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MARITIME ELECTRIC
A FORTIS COMPANY

August 15, 2024

Mrs. Cheryl Bradley
Island Regulatory & Appeals Commission
PO Box 577
Charlottetown PE C1A 7L1

Dear Mrs. Bradley:

UE22503 - Application for an Order to Approve Stage 1 Rate Design Changes
Response to Additional Interrogatories from PEI Federation of Agriculture

Please find attached the Company's response to the additional Interrogatories filed by the PEI Federation of Agriculture with respect to the Company's Application for an Order to Approve Stage 1 Rate Design Changes.

An electronic copy will follow.

Yours truly,

MARITIME ELECTRIC

Gloria Crockett

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

GCC19
Enclosure

180 Kent Street • PO Box 1328 • Charlottetown, PE C1A 7N2
telephone 1-800-670-1012 • **fax** 902-629-3665 • **maritimeelectric.com**

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MARITIME ELECTRIC
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VIA EMAIL

August 15, 2024

Ryan P. MacDonald
Key Murray Law
80 Grafton Street, Suite 200
Charlottetown PE C1A 1K7

Dear Mr. MacDonald:

UE22503 – Application for an Order to Approve Stage 1 Rate Design Changes
Responses to Additional Interrogatories from the PEI Federation of Agriculture

Please find attached the Company's responses to the additional Interrogatories filed by you on behalf of the PEI Federation of Agriculture ("PEIFA" or the "Federation") with respect to the Company's Application to the Island Regulatory and Appeals Commission for an Order approving Stage 1 Rate Design Changes.

Yours truly,

MARITIME ELECTRIC

Gloria Crockett

Gloria Crockett, CPA, CA
Director, Regulatory & Financing Planning

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RESPONSE TO ADDITIONAL INTERROGATORIES

UE22503 MECL – June 30, 2022
Interrogatories from Federation of Agriculture
File Reference 29768-001lm

Submitted August 15, 2024

In relation to the above-noted matter, please find herein the list of interrogatories pertaining to the above noted matter, as submitted on behalf of the Prince Edward Island Federation of Agriculture.

IR-20 Exhibit M-11a Attachment 1 in response to PEIFOA-1

Exhibit M-11a provides an excel attachment supporting MECL's individual customer consumption calculations for those who consume more than 2,000 kWh per month in 2021.

(a) Can you please confirm or explain otherwise that there is a calculation error for the Min, Max, and Average calculations (columns T, U, V) in tab 'All', as it appears to include the annual total, driving up average monthly consumption for customers.

i. Please confirm that this also impacts the 'Table' tab for the 'All Accounts' average monthly consumption column.

ii. Please confirm the following table corrects for this calculation error or alternatively provide the corrected version:

	ALL ACCOUNTS	
Maximum Month Consumption Range	**# of Customer Accounts in Range**	**Average Monthly Consumption of Customer Accounts in Range**
2,000 – 5,000	12,365	1,508
5,001 – 9,999	1,039	2,872
10,000 – 19,999	276	5,805
20,000 – 49,999	88	12,464
>49,999	18	94,410
Total	**13,786**	

MECL explains in response to IR-1a.ii that 'in order to add the accounts with consumption >2,000 kWh, this response is based on a completely new data set and reflects customer information changes since the original data was set was taken for the response to IRAC IR-18. For example, some accounts have added net meter installs since the data set for the response to IRAC IR-18 was obtained.

(b) Please explain why an entirely different data set was required if both tables and data sets use actual usage per customer for the 2021 calendar year.

(c) Please confirm or explain otherwise that the vast differences between the table provided in response to IRAC-18 and the data summarized in the 'table' tab in Attachment 1 of MECL response to PEIFOA-1 is entirely a result of the explanation provided in response to (b) above.

Tab 'Farm Study' provides as list of 87 customers that were used in the Farm Study. The following 17 accounts (or 'Premises') listed as part of the 'Farm Study' are not included within the Farm category:

Type	Premise	SIC Description	Annual Usage (kWh)
Dairy	18923	Private Households – Detached Single Family – Cottages	221,040
Dairy	29337	Private Households – Detached Single Family – Cottages	154,080
Dairy	32206	Private Households – Detached Single Family – Cottages	198,560
Dairy	45396	Private Households – Detached Single Family – Cottages	80,840
Dairy	46656	Private Households – Detached Single Family – Cottages	162,520
Dairy	90715	Other Personal and Household Services	169,320
Dairy	94407	Services Incidental to Livestock and Animal Specialties	99,360
Dairy	95411	Services Incidental to Livestock and Animal Specialties	382,000
Potato	5750	n/a	
Potato	15062	Private Households – Detached Single Family – Cottages	90,240
Potato	28808	Other Storage and Warehousing Industries	152,498
Potato	45307	Other Storage and Warehousing Industries	93,200
Potato	61966	n/a	
Poultry	48345	On Rate 232	
Hog		n/a	
Hog		n/a	
Hog		n/a	

(d) Please explain why these accounts were included in the Farm Study given the SIC description provides they are private households, general service or not provided for at all in the detailed customer level data.

i. As these accounts are listed as residential or General Service related, will these customers have the option proposed for Farms of remaining on the residential rate or switching to Small Industrial under MECL's rate design proposal?

(e) Why do the three 'hog' accounts not have premise or load annual usage data?

i. Please provide the monthly usage data for these three accounts.

(f) For the 87 farm customers, please provide the monthly peak load data used to calculate the impacts of these customers if switched to Small industrial (for example, as calculated in Exhibit M-3K Synapse IR 26).

i. For the Farm accounts/premises listed for the Farm Study, please indicate which ones MECL assume would transfer over to the SI class in their analysis vs. which ones would stay in Residential.

(g) Please explain the assumptions and methodology MECL used to apply Farm Study load/customer peak results to the estimate the impacts on the broader Farm class between staying on the Residential rate or moving over to the Small Industrial.

