

All our energy.
All the time.



September 9, 2022

Ms. Cheryl Mosher
Island Regulatory & Appeals Commission
PO Box 577
Charlottetown PE C1A 7L1

Dear Ms. Mosher:

**2023 Capital Budget - Docket UE20735
Response to Interrogatories from John te Raa**

Please find attached the Company's response to Interrogatories from John te Raa with respect to the 2023 Capital Budget Application filed on July 6, 2022.

An electronic copy of this submission will be forwarded shortly.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in blue ink that reads "Gloria Crockett". The signature is written in a cursive style.

Gloria Crockett, CPA, CA
Manager, Regulatory & Financial Planning

GCC29
Enclosure

All our energy.
All the time.



Via email: johnteraa@gmail.com

September 9, 2022

Mr. John te Raa
1848 Hardy Mill Rd – Rte 220
York PE C0A 1P0

Dear Mr. te Raa:

**UE20735 – 2023 Capital Budget
Responses to Interrogatories**

Please find attached the Company's responses to your interrogatories with respect to the Company's 2023 Capital Budget filed with the Commission on July 6, 2022.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in blue ink that reads "Gloria Crockett".

Gloria Crockett, CPA, CA
Manager, Regulatory & Financial Planning

GCC30
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INTERROGATORIES

**Responses to Interrogatories
of
John te Raa**

**2023 Capital Budget
(UE20735)**

Submitted September 9, 2022

Maritime Electric

IR-1 On an annual bases for the last 10 years, how were the three combustion turbines used in their standby and peaking roles? Please provide a breakdown in megawatt-hour (“MWh”) for each of CT1, CT2 and CT3 for the following categories.

- Off Load submarine cables
- Curtailement by NB Power
- NB Power Hold-to-Schedule
- Lepreau related such as tripped off
- On-Island transmission related
- Unit testing
- Other

Response:

An annual breakdown of operating requirements, output and events for each of CT1, CT2 and CT3, from 2012 to 2021, is provided in Tables 1 to 10, and the ten-year totals are provided in Table 11. This data was compiled from annual generation logs that are maintained by system operators.

Table 1 Breakdown of Combustion Turbine Operating Data 2012								
	CT1		CT2		CT3		Total	
Operating Requirement	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	182	11	392	16	7,602	33	8,176	60
NB Power Curtailment	14	3	47	3	1,013	9	1,074	15
NB Power Hold to Schedule	-	-	-	-	-	-	-	-
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	29	1	42	1	93	1	164	3
Unit Testing	30	5	24	5	88	3	142	13
Other	-	-	-	-	-	-	-	-
Total	255	20	505	25	8,796	46	9,556	91

**Table 2
Breakdown of Combustion Turbine Operating Data
2013**

Operating Requirement	CT1		CT2		CT3		Total	
	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	56	6	-	-	584	9	640	15
NB Power Curtailment	160	13	325	11	1,195	16	1,680	40
NB Power Hold to Schedule	25	3	22	1	414	10	461	14
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	18	1	18	1
Unit Testing	12	6	22	2	3	1	37	9
Other	-	-	-	-	-	-	-	-
Total	253	28	369	14	2,214	37	2,836	79

**Table 3
Breakdown of Combustion Turbine Operating Data
2014**

Operating Requirement	CT1		CT2		CT3		Total	
	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	170	8	48	3	1,953	26	2,171	37
NB Power Curtailment	8	1	49	2	642	11	699	14
NB Power Hold to Schedule	9	1	20	2	193	6	222	9
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	133	5	133	5
Unit Testing	17	2	18	2	26	4	61	8
Other	-	-	-	-	-	-	-	-
Total	204	12	135	9	2,947	52	3,286	73

Table 4 Breakdown of Combustion Turbine Operating Data 2015								
	CT1		CT2		CT3		Total	
Operating Requirement	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	28	3	120	6	3,823	36	3,971	45
NB Power Curtailment	46	1	45	1	562	8	653	10
NB Power Hold to Schedule	5	1	19	2	62	2	86	5
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	-	-	-	-
Unit Testing	13	2	19	4	38	3	70	9
Other	-	-	-	-	-	-	-	-
Total	92	7	203	13	4,485	49	4,780	69

Table 5 Breakdown of Combustion Turbine Operating Data 2016								
	CT1		CT2		CT3		Total	
Operating Requirement	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	-	-	150	9	2,482	33	2,632	42
NB Power Curtailment	3	1	10	1	199	2	212	4
NB Power Hold to Schedule	-	-	62	3	28	1	90	4
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	-	-	-	-
Unit Testing	28	4	12	4	65	5	105	13
Other	-	-	-	-	-	-	-	-
Total	31	5	234	17	2,774	41	3,039	63

