1 **Q.** **In response to PUB-NP-031 Newfoundland Power provided the calculation for the**
2   **mTRC test for the residential EV and charging infrastructure program. The**
3   **benefits captured in this calculation include only the fuel and maintenance savings**
4   **for customers that switch from a fossil-fuelled powered vehicle to an EV.**
5
6   a) **Please explain the basis upon which the proposed mTRC test should be**
7   **approved given that the test includes significant non-energy benefits that accrue**
8   **only to certain customers in the form of direct cost savings while including costs**
9   **that will be paid for by all customers?**
10
11   b) **Excluding the forecast rate mitigation impact of 0.5 cents per kWh in 2034, are**
12   **there other benefits to all customers associated with the proposed electrification**
13   **programs?**
14
15   c) **On what basis was the discount rate of 6% selected?**
16
17   d) **Do the total costs in Column H of the mTRC analyses include any costs**
18   **associated with equipment replacement due to changing technologies or**
19   **obsolescence?**
20
21   e) **Please provide Tables 1, 2 and 3 showing the impact of the elimination of federal**
22   **incentives as of 2023, 2025, 2028 and 2030.**
23
24   f) **Please provide the mTRC calculations including the federal incentive and the**
25   **recent provincial EV incentive announced May 31, 2021 in the Provincial Budget**
26   **but excluding the utility EV incentive. What impact would this have on the**
27   **utilities' proposed electrification program?**
28
29 **A.** *This Request for Information relates to the Electrification, Conservation and Demand*
30   *Management Plan: 2021-2025 (the "2021 Plan") developed in partnership by*
31   *Newfoundland Power and Newfoundland and Labrador Hydro ("Hydro" or, collectively,*
32   *the "Utilities"). Accordingly, the response reflects collaboration between the Utilities.*
33
34   a) The mTRC test should be approved based on the following facts:
35
36   (i)   The mTRC test ensures the benefits provided to customers outweigh the costs
37   to both customers and the utility. This ensures that programs are economical
38   from a customer perspective, which will encourage customer participation in
39   electrification programs. It also ensures that individual programs are
40   economical from a utility perspective, which confirms the appropriateness of
41   utility investment in a particular area. The inclusion of non-electrical benefits
42   is essential to the customer economics of electrification. The inclusion of non-
43   electrical benefits is supported by the *National Standard Practice Manual*,
44   which is the authoritative source for evaluating the cost-effectiveness of
45   customer programs.[1]

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[1]   See the *National Standard Practice Manual,* August 2020, pages 10-11 to 10-12.

(ii)   The mTRC test is used in concert with a secondary assessment. The secondary assessment is a net present value ("NPV") analysis that assesses the net revenue impact and customer rate impact of electrification programs. The combined use of the mTRC test and the NPV analysis ensures customer programs are sufficiently economical to enable customer participation, and that customer participation will provide a benefit to *all* customers. This, in turn, is consistent with the provincial policy goal of customer rate mitigation. See response to Request for Information PUB-NP-053 for more information.

(iii)   Use of the mTRC test is consistent with sound public utility practice. Of the jurisdictions that undertake cost-effectiveness testing of electrification programs, all do so by way of an overall cost assessment. The mTRC test is an overall cost assessment that is comparable to the tests applied in these jurisdictions. The mTRC test is also consistent with the sound economic and regulatory practices prescribed by the *National Standard Practice Manual*. See response to Request for Information PUB-NP-052 for more information.

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

The rate mitigating benefit of electrification programs has increased since the Utilities developed the 2021 Plan. On July 28, 2021, the provincial and federal governments announced an agreement-in-principle that will mitigate rate impacts associated with the Muskrat Falls Project. The updated rate mitigation target is now 9% higher than the previously indicated target of 13.5 ¢/kWh. This would increase the rate mitigating benefit of electrification programs from 0.5 ¢/kWh to 0.65 ¢/kWh by 2034.[2] Any further increases in costs resulting from the Muskrat Falls Project would further increase the value of electrification programs for customers.