Based on Exhibit M-11a, the tabs of 'Farms', 'All' and for the Accounts/Premises listed in 'Farm Study', the following table compares the data sets provided:

Data Set Comparison	# of Accounts (with usage provided)	# of Accounts with 12 months of usage	Average Revenue from Service Charge	Average Revenue from First Block Energy Charge	Average Revenue from Second Block Energy Charge	Total Average Annual Revenue	Average Energy from First Block (kWh)	Average Energy from Second Block (kWh)	Average Total Annual Energy (kWh)	Total Annual Energy (Max.) kWh	Total Annual Energy (Min.>0) kWh
Farm Study	80	80	$322.69	$ 3,579.98	$14,113,98	**$18,016.65**	22,017	108,486	**130,503**	382,000	15,120
All Farm Account >2,000 kWh Monthly Usage	899	829	$311.63	$ 2,891.34	$ 4,906.08	**$ 8,109.05**	17,782	37,710	**55,492**	3,609,600	3,582
All Residential Accounts >2,000 kWh Monthly Usage	13,786	11,704	$292.87	$ 2,852.75	$ 881.60	**$ 3,757.21**	15,884	6,776	**22,660**	8,000,971	240

And the following table updates MECL's Table in Exhibit M-11a to include a summarized version of the 'Farm Study' accounts:

Residential Customers with Consumption >2,000 in a Month in 2021									
	ALL ACCOUNTS			FARMS *			FARM STUDY		
Maximum Month Consumption Range	# of Customer Accounts in Range	Average Monthly Consumption of Customer Accounts in Range	% of Customer Accounts in Range	# of Customer Accounts in Range	Average Monthly Consumption of Customer Accounts in Range	% of Customer Accounts in Range	# of Customers in Account Range	Average Monthly Consumption of Customer Accounts in Range	% of Customer Accounts in Range
2,000–5,000	12,365	1,508	89.7%	444	1,640	49.4%	2	583	2.5%
5,001-9,999	1,039	2,872	7.5%	220	3,657	24.5%	13	5,123	16.3%
10,000-19,999	276	5,805	2.0%	165	6,634	18.4%	41	9,464	51.3%
20,000-49,999	88	12,464	0.6%	62	13,421	6.9%	23	16,779	28.8%
>49,999	18	94,410	0.1%	8	87,259	0.9%	1	24,213	1.3%
Total	13,786		100.0%	899		100.0%	80		100.0%

(h) Please explain how Farm Study accounts were chosen, given the comparative uniformity of these accounts compared to the range and distribution of all Farm accounts >2,000kWh.

(i) Did the Farm Study lead to any conclusions by MECL that may have been different if the Study included a more representative mix of farms that use over 2,000kWh/month?

(j) Please reconcile MECL's explanation that there were 523 Farm accounts identified in the Farm Study and the 2020 CAS from MECL's billing system (as per response to PEIFOA IR 1a)iii) with the 455 Farm accounts with over 5,000 kWh/month usage provided in the dataset in Exhibit M-11a.

(k) For the 70 Farm accounts that did not use energy in all 12 months (only 829 used energy in all months compared to 899 total Farm accounts with data provided), and more broadly for customers who utilize energy for part of the year only, why does MECL not include these accounts in the Seasonal rate class (i.e. separate them out from the Farm account analysis?

Response:

(a) Yes, there is a calculation error for the Min, Max, and Average calculations (columns T, U, V) in tab 'All', as it includes the annual total, driving up average monthly consumption for customers.

i. This does impact the 'Table' tab for the 'All Accounts' average monthly consumption column.

ii. An updated electronic data file of individual consumption levels of each of Maritime Electric's customers in the Residential Rate Class who consumed more than 2,000 kWh per month in 2021 by premise number is provided in IR-20 Attachment 1 to this response. Table 1 has been updated to reflect this update.

TABLE 1
All Accounts

Maximum Month Consumption Range	# of Customer Accounts in Range	Average Monthly Consumption of Customer Accounts in Range
2,000 – 5,000	12,362	1,509
5,001 – 9,999	1,038	2,876
10,000 – 19,999	276	5,805
20,000 – 49,999	88	12,464
>49,999	18	94,410
TOTAL	**13,782**	

Please note for both IRAC IR-18 and FOA IR-1, it is the underlying data set provided that forms the basis of the responses and the summary table(s) are meant to be a reference.

(b) Both data sets were generated from query of Maritime Electric's customer information system data base at a point in time.

IRAC IR-18 requested the Company to provide the names, addresses, and monthly consumption level (in kWh) for each of Maritime Electric's customers in the Residential rate class who consumed more than 5,000 kWh per month in 2021. The data set provided to IRAC to respond to this request therefore did not include customers with monthly consumption between 2,000 and 4,999 kwh per month. This data set was prepared in the spring of 2023.

The Federation of Agriculture's ("FOA") IR-1 requested the individual customer

consumption levels for each of Maritime Electric's customers in the residential rate class who consumed more than 2,000 kWh per month in 2021, a larger subset of the data base than originally requested by IRAC.

For the Company's response to include customers with monthly consumption between 2,000 and 4,999 kWh per month in addition to the original data requested by IRAC for Residential customers who consumed more than 5,000 kWh per month, a new data set was generated from the Company's customer information system for the response to FOA IR-1 in the fall of 2023.

(c) A revised summary table provided in IR-20 Attachment 1 to this response. The table provides more comparable average monthly consumption for customers with more than 5,000 kWh per month in 2021 and the original response to IRAC IR-18 grouped on the same basis.

(d) As discussed in the Company's response to IR-1(a), IR-1(b) and IR-6(b) from the PEIFOA (Exhibit M-11), not all farms have a farm-related SIC code in the billing system. Part of the effort in the Farm Study (the "Study") involved identifying farms that do not have a farm SIC code, which was accomplished by reviewing publicly available member lists from industry organizations, as well as a detailed analysis of Residential accounts using more than 5,000 kWh per month.

As discussed in the Company's response to IR-9(b) from the Commission (Exhibit M-10), during the Study, the Company identified over one hundred farms that had not been assigned any of the eight farm-related SIC codes. The 17 accounts (or "Premises") listed as part of the Study sample meters that did not have farm SIC codes were part of this group of over one hundred farms.

i. Yes, these customers will have the option proposed for Farms of remaining on the residential rate or switching to Small Industrial under Maritime Electric's rate design proposal if they meet the definition of a 'farm' as per Maritime Electric's Rates and General Rules and Regulations.

(e) The premise numbers for the hog accounts were removed for privacy reasons. The premise numbers for the three hog accounts are:

- 25752
- 13924
- 16074

The monthly usage data for the three hog accounts are included in IR-20 Attachment 1 Customer Data Request Update May 2024.

(f) The monthly peak load (i.e., monthly demand) data used to calculate the impacts of the 87 Farm Study customers switching to Small Industrial was provided in response to PEIFOA IR-4(g) (Exhibit M-11b). The tab labelled 'IR-4(g)' provides the monthly 15-minute metered demand data in columns AD to AO used to calculate the impacts of switching to the Small Industrial Rate Class.

i. Exhibit M-11(b) Tab 'IR-4(g)' was updated and is resubmitted in Federation-of-Agriculture-IR-Responses-in-Excel-2.xlsx in tab 'IR-20(f)'. The updated spreadsheet includes the impact of increasing the residential energy charges by 4.6 per cent. This results in an overall average increase in revenue of 4.4 per cent recovered from farm customers to achieve an RTC ratio of 95 per cent and indicates which customers would switch to the Small Industrial Rate Class or remain on the Residential Rate Class.