Table 6
Breakdown of Combustion Turbine Operating Data
2017

Operating Requirement	CT1		CT2		CT3		Total	
	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	23	1	163	7	2,209	23	2,395	31
NB Power Curtailment	-	-	44	3	167	1	211	4
NB Power Hold to Schedule	13	2	20	2	610	9	643	13
Lepreau Related	-	-	-	-	37	1	37	1
On-Island Transmission	-	-	-	-	-	-	-	-
Unit Testing	31	9	57	8	53	5	141	22
Other	-	-	-	-	-	-	-	-
Total	67	12	284	20	3,076	39	3,427	71

Table 7
Breakdown of Combustion Turbine Operating Data
2018

Operating Requirement	CT1		CT2		CT3		Total	
	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	-	-	-	-	-	-	-	-
NB Power Curtailment	58	1	190	4	1,090	6	1,338	11
NB Power Hold to Schedule	3	1	57	3	192	6	252	10
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	513	5	513	5
Unit Testing	45	8	32	6	348	11	425	25
Other (Off-Island Sales)	-	-	-	-	196	2	196	2
Total	106	10	279	13	2,339	30	2,724	53

**Table 8
Breakdown of Combustion Turbine Operating Data
2019**

Operating Requirement	CT1		CT2		CT3		Total	
	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	-	-	-	-	-	-	-	-
NB Power Curtailment	-	-	-	-	-	-	-	-
NB Power Hold to Schedule	19	2	67	4	272	10	358	16
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	-	-	-	-
Unit Testing	50	11	48	9	146	9	244	29
Other (Off-Island Sales)	-	-	-	-	220	1	220	1
Total	69	13	115	13	638	20	822	46

**Table 9
Breakdown of Combustion Turbine Operating Data
2020**

Operating Requirement	CT1		CT2		CT3		Total	
	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	-	-	-	-	-	-	-	-
NB Power Curtailment	-	-	-	-	-	-	-	-
NB Power Hold to Schedule	-	-	4	1	283	12	287	13
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	91	4	91	4
Unit Testing	37	8	26	5	120	3	183	16
Other	-	-	-	-	-	-	-	-
Total	37	8	30	6	494	19	561	33

Table 10 Breakdown of Combustion Turbine Operating Data 2021								
	CT1		CT2		CT3		Total	
Operating Requirement	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	-	-	-	-	76	1	76	1
NB Power Curtailment	-	-	-	-	-	-	-	-
NB Power Hold to Schedule	17	2	149	4	1,295	17	1,461	23
Lepreau Related	-	-	-	-	-	-	-	-
On-Island Transmission	-	-	-	-	-	-	-	-
Unit Testing	42	8	42	7	42	3	126	18
Other (Off-Island Sales)	36	2	58	3	346	5	440	10
Total	95	12	249	14	1,759	26	2,103	52

Table 11 Breakdown of Combustion Turbine Operating Data 2012 to 2021								
	CT1		CT2		CT3		Total	
Operating Requirement	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Output (MWh)	Events (Count)	Total Output (MWh)	Total Events (Count)
Off Load Cables	459	29	873	41	18,729	161	20,061	231
NB Power Curtailment	289	20	710	25	4,868	53	5,867	98
NB Power Hold to Schedule	91	12	420	22	3,349	73	3,860	107
Lepreau Related	-	-	-	-	37	1	37	1
On-Island Transmission	29	1	42	1	848	16	919	18
Unit Testing	305	63	300	52	929	47	1,534	162
Other	36	2	58	3	762	8	856	13
Total	1,209	127	2,403	144	29,522	359	33,134	630

Maritime Electric

IR-2 For each of the last ten years for the categories listed under IR-1 what were the number of annual occurrences.

Response:

A breakdown of operating occurrences for each of CT1, CT2 and CT3 is provided in Tables 1 to 11 of the response to IR-1.

Maritime Electric

IR-3 In response to my IR-1 UE20946 GRA dated July 29, 2022, Maritime Electric identified that for the years 2025 and 2026 it has available 327 and 332 megawatts (“MW”) respectively.

In January 2022 PEI set a new system peak of about 325 MW. This peak may or may not be exceeded before 2027, most likely depending on temperature drops below minus 19 degrees Celsius on a weekday. At 90% share plus 15% planning reserves, Maritime Electric system peak is now 335 MW more or less. This is more than the 332 MW peak capacity contracted for 2026.