In addition to the rate mitigating impact of electrification, all customers will benefit from the Utilities' management of system costs. The Utilities' are pursuing transportation electrification in a manner that will achieve effective load management.[3] Without load management, transportation electrification will increase costs to customers by approximately $22 million by 2034.[4] This would be inconsistent with the provincial policy goal of customer rate mitigation.

c) The discount rate of 6% used in the 2021 Plan represents the long-term weighted average cost of capital for the Utilities.

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

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[2]   See response to Request for Information PUB-NP-051.
[3]   See response to Request for Information PUB-NP-037.
[4]   See response to Request for Information PUB-NP-066.

1 The mTRC test analyzes the costs of EVs adopted over the 2021 to 2025 timeframe
2 as a result of electrification programs.[5] This includes: (i) program administration
3 costs and equipment costs related to the purchase of EVs to 2025; and (ii) the
4 electricity supply costs and fuel and maintenance savings that result over the life of
5 those vehicles.

7 It is not anticipated that changes in technology or obsolescence would result in
8 additional costs for the majority of customers who purchase EVs over the 2021 to
9 2025 timeframe.

11 e) Attachment A provides the mTRC calculation for the residential and commercial EV
12 and charging infrastructure programs based on elimination of the federal incentive as
13 of 2023 and as of 2025.[6] EVs are forecast to reach cost parity with gasoline-powered
14 vehicles in 2025. As a result, no federal incentives were assumed beyond 2025.
15 Federal incentives are also not applicable to the Custom Electrification Program.

17 The requested analysis shows that:

19 (i) The cost-effectiveness of the residential program is reduced from a ratio of 1.9
20 to 1.5 when the federal incentive is eliminated in 2023 and to 1.6 when the
21 federal incentive is eliminated in 2025.

23 (ii) The cost-effectiveness of the commercial program is reduced from a ratio of
24 2.2 to 1.8 when the federal incentive is eliminated in 2023 and to 1.9 when the
25 federal incentive is eliminated in 2025.

27 For information on how changes in federal incentives could impact the Utilities'
28 proposed electrification programs, see response to Request for Information
29 PUB-NP-057.

31 f) Attachment B provides the mTRC calculations including the federal incentive and the
32 provincial EV incentive announced May 31, 2021, but excluding the utility EV
33 incentive. Since the provincial EV incentive is applicable only to residential
34 customers, the requested analysis is provided for the residential program only.

36 The provincial EV incentive was announced as part of Budget 2021. The Provincial
37 Government has not announced a funding commitment for this incentive beyond the
38 2021 fiscal year (i.e. beyond March 2022). The requested analysis therefore assumes
39 a baseline adoption scenario for EVs beyond this period.

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[5] EV incentive programs are forecast to be discontinued in 2025, when cost parity is expected to be achieved between EVs and gasoline-powered vehicles.
[6] The mTRC results in this response reflect the combined program results of both Utilities under the 2021 Plan. See Newfoundland Power's *2021 Electrification, Conservation and Demand Management Application,* Volume 2, Schedule L, page 5 of 5.

1 The requested analysis shows that the cost-effectiveness of the Residential EV and
2 Charging Infrastructure program is reduced from a ratio of 1.9 to 1.4 when the utility
3 incentive is excluded.

mTRC Analysis
Elimination of Federal Incentives in 2023 and 2025

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

Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
		B	C	D	E	F	G	H
	A				($000s)			
2021	90	7	159	19	933	378	166	1,330
2022	495	42	880	106	4,161	414	922	4,681
2023	1,436	121	2,431	277	12,360	375	2,552	13,012
2024	3,119	249	5,274	607	10,232	434	5,523	11,273
2025	5,738	453	9,817	1,133	15,941	420	10,270	17,494
2026	5,738	462	10,013	1,206			10,475	1,206
2027	5,738	471	10,213	1,244			10,684	1,244
2028	5,738	481	10,417	1,307			10,898	1,307
2029	5,738	490	10,626	1,392			11,116	1,392
2030	5,738	500	10,838	1,420			11,338	1,420
2031	5,648	501	10,861	1,425			11,362	1,425
2032	5,243	470	10,204	1,346			10,674	1,346
2033	4,302	384	8,538	1,128			8,922	1,128
2034	2,619	238	5,303	701			5,541	701