(g) As discussed in Section 6.1 on pages 26 to 29 of the Study, the 87 sample farms were divided into farm types. The sample for each farm type was determined to be representative of the total population of that type; therefore, the percentage of sample farms that would move to the Small Industrial rate class was considered to be representative of the group and applied to the larger farm population for each farm type.

(h) As explained on page 27 of the Study report and in response to IR-5(b) from the PEIFOA, the sample group of farms included in the Study were identified on the basis of:

1. Being among the larger farms in terms of electricity usage. It is the larger farms that will be most affected by elimination of the Residential second energy block, and thus it is the larger farms that are most relevant to the study.
2. Having a meter (i.e., installed prior to the Study) that can provide monthly demand as well as monthly energy readings. The reasoning at the time was that this could provide monthly demand readings for 2017, the latest year for which a Cost Allocation Study ("CAS") was available, which might enable greater use of the 2017 CAS results.

(i) No. Please refer to IR-20(g). Additionally, as described on Page 6 of the Study (Exhibit M-1), farms with consumption of 5,000 kWh for at least one month were used for the Study because few Residential rate customers use more than 5,000 kWh per month for domestic loads (i.e., household usage) and most large farms use more than 5,000 kWh per month.

(j) As indicated in the Company's response to IR-6(d) from Synapse Energy Economics, Inc. ("Synapse"), Exhibit M-6, almost all of the 523 farms in the farm subset of the Residential class of the 2020 CAS and the Study had greater than 5,000 kWh energy consumption in at least one month. The difference between the 523 number of farms and the 455 farms provided in the dataset in Exhibit M-11a are 68 farms that did not have a farm SIC code. The majority of the 68 farms consumed greater than 5,000 kWh in at least one month.

(k) As described in Maritime Electric's Rates and General Rules and Regulations, the Residential Seasonal Rate Class is intended for "Customers who use electricity for living purposes in a dwelling other than the Customer's principal residence; e.g., summer cottage." Thus, farms do not qualify to be included in the Residential Seasonal Rate Class.

IR-21 Residential Load and Space Heating Impacts

Table 4-4 from MECL's 2023 to 2025 GRA provides an energy sales forecast by customer group on page 31:

TABLE 4-4 Energy Sales							
	2019 Actual	**2020 Actual**	**2021 Actual**	**2022[32] Forecast**	**2023 Forecast**	**2024 Forecast**	**2025 Forecast**
Energy Sales[33] (gigawatt hours or GWh)							
Residential							
Space heating load[34]	178.4	176.8	171.8	222.8	229.8	244.3	258.8
Non-space heating load[34]	462.6	495.1	518.5	505.1	493.7	498.5	505.1
Subtotal	641.0	671.9	690.3	727.9	723.5	742.8	763.9
General Service	392.8	370.5	381.6	401.0	400.4	397.7	395.8
Large Industrial	154.0	151.8	153.8	163.5	163.5	168.0	168.0
Small Industrial	91.7	91.6	93.4	98.1	97.9	97.3	96.9
Street Lighting/Unmetered	7.4	7.0	6.9	6.4	6.4	6.4	6.5
Total Energy Sales	**1,286.9**	**1,292.8**	**1,326.0**	**1,396.9**	**1,391.7**	**1,412.2**	**1,431.1**
Growth Rate (%)							
Residential							
Space heating load	9.4	(0.9)	(0.6)	29.7	3.1	6.3	5.9
Non-space heating load	2.9	7.0	4.7	(2.6)	(2.2)	1.0	1.3
Subtotal	**4.6**	**4.8**	**2.7**	**5.4**	**(0.6)**	**2.7**	**2.8**
General Service	(0.2)	(5.7)	3.0	5.1	(0.1)	(0.7)	(0.5)
Large Industrial	1.5	(1.5)	1.3	6.3	-	2.8	-
Small Industrial	-	(0.1)	2.0	5.0	(0.1)	(0.7)	(0.4)
Street Lighting/Unmetered	(2.6)	(5.4)	(1.8)	(7.6)	-	1.0	1.0
Overall Growth Rate	**2.4**	**0.5**	**2.6**	**5.3**	**(0.4)**	**1.5**	**1.3**

Exhibit M-1c at paragraph 47 states: "Notably, updated load data indicate that Residential customers' share of the coincident peak rose by about four percentage points, while shares of coincident peak for Farm, General Service, and Small Industrial each fell. The utility has noted increased use of electric heat among the Residential class, which may explain part of this increase, though the 2020 results may also be influenced by pandemic-related lockdowns. Specific to the farm group, previous studies assumed a residential-like behaviour in the absence of any other information. With load research, the farm share of coincident peak fell by 2.5 percentage points."

The Update to the 2020 CAS shown in PEIFOA IR-4(b) Table 14 to reflect the Farm Study showed a reduction in the load of Farms by 10 per cent (From 52,322 MWh to 47,023 MWh) while Non-Coincident peak loads of farms dropped by 35 per cent (from 16.8 MW to 10.9 MW) and Coincident Peak by 40 per cent (from 13.6 MW to 8.2 MW).

Further increases in Non-Farm peak loads (e.g., from growing electric heating) has the potential to continue to reduce the cost allocation to farms.

In response to PEIFOA IR 14d, MECL states:

> Under the current Energy Purchase Agreement ("EPA") with NB Power, there is no monthly price volatility driven by changes in monthly customer demand because the EPA provides for fixed pricing. **There is a large variation in monthly volumes, driven largely by space heating load. The current EPA extends to the end of 2026.** *[emphasis added]*

(a) Please provide the actual 2022 energy sales including an update on space heating load growth and an update on forecast sales and whether the anticipated space heating load growth has materialized.

i. Please split residential by farm and non-farm, for space heating and non-space heating load (i.e. is any space heating load associated with farm accounts).

(b) Please explain how MECL anticipates RTC ratios to be impacted by the anticipated growth in space-heating load, especially for residential and farm customers.

i. Please provide any analysis MECL has undertaken on this topic, including updated RTC ratios that include the increased space heating load.

(c) Please explain how MECL anticipates the proportional breakdown of generation, transmission, distribution and customer related costs to change as a result of servicing the expected space heating load and how this will impact RTC ratios.

i. Please specifically comment on any potential cost changes being contemplated as a result of the EPA expiry at the end of 2026.

ii. Please provide any cost of service or capital related analysis MECL has undertaken on this topic.

Response:

(a) The Table with updated actual energy sales for 2022 and 2023 for each rate class is provided in Table 2 below. As discussed in (i) below, Maritime Electric believes that the amount of space heating load associated with farm accounts is not material. Table 2 is based on Maritime Electric's load forecast, which does not split the residential load into farm and non-farm.