Maritime Electric needs to purchase additional short term capacity as part of UE20946 the General Rate Application now before IRAC.

- a) What is the annual cost of the additional capacity required?
- b) For the years 2025 and 2026 what is the cost per MW for an additional 20 MW should CT-1 not be available to provide system capacity?

Response:

The Island net peak load on January 11, 2022 was 322.9 MW during the hour ending at 18:00. Summerside’s load at the time was 31.6 MW, leaving Maritime Electric a net peak load of 291.3 MW during that hour. Maritime Electric’s resultant planning capacity obligation is 319 MW, as shown in Table 12.

Table 12	
Maritime Electric Planning Capacity Obligation	
Description	MW
Maritime Electric Load at Peak	291
Less Interruptible Load	(14)
Firm Maritime Electric Load at Peak (Subtotal)	277
Add 15% Planning Reserve	42
Maritime Electric Planning Capacity Obligation	319

Maritime Electric’s planning capacity obligation, based on a firm peak load of 277 MW is less than the 332 MW peak capacity contracted for in 2026, which provides room for the peak to grow between now and 2026.

With respect to the questions (a) and (b), the cost for short-term capacity purchases is confidential per the terms and conditions of the Energy Purchase Agreement with New Brunswick Energy Marketing, and therefore cannot be disclosed.

Maritime Electric

IR-4 138 kV Breaker Replacement Program (Justifiable) \$153,000. Transmission lines Richmond Cove Cable Riser Station to Bedeque Switching Station.

Setting aside ownership related matters. This transmission system, lines Y-101 and Y-103, is part of the original 1978 transmission system between Bedeque and Memramcook New Brunswick.

This breaker replacement is part of a six year \$9,470,000 capital replacement program.

- a) What will be the expected life of this transmission system upon completion of this program?
- b) What is the current expected life of submarine cables numbers one and two?
- c) What is the expected life of the associated New Brunswick transmission system to Memramcook?

Response:

- a. The expected life of this transmission system upon completion of this program will be approximately 50 years.
- b. Cables #1 and #2 were put into service in 1977 and, while they have been carefully operated and maintained to maximize their service life, they will likely have to be replaced within the next 15 years.
- c. NB Power transmission line 1142 from Memramcook to Murray Corner in New Brunswick feeds cables #1 and #2. The section from Memramcook to Melrose was constructed in 1977 and the section from Melrose to Murray Corner was constructed in 1990. Typically, the expected life of transmission lines is approximately 50 years.

NB Power has replaced some equipment associated with transmission line 1142 over the past few years and will replace other system components as required, at its cost, according to the provisions of NB Power's open access transmission tariff.

Maritime Electric

- IR-5** a) Are lines Y-101 and Y-102 energized at all times?¹
 b) Are the lines metered separately?
 c) What percentage of annual energy import to PEI comes across these two lines?

Response:

- a. Normally, transmission lines Y-101 and Y-103 are energized at all times. However, there are infrequent events where one or both transmission lines are de-energized, either for planned maintenance or due to unplanned outages.
- b. Transmission lines Y-101 and Y-103 are not metered. NB Power has revenue class meters at the Murray Corner riser station and the meters are positioned in such a way that Maritime Electric gets an aggregate (i.e., total combined) reading for cables #1 and #2. Maritime Electric has access to these meters and downloads the meter data on a monthly basis.
- c. The percentage of annual energy import that flows across cables #1 and #2 (and transmission lines Y-101 and Y-103) has averaged approximately 35 per cent over the last four years (i.e., since cables #3 and #4 were commissioned in 2017), as shown in Table 13 as Line 1142 Energy Import. Prior to this, 100 per cent of the annual energy import to PEI came across cables #1 and #2, and transmission lines Y-101 and Y-103.

Table 13 Energy Import for Transmission Line 1142 at Murray Corner 2018 to 2021			
Year	Total Energy Import (MW)	Line 1142 Energy Import (MW)	% of Total Energy Import
2018	851,209,046	326,877,038	38.4
2019	898,376,288	314,482,508	35.0
2020	888,177,993	302,207,609	34.0
2021	974,946,994	320,204,166	32.8
Total	3,612,710,321	1,263,771,321	35.0

¹ The response references Y-101 and Y-103 (rather than Y-102), as they are the transmission lines that connect cables #1 and #2 to the Bedeque substation.