Table 1:
mTRC Analysis
Residential EV & Charging Infrastructure Program
Removal of Federal Incentive as of 2023

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").

mTRC = NPV Column G / NPV Column H
     = $67,330,993 / $44,720,135
     = 1.5

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

Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
		B	C	D	E	F	G	H
	A				($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	1,242	63	2,889	374	3,631	229	2,952	4,234
2026	1,242	64	2,946	395			3,010	395
2027	1,242	65	3,005	407			3,070	407
2028	1,242	67	3,066	426			3,133	426
2029	1,242	68	3,127	451			3,195	451
2030	1,242	69	3,189	460			3,258	460
2031	1,226	70	3,211	463			3,281	463
2032	1,146	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

Table 2:
mTRC Analysis
Commercial EV & Charging Infrastructure Program
Removal of Federal Incentive as of 2023

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").

mTRC = NPV Column G / NPV Column H
= $19,264,882 / $10,652,729
= 1.8

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

Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
		B	C	D	E	F	G	H
	A				($000s)			
2021	90	7	159	19	933	378	166	1,330
2022	495	42	880	106	4,161	414	922	4,681
2023	1,436	121	2,431	277	9,320	375	2,552	9,972
2024	3,119	249	5,274	607	6,474	434	5,523	7,516
2025	5,738	453	9,817	1,133	18,746	420	10,270	20,299
2026	5,738	462	10,013	1,206			10,475	1,206
2027	5,738	471	10,213	1,244			10,684	1,244
2028	5,738	481	10,417	1,307			10,898	1,307
2029	5,738	490	10,626	1,392			11,116	1,392
2030	5,738	500	10,838	1,420			11,338	1,420
2031	5,648	501	10,861	1,425			11,362	1,425
2032	5,243	470	10,204	1,346			10,674	1,346
2033	4,302	384	8,538	1,128			8,922	1,128
2034	2,619	238	5,303	701			5,541	701

Table 3: mTRC Analysis — Residential EV & Charging Infrastructure Program — Removal of Federal Incentive as of 2025

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").

mTRC = NPV Column G / NPV Column H
= $67,330,993 / $41,287,460
= 1.6

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

Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
		B	C	D	E	F	G	H
	A				($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	1,242	63	2,889	374	4,056	229	2,952	4,659
2026	1,242	64	2,946	395			3,010	395
2027	1,242	65	3,005	407			3,070	407
2028	1,242	67	3,066	426			3,133	426
2029	1,242	68	3,127	451			3,195	451
2030	1,242	69	3,189	460			3,258	460
2031	1,226	70	3,211	463			3,281	463
2032	1,146	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

Table 4:
mTRC Analysis
Commercial EV and Charging Infrastructure Program
Removal of Federal Incentive as of 2025

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").

mTRC = NPV Column G / NPV Column H
= $19,264,882 / $9,962,162
= 1.9

mTRC Analysis
Elimination of Utility Incentive

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.

Year	Cumulative Units (EVs & Chargers)	Maintenance Savings	Fuel Savings	Electricity Supply Costs	Incremental Equipment Costs	Program Administration Costs	Total Benefits	Total Costs
		B	C	D	E	F	G	H
	A				($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	1,302	129	3,155	1,319	2,016	0	3,284	3,335
2025	1,950	200	4,913	1,794	2,684	0	5,113	4,478
2026	1,950	204	5,011	1,848			5,215	1,848
2027	1,950	208	5,111	1,891			5,319	1,891
2028	1,950	212	5,213	1,949			5,425	1,949
2029	1,950	216	5,318	2,018			5,534	2,018
2030	1,950	221	5,424	2,059			5,645	2,059
2031	1,837	210	5,150	1,764			5,360	1,764
2032	1,545	181	4,447	1,273			4,628	1,273
2033	1,154	140	3,460	975			3,600	975
2034	648	82	2,025	562			2,107	562

Table 1:
mTRC Analysis
Residential EV and Charging Infrastructure Program
With Federal and Provincial Incentive and No Utility Incentive

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").

mTRC = NPV Column G / NPV Column H
= $34,072,111 / $23,558,082
= 1.4