It is important to note that there are notable differences between Table 14 of the 2017 CAS and PEIFOA Table IR-4(b)-6 referenced in IR-21 above that prevent them from being

comparable. The data from Table 14 included 2,094 farm customers whereas PEIFOA Table IR-4(b)-6 included 523 customers, as the list of farm customers was revised to represent farms more accurately. Also, as discussed in Response to IR-22(c)(ii), for the 2017 CAS, it was assumed that farm load had the same characteristics as Residential non-Farm. However, the sample meter data from the Study for 2020 showed that the Farm load typically peaks in the morning whereas Residential non-Farm peak is typically in the late afternoon or early evening.

TABLE 2
Energy Sales

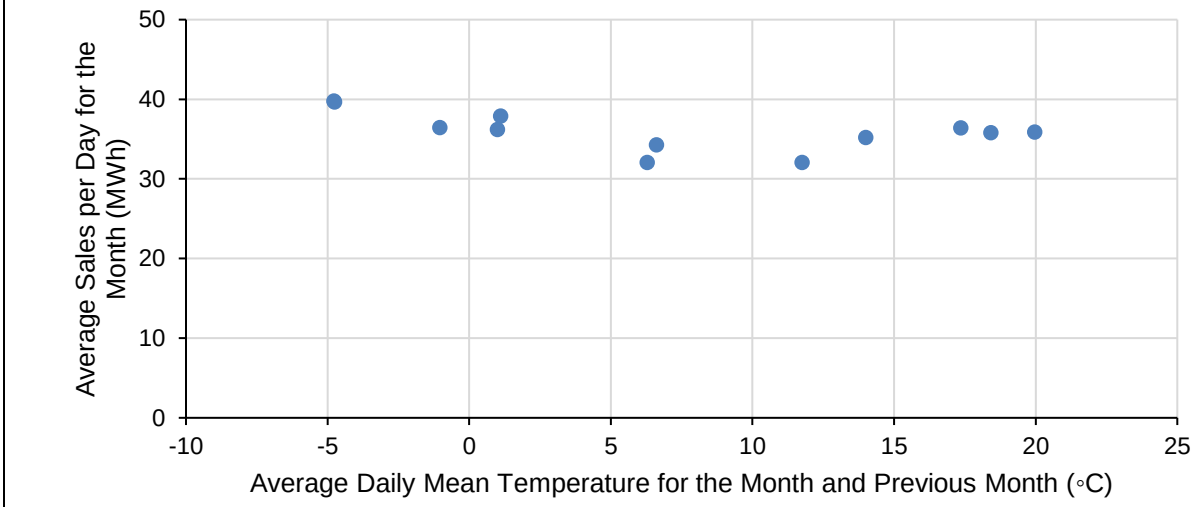
	2019 Actual	2020 Actual	2021 Actual	2022[32] Actual	2023 Actual	2024 Forecast	2025 Forecast
Energy Sales[33] (gigawatt hours or GWh)							
Residential							
Space heating load[34]	178.4	176.8	171.8	226.7	254.1	244.3	258.8
Non-space heating load[34]	462.6	495.1	518.5	509.7	547.1	498.5	505.1
Subtotal	641.0	671.9	690.3	736.4	801.2	742.8	763.9
General Service	392.8	370.5	381.6	392.8	412.1	397.7	395.8
Large Industrial	154.0	151.8	153.8	163.8	168.5	168.0	168.0
Small Industrial	91.7	91.6	93.4	91.1	91.0	97.3	96.9
Street Lighting/Unmetered	7.4	7.0	6.9	6.6	6.4	6.4	6.5
Total Energy Sales	**1,286.9**	**1,292.8**	**1,326.0**	**1,390.7**	**1,479.2**	**1,412.2**	**1,431.1**
Growth Rate (%)							
Residential							
Space heating load	9.4	(0.9)	(0.6)	32.0	12.1	6.3	5.9
Non-space heating load	2.9	7.0	4.7	(1.7)	7.3	1.0	1.3
Subtotal	**4.6**	**4.8**	**2.7**	**6.7**	**8.8**	**2.7**	**2.8**
General Service	(0.2)	(5.7)	3.0	2.9	4.9	(0.7)	(0.5)
Large Industrial	1.5	(1.5)	1.3	6.5	2.9	2.8	-
Small Industrial	-	(0.1)	2.0	(2.5)	(0.1)	(0.7)	(0.4)
Street Lighting/Unmetered	(2.6)	(5.4)	(1.8)	(4.0)	(2.9)	1.0	1.0
Overall Growth Rate	**2.4**	**0.5**	**2.6**	**4.9**	**6.4**	**1.5**	**1.3**

i. Maritime Electric believes that the amount of space heating load associated with the farm accounts is not material. Maritime Electric evaluated loads for 135 dairy farms and 357 potato farms for the year 2023 to analyze heating and non-heating loads.

Monthly average loads per day for the dairy farms as a group relative to average temperatures are shown in Figure 1. Figure 1 shows only a small correlation

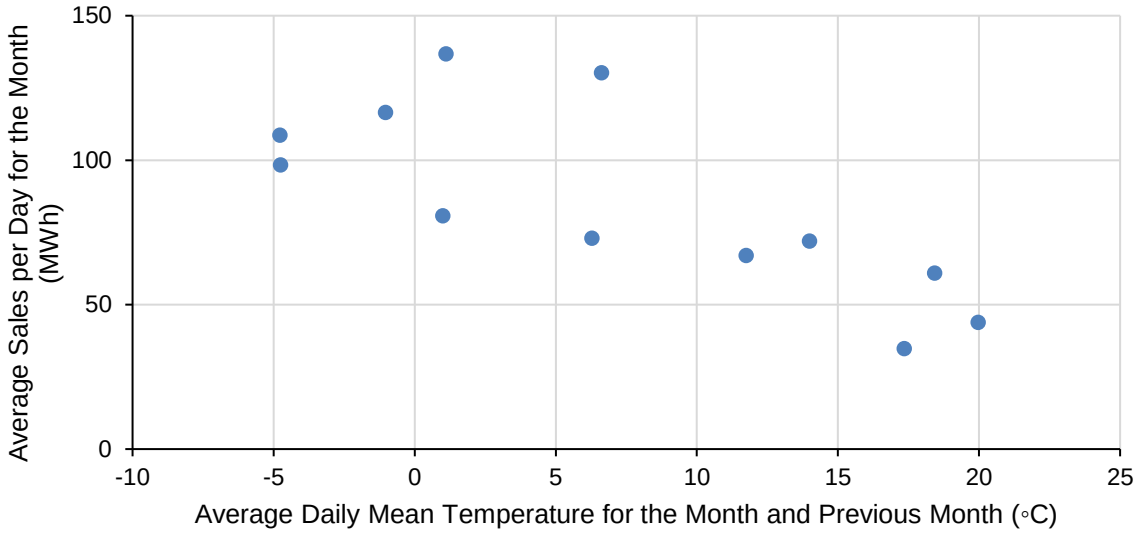
between dairy farm loads and temperatures, which implies that there may be some heating load associated with this group of customers but it does not have a material impact on the load. Poultry and hog farms are assumed to have similar load profiles as dairy farms as these are also livestock farms.

