2,889	374	3,631	229	2,952	4,233
2026	1242	64	2,946	395			3,010	395
2027	1242	65	3,005	407			3,070	407
2028	1242	67	3,066	426			3,133	426
2029	1242	68	3,127	451			3,195	451
2030	1242	69	3,189	460			3,258	460
2031	1226	70	3,211	463			3,281	463
2032	1146	66	3,058	441			3,124	441
2033	977	58	2,661	384			2,719	384
2034	622	37	1,726	249			1,763	249

Column G ("Total Benefits") is the sum of Column B ("Maintenance Savings") and Column C ("Fuel Savings").

Column H ("Total Costs") is the sum of Column D ("Electricity Supply Cost"), Column E ("Incremental Equipment Costs") and Column F ("Program Administration Costs").

$$\begin{aligned}
 \text{mTRC} &= \text{NPV Column G} / \text{NPV Column H} \\
 &= \$19,264,882 / \$10,652,729 \\
 &= 1.8
 \end{aligned}$$



Table 3 shows the mTRC calculation for the Residential EV & Charging Infrastructure Program with the elimination of the federal incentive as of 2025.

<b>Table 3: mTRC Analysis Residential EV &amp; Charging Infrastructure Program Removal of Federal Incentive as of 2025</b>								
Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
	A	B	C	D	E	F	G	H
(\$000s)								
2021	90	7	159	18	933	378	166	1,330
2022	495	42	880	106	4,161	414	922	4,681
2023	1436	121	2,431	277	9,320	375	2,552	9,972
2024	3119	249	5,274	607	6,474	434	5,523	7,516
2025	5738	453	9,817	1,133	18,746	420	10,270	20,298
2026	5738	462	10,013	1,206			10,475	1,206
2027	5738	471	10,213	1,244			10,684	1,244
2028	5738	481	10,417	1,307			10,898	1,307
2029	5738	490	10,626	1,392			11,116	1,392
2030	5738	500	10,834	1,420			11,338	1,420
2031	5648	501	10,861	1,425			11,362	1,425
2032	5243	470	10,204	1,346			10,674	1,346
2033	4302	384	8,538	1,128			8,922	1,128
2034	2619	238	5,303	701			5,541	701

Column G ("Total Benefits") is the sum of Column B ("Maintenance Savings") and Column C ("Fuel Savings").

Column H ("Total Costs") is the sum of Column D ("Electricity Supply Cost"), Column E ("Incremental Equipment Costs") and Column F ("Program Administration Costs").

$$\begin{aligned}
 \text{mTRC} &= \text{NPV Column G} / \text{NPV Column H} \\
 &= \$67,330,993 / \$41,287,460 \\
 &= 1.6
 \end{aligned}$$

Table 4 shows the mTRC calculation for the Commercial EV & Charging Infrastructure Program with the elimination of the federal incentive as of 2023.

<b>Table 4: mTRC Analysis Commercial EV and Charging Infrastructure Program Removal of Federal Incentive as of 2025</b>								
Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
	A	B	C	D	E	F	G	H
(\$000s)								
2021	16	1	35	5	160	240	36	405
2022	97	5	213	30	805	263	218	1,098
2023	266	13	594	77	1,687	212	607	1,976
2024	620	31	1,416	183	1,299	248	1,447	1,730
2025	1242	63	2,889	374	4,056	229	2,952	4,658
2026	1242	64	2,946	395			3,010	395
2027	1242	65	3,005	407			3,070	407
2028	1242	67	3,066	426			3,133	426
2029	1242	68	3,127	451			3,195	4501
2030	1242	69	3,189	460			3,258	460
2031	1226	70	3,211	463			3,281	463
2032	1146	66	3,058	441			3,124	441
2033	977	58	2,661	384			2,719	384
2034	622	37	1,726	249			1,763	249

Column G ("Total Benefits") is the sum of Column B ("Maintenance Savings") and Column C ("Fuel Savings").

Column H ("Total Costs") is the sum of Column D ("Electricity Supply Cost"), Column E ("Incremental Equipment Costs") and Column F ("Program Administration Costs").

$$\begin{aligned}
 \text{mTRC} &= \text{NPV Column G} / \text{NPV Column H} \\
 &= \$19,264,882 / \$9,962,162 \\
 &= 1.9
 \end{aligned}$$