FIGURE 1
Load Versus Temperature for Dairy Farms (2023)



Monthly average loads per day for the potato farms as a group relative to average temperatures is shown in Figure 2. With regards to potato farms (Figure 2), it is likely that what appears to be a correlation between sales and temperature is actually explained by changing volumes of potatoes in storage. The volume of potatoes in storage is at a maximum at the end of the harvest in late October or early November, and then steadily declines through to the summer of the following year, when most warehouses are empty.

FIGURE 2
Load Versus Temperature for Potato Farms (2023)



(b) Maritime Electric has not done any analysis related to how RTC ratios may be impacted by growth in space-heating load. However, the ongoing impact of space heating load on RTC ratios will be reflected in future cost allocation studies and the Company may propose future rate design changes to address these impacts if CAS results warrant such changes.

That being said, please refer to the Company's response to IR-22(m). The updated results from the 2020 CAS indicate that growth in space-heating load will result in a greater improvement the RTC ratio of the residential rate class when the second block is eliminated than previously thought. This may indicate that the required Stage 2 rate design increase for the Residential Class may be less than previously indicated in Section 8.2 of the rate design application. This will be considered in combination with other relevant analyses, including the impact of Stage 1 rate design changes on customer consumption, in developing a future proposal for Stage 2 rate design changes.

(c) Maritime Electric has not analyzed how the proportional breakdown of generation, transmission, distribution and customer related costs is impacted by space hearing load and how these might affect RTC ratios.

i. Cost changes as a result of the EPA expiry in 2026 will not be known until a new EPA is negotiated.

ii. Maritime Electric has not undertaken any analysis related to cost of service or capital since the evidence was provided in the 2023 GRA.

IR-22 Exhibit M-11, Response to PEIFOA IR 14 & pdf page 4 of 84 (MECL second cover letter)

The response to PEIFOA IR-14 provides information regarding the 2020 Cost Allocation study, indicating material changes from the 2017 Cost Allocation study on which the original application and proposal to phase out the Residential 2nd block rate was based.

(a) Please confirm the 2020 Cost Allocation Study was the most recent study completed by MECL. If not, please provide a copy of any newer cost allocation study. In addition, please update IR-14(f) for the new study, and please respond to the remaining components of this question so as to include updated information from the newer cost allocation studies, if available.

(b) Please provide a description of the specific error identified in the December 12, 2023 cover letter (pdf page 4 of Exhibit M-11) and the source and reason for the error. Please also provide a full Excel GAS study reflecting the correction.

(c) Please confirm, per IR-14(b) that the 2020 study now includes 523 average monthly bills as the farms included in the Residential Farms portion of the subclass, compared to the previous 2017 study which used 2094 average farm bills.

i. Further to (b) above, please confirm that the 523 average farm accounts in the 2020 study are "larger farms" and are active farms such that the approximately 1500 accounts that had previously been considered residential farms (in the 2017 study) which are now no longer included in residential farms are primarily smaller and/or customer who are no longer farming.

ii. Please confirm that limiting the analysis to the 523 larger and active farms raised the measured RTC ratio from 82 to 87, indicating the larger and active farms are in fact paying a larger share of their costs than the 1500 now excluded accounts which had brought down the RTC ratio when included in the farm accounts. If not confirmed, please explain your answer in detail.

iii. Further to (ii), please explain the reference to 87 RTC, when the 2020 cost allocation study indicated farms are at 92 RTC, per page 26 of the Chymko report.

(d) Please confirm, per IR-4(c) that growth in demand-related costs relative to energy-related costs is one of the reasons driving the revision in cost allocation to farms.

i. Please confirm that part of the reason growth in demand related costs are not affecting farms to the same degree as other residences is that farms are not as "peaky" as previously assumed in 2017, per Chymko page 23. If not, please describe why growth in demand-related costs helps increase the farm customer RTC.

ii. With ongoing disproportionate increases in demand-related costs, as is occurring in the 2023 General Rate Application, is it reasonable to assume that the farm RTC will further increase relative to the remainder of the residential class, as has been

seen between 2017 and 2020? If no, why not.

(e) Please confirm that the Rate Design application RTC ratios are based on rates from 2021 (approved in UE20-04 per Synapse response IR-22 Attachment 1). Also please confirm that the 2023 General Rate Application adopts material rate increases for residential customers entirely derived from the energy portion of the bill (with no increases to the fixed or customer portion). If confirmed, would not ongoing rate increases of this type lead to improvements in the RTC for larger customers (i.e., farms) relative to smaller customers (i.e., residential non-farms)? If not, please explain in detail.

(f) Please explain Table IR-14(f)-4 in respect of the revenues of Farm customer moving from Residential to Small Industrial. Per Charts IR-14(g)-1 and 14(g)-2, for example, customers who move from Residential to Small Industrial will face bill increases of up to 20%. Yet Table IR-14(f)-4 appears to indicate that their revenues ($3.962 million) are simply removed from residential and added to small industrial without any increase to the revenue to be derived from these customers. Please revise Table 14(f)-4 to include the added revenue from the revision.

(g) Please reconcile the statement in IR-14(b) that "The farms included in the Farm Study made up the 523 average monthly bills for potato, dairy, hog and poultry farms that formed the Farm subset of the Residential Rate class in the 2020 CCAS" with the fact that only 87 farms were included in the Farm Study. Is this statement saying that the 87 farms in the farm study are among the 523 average monthly bills? If not, please explain the difference.

(h) Please explain why Table 14(f)-3 shows a total 2020 Allocated cost of $118.386 million for year-round residential classes, while Table IR-14(f)-4 shows $117.665 million. Please explain and show the calculations in support of the difference.

(i) Table IR-14(f)-3 reports the Farms >5000 kWh who remain in Residential RTC (after elimination of the second block) at 104.7. This appears to be an error affecting Rows 4, 5 and 6 in this table. Please check calculations and re-file a corrected table.

(j) Table IR-14(f)-3 appears to indicate that the residential class, following the elimination of the second block remains at 91% RTC overall, implying further disproportionate rate increases would be required for this class. However, the large farm customer subset who remain residential (i.e., they would pay even more if they switched to Small Industrial) would already be covering their own costs (with the range of 95-105%), unlike the large customers who are non-farm who are much lower RTC (75.2% and 77.7%). Please confirm that this finding reflects the load shape of the farm customers, and their relatively less "peaky" usage than other customer types.

(k) Please confirm that on the basis of Table IR-14(f)-3, if larger farms (>5000 kWh) were made their own class, the total revenue from the class would not need to rise farther than elimination of the second block and would not require further increases due to the shortfall otherwise measured for the remainder of the residential class.

(l) On the basis of the response to (k) above shown in Table IR-14(f)-3, please indicate if MECL has considered keeping larger farms as their own class. Please indicate why or why not.

(m) Based on the updated analysis provided in response to PEIFOA IR 14(f) (and potentially corrected as a result of questions asked above) please update Exhibit M3K-Synapse IR 26, i.e. that includes separate calculations for removal of the second block energy rate and the increase specifically from the adjustment to the RTC ratio.

a. Please include an additional step in this analysis that adds the compounding impact of the general rate increases approved in the 2023 - 2025 GRA for all customers as well as any other rate rider changes over this time - for example the ECAM rate adjustment.

Response:

(a) The 2020 CAS is the most recent study completed by Maritime Electric.[1]

(b) As shown in Table 1 of the December 12, 2023 cover letter (Exhibit M-11), the 'Energy Input Allocator (MWh)' for the 'Residential (Farms)' group had an incorrect value of 45,716 MWh. The correct value, based on energy sales and associated line losses allocated to the 'Residential (Farms)' group, is 50,937, which increased the costs allocated to the Farm group and decreased the RTC ratio to 86.8 per cent. Maritime Electric has not identified the cause of the error.

The 2020 CAS did not need to be updated as a result of the error because the error impacted only the allocation step, which is the final step of the CAS process and the calculation done for the resulting corrections to the RTC ratios were provided in the cover letter.

(c) Maritime Electric confirms that the 2020 CAS includes an average of 523 bills per month for the Farm group.

i. Maritime Electric confirms that the 523 average farm accounts in the 2020 CAS are larger farms, most of which consumed more than 5,000 kWh in a month. The approximately additional 1,500 accounts that had previously been considered as residential farms in the 2017 CAS are smaller farms or customers who are no longer farming.

ii. No. The RTC ratio for farms was raised from 82 in the 2017 CAS to 87 in the 2020 CAS primarily due to the use of more accurate load data collected through the Study. For the 2014 CAS and the 2017 CAS, it was assumed that Farm load had the same characteristics as Residential non-farm. However, the sample meter data from the Study for 2020 showed that the Farm load typically peaks in the morning rather than in late afternoon or early evening, as is the case for Residential non-farm. This resulted in the 2020 1CP for Farms being significantly

[1] Preparation of the 2023 CAS is in progress and is not completed as of the filing date of these responses.

lower than the 2017 1CP estimate.

iii. As discussed in the cover letter (dated December 12, 2023) for the Company's Responses to Interrogatories from the PEIFOA, it was discovered that an incorrect energy input allocator for farms was used in the 2020 CAS. Table 1 of the cover letter shows the revised RTC for farms as 86.8 per cent (rather than 92.1 per cent reported in the 2020 CAS).

(d) Maritime Electric assumes that the PEIFO meant to reference IR-4(b). The primary reason for the increase in the RTC ratio from 82 to 87 for farms is the use of more accurate load data collected through the Study. As discussed in the 2020 CAS and in Response to IR-22(c)(ii), farms contribute less to the peak than previously estimated in 2017, which reduced demand-related costs allocated to farm customers. A reduction in cost allocated to farm customers resulted in an increase in RTC ratio for farms.

i. Growth in demand-related costs affects all rate classes relative to their proportional contributions to coincident and non-coincident peaks. More accurate load data collected as part of the Study and incorporated into the 2020 CAS demonstrated that farms contribute less to the system peak than previously estimated, which reduced demand-related costs allocated to farm customers. The reduced cost allocated to farm customers increased the RTC ratio accordingly.

ii. The 2017 to 2020 increase in RTC ratio for the farm group was due to load data from the Study, as described in Response to IR-22(c)(ii) – not a decrease in demand-related costs relative to previous CAS results. Please refer to Maritime Electric's Response to IR-22(k) below regarding the RTC ratio of farms moving to the Small Industrial rate. The Company is proposing that farms will continue to have the option to move to the Small Industrial rate class at any time they so choose.

(e) The RTC ratios in Maritime Electric's Rate Design Application (Exhibit M-1), filed on May 14, 2021, were based on the 2017 CAS and 2017 rates. The 2020 CAS was not completed until after the Rate Design Application was filed.

The 2023 General Rate Application approved by the Commission included changes to the energy charges of residential rates; the application did not include changes to service charges for residential customers (i.e., no increase to the fixed or customer portion).

All else being equal, rate increases to the energy charge should result in relatively constant RTC ratios because the energy portion of the residential rate is intended to cover energy- and demand-related costs (i.e., rate increases are a result of cost increases). Maritime Electric acknowledges that the RTC ratio for large farms is expected to be higher than the remainder of the residential rate class after the proposed changes, which is why Maritime Electric is proposing that farms be able to choose between remaining on the residential rate class or moving to the Small Industrial rate class, whichever is more beneficial for the customer.

(f) Footnote eight to Table IR-14(f)-4 was provided to explain why the reduction in revenue from the Residential rate classes is equal to the increase in revenue to the Industrial rate class.

The calculations assume that 'Farms >5,000 kWh' and 'Other >5,000 kWh' that move to the Small Industrial rate do so in year two of the four-year step to eliminate the residential second block, at which point the cost of the Small Industrial rate is assumed to be equal to the cost of the residential rate for those customers (i.e., the average impact of moving to the Small Industrial rate is revenue neutral).

(g) Monthly load data for the 523 average monthly farm customers were used for the Study. A sample of 87 farms with hourly load meters installed was used to estimate the non-coincident and coincident peaks for the farm population of 523 average monthly customers. The 87 sample farms with hourly metering in the Study are among the 523 average monthly bills.

(h) The difference is because the tables in question are based on different time periods. Table IR-14(f)-3 is based on applying 2020 CAS unit costs to the 12-month period March 2019 to February 2020. Table 14(f)-4 is the adjusted 2020 CAS allocated costs for calendar year 2020, as shown in Table 1 of the cover letter (dated December 13, 2020) for the Company's Response to Interrogatories from the PEIFOA (Exhibit M-11).

(i) The 'Revised 2020 RTC Ratio (%)' in Table IR-14(f)-3 for the two farm cohorts are misplaced. The cohort "4. Farms > 5,000 kWh to Small Industrial" should have an RTC ratio of 107.7 and the Cohort "5. Farms > 5,000 kWh Remaining in Residential" should have an RTC ratio of 96.9. No changes are required to Row 6 Subtotal Farms or the bottom Total in the table. A revised Table with the changes is provided in Table 3.

TABLE 3 UPDATED TABLE IR-14(f)-3 Update of Rate Design Application Table 5 to 2020 CAS - Expanded[2] Analysis of Year-round Cohorts with the Declining Second Block Eliminated						
Cohorts	**Updated 2020 Allocated Cost from Table 3 ($000s) A**	**2020 Base Revenue from Table 3 ($000s) B**	**2020 Base Revenue – Declining Second Block Eliminated ($000s) C**	**Incremental Revenue from Elimination of Declining Second Block ($000s) D = C - B**	**Increase in Revenue (%) E = D/B**	**Revised 2020 RTC Ratio (%) F = C/A**
1. Usage up to 2,300 kWh	79,191	74,431	74,691	260	0.3	94.3
2. Usage 2,301 to 5,000 kWh	28,804	22,678	23,564	886	3.9	81.8
3. Domestic >5,000 kWh	2,308	1,562	1,736	174	11.1	75.2
4. Farms > 5,000 kWh to Small Industrial ("SI")	3,068	2,676	3,213	537	20.1	104.7 ~~96.9~~
5. Farms > 5,000 kWh Remaining in Residential	3,059	2,501	2,965	464	18.6	96.9 ~~104.7~~
6. Subtotal Farms >5,000 kWh (4+5)	6,128	5,177	6,178	1,001	19.3	100.8
7. Other > 5,000 kWh to SI	1,467	902	1,132	230	25.5	77.2
8. Other > 5,000 kWh Remaining in Residential	488	327	379	52	15.9	77.7
9. Subtotal Other >5,000 kWh (7+8)	1,955	1,229	1,511	282	22.9	77.3
TOTAL (1+2+3+6+9)	**118,386**	**105,077**	**107,680**	**2,603**	**2.5**	**91.0**

(j) Table IR-14(f)-3 includes customers who would move to the Small Industrial Rate Class and the Total RTC ratio of 91.0 per cent is not representative of the Residential Rate Class. The RTC ratio for all customers who remain on the residential rate class after Stage 1 is shown in Table IR-14(f)-4 as 94.5, compared to all Farms who stay in the Residential rate class with an RTC ratio of 99.4. The difference between the RTC ratios for farms that remain in the Residential Rate Class compared to the remainder of residential customers is due to the average load profile of farms, which contributes less to the peak than non-farm customers.

(k) Yes, based on Table IR-14(f)-3, if larger farms (>5000 kWh) were made their own class, the total revenue from the class would not need to rise farther than elimination of the second block and would not require further increases due to the shortfall otherwise measured for the remainder of the residential class. However, a separate rate for farms would not necessarily be the same as the existing Residential rate with the second energy block eliminated. In response to requests to design a separate farm rate, Maritime Electric has proposed that such a rate include a demand charge and a two block energy structure, and is based on an RTC ratio of 1.0, as described previously.

Please also refer to the Company's response to IR-22(m). The updated results from the 2020 CAS indicate that growth in space-heating load will result in a greater improvement the RTC ratio of the residential rate class when the second block is eliminated than previously thought. This may indicate that the required Stage 2 rate design increase for the Residential Class may be less than previously indicated in Section 8.2 of the rate

[2] The Farms > 5,000 kWh and Other > 5,000 have been expanded to separate those that would move to Small Industrial and those that would remain in Residential in Table IR-14(f)-3 only for reference in other interrogatory responses.

design application. This will be considered in combination with other relevant analyses, including the impact of Stage 1 rate design changes on customer consumption, in developing a future proposal for Stage 2 rate design changes.

(l) Please refer to Maritime Electric Response to Interrogatories from Commission Staff (Exhibit M-10). In response to IR-15 from the Commission, Maritime Electric provides details of a potential farm rate class using available load data from the Study and Residential Load Study. Table 2 shows the 2020 revenue needed to be collected from farms to achieve an RTC ratio of 1.00 is estimated at $8.537 Million. Table 4 shows the revenue collected from farms moving to the Small Industrial rate is estimated to be $8.587 Million with an RTC ratio of 1.01. This is not materially different than a potential farm rate.

Given the small number of customers that would qualify for a separate Farm rate and the comparability of the potential farm rate to the Small Industrial rate, Maritime Electric believes it remains most appropriate to give large farms the option to move to the Small Industrial rate class if it is beneficial for them to do so as proposed in the Application.

(m) An updated version of Exhibit M-3(k) – Synapse IR 26 with 2020 CAS data and with the impact of the 2023-2025 GRA in electronic format is provided in Federation-of-Agriculture-IR-Responses-in-Excel-2.xlsx tab 'IR-22(m)-Chart-Data' and tab 'IR-22(m)-0.95RTC'.

Tab 'IR-22(m)-0.95RTC' demonstrates that, based on the 2020 CAS, energy charges would only need to increase by 1.2 per cent (in Stage 2) to achieve an RTC ratio of 95 per cent for the residential rate class, which is less than the 4.6 per cent increase based on the 2017 CAS. The reason for the reduction from 4.6 per cent to 1.2 per cent is because of an increase in second block energy sales for the residential rate class between the 2017 CAS and the 2020 CAS, likely due to the electrification of space-heating.

This may indicate that the required Stage 2 rate design increase for the Residential Class may be less than previously indicated in Section 8.2 of the rate design application. This will be considered in combination with other relevant analyses, including the impact of Stage 1 rate design changes on customer consumption, in developing the Company's proposal for Stage 2 rate design changes in the future.

a) Columns O to U in tab 'IR-22(m)-Chart-Data' were added to demonstrate the overall estimated rate impacts for Farm customers when including the 2023-2025 GRA; the per cent increases are based on first block rates effective March 1, 2022, because second block is assumed to be eliminated as proposed.

IR-23 Exhibit 11, Response to PEIFOA IR 4b

In response to PEIFOA IR 4b, MECL provided an update for 2020 CAS results to tables originally provided in the Farm Study based on the 2017 CAS results. Specifically for Table 10 from the Farm Study, which provides unit costs for all distribution level customers to allocate estimated costs to serve those loads (i.e. residential, farms, general service):

TABLE 10 Unit Costs (from 2017 Cost Allocation Study)		
Customer related	295	$/yr
CP demand related	184.46	$/kWh
NCP demand related	53.80	$/kWh
Energy related	83.00	$/MWh

Was updated as follows:

Table IR-4(b)-2 Update of Farm Study Table 10 to 2020 CAS		
Customer related	311.00	$/year
1CP Demand related	225.05	$/kW
NCP Demand related	72.40	$/kW
Energy related	82.14	$/MWh

Further, Exhibit M-3b response to Synapse IR-2, which is the 2020 CAS model, provides a breakdown of full revenue requirement provides unit costs for Farms in Tab 1.2 (Unit Cost by Function) summarized for Farm accounts as follows:

Table from Tab 1.2 Unit Cost by Function for Farms From 2020 CAS (Exhibit M-3b)		
Full Revenue Requirement	13.29	¢/kWh
Energy Related Revenue Requirement (Generation, Purchased Power)	7.35	¢/kWh
Site Related Revenue Requirement	26.19	$/bill

(a) Please explain at a high level what is driving the substantial increases from 2017 to 2020, specifically with customer related, CP and NCP unit costs.

(b) Comparatively, energy related unit costs have not changed much at all over the three-year period. Please explain what is happening (on both the demand and supply side) driving this result.

(c) Does MECL forecast continued increases in customer, transmission and distribution related costs and stable energy costs relative to load moving forward? Please explain.

(d) Please reconcile the Table IR-4(b)-2 with the Table from Tab 1.2 above.

a. If these tables need updating as a result of the 2020 CAS error noted in the second cover letter for the responses to PEIFOA IRs (Exhibit M-11, pdf page 4 of 84), please provide and explain the differences.

(e) For the Table provided from 'Tab 1.2', can this be correctly read that site specific costs can be covered by a monthly charge of $26.19/bill and remaining energy related revenue requirement is covered by a rate on all energy of 7.35¢/kWh?

a. If this is applied does it fully recover Farm allocated revenue requirement in the Cost of Serv
b. If not, please explain and provide the appropriate energy rate that fully recovers energy related revenue requirement and monthly rate that recovers all remaining Farm allocated costs (such as transmission, substation, etc.).

Response:

(a) Two main factors have caused an increase in the CP and NCP unit costs for the residential rate class in the 2020 CAS compared to 2017 CAS:

- An increase in total demand-related costs, notably those associated with purchased power, transmission and substations.
- A reduction in the NCP for the residential rate class, which increases the unit cost ($/kW).

(b) The Company's energy-related unit supply costs are relatively stable due to long-term energy purchase agreements with suppliers, including fixed pricing under the current Energy Purchase Agreement (EPA) with NB Energy Marketing. In addition, the Commission did not approve any changes to electricity rates in 2019 and 2020. This meant that the energy charges included in revenue requirement were held to 2018 rates.

(c) Maritime Electric expects relatively stable energy-related unit supply costs to the end of 2026 as discussed in Company's 2023 General Rate Application. Beyond 2026, it will depend on the negotiated terms of a new EPA. The Company expects increases in customer, transmission and distribution related costs will continue due to continued load growth. However, the Company does not forecast how the increases in these costs will compare to the increases in load.

(d) Table IR-4(b)-2 provided includes the correction to the error identified in the cover letter for the responses to PEIFOA IRs (Exhibit M-11, pdf page 4 of 84). Table 4 has been updated to correct to the error identified.

Table 4 **Updated Table from Tab 1.2 with Exhibit M-11 Cover Letter Error Resolved** **Unit Cost by Function for Farms From 2020 CAS (Exhibit M-3b)**		
Full Revenue Requirement	14.10	¢/kWh
Energy-related Revenue Requirement (Generation, Purchased Power)	8.21	¢/kWh
Site Related Revenue Requirement	26.17	$/bill

The 'energy-related' value from Table IR-4(b)-2 matches the 'Energy Related Revenue Requirement' from the updated Table from Tab 1.2. The Full Revenue Requirement from the updated Table from Tab 1.2 includes all costs, including 1CP and NCP demand-related costs. The demand-related costs are not provided separately in the updated Table from Tab 1.2 because the current residential rates do not contain demand charges. Demand-related costs are recovered through the energy charges, along with energy-related costs.

(e) The Table from tab 1.2 indicates that the 2020 site-specific revenue requirement for farm customers can be covered by a monthly service charge of $26.17 per month and that a rate of 8.21¢ per kWh can cover the energy-related revenue requirement.

a. No, the 8.21¢ per kWh covers the energy-related revenue requirement but does not include the demand-related revenue requirement. Therefore, an energy rate of 8.21¢ per kWh would not fully cover the revenue requirement under the cost-of-service model because there is no demand charge under the Residential Rate.

b. For the residential rate class, the energy charge recovers both the energy-related portion of the revenue requirement and the demand-related portion of the revenue requirement.

Please refer to Table IR-3(b) provided in response to PEIFOA IR-3 (Exhibit M-11), which provides estimated rates for 2020 that would have resulted in an RTC ratio of 100 per cent. In this example, the estimated rate for the 'Residential (Farms)' group included a service charge, demand charge and energy charges broken out into first and second blocks.

The requested estimate of a 2020 rate for farms with an energy rate that fully recovers energy-related revenue requirement and a monthly service charge that recovers all remaining Farm allocated costs is provided in Table 5.

Maritime Electric

TABLE 5 2020 Farm Rate with Energy Only Charge and Monthly Service Charge		
Energy-related revenue requirement ($)	A	3,862,567
Energy sales (kWh)	B	47,022,711
Site-related revenue requirement ($)	C	164,241
Demand-related revenue requirement ($)	D	2,604,392
Average number of monthly bills	E	523
Energy charge ($ per kWh)	**A / B**	**0.0821**
Monthly service charge ($ per month)	**(C + D) / (E x 12)**	**441.15**

Maritime Electric does not recommend approving this rate because of the potential inequity of such a rate . As an example, under this scenario, a farm using 5,000 kWh per month would pay the same dollar amount contribution to system demand-related costs as a farm using 10,000 kWh per month.

IR-24 Exhibit 11, Response to PEIFOA IR 15b & c

The table provided in response to IR 15c gives the historic estimated annual coincident peak load split by customer class:

TABLE IR-15 (c) Breakdown of MECL Annua l Peak Load (at system input)			
Year	**2014**	**2017**	**2020**
Date	December 30	December 27	December 16
Hour ending	18:00	18:00	18:00
Coincident Peak load (MW)			
Residential year round	119.2	142.6	154.0
Residential Seasonal	0.7	1.6	1.8
Residential Farm	10.9	14.8	8.8
General service	63.6	58.1	61.8
General Service Seasonal	-	-	-
Small Industrial	15.8	14.6	13.2
Large Industrial	17.2	16.3	14 .2
Street lighting	1.6	1.4	1.2
Unmetered	0.4	0.4	0.4
	229.4	**249.8**	**255.4**

MECL explains in response to 15b that the coincident peak is the 1CP (i.e., the highest single hourly load for the year). For each rate class the coincident peak allocator is the contribution of that rate class to the 1CP. In 15c MECL states it estimates the coincident peak values for all rate classes (except Large Industrial) as part of the CAS.

(a) Please detail how MECL estimates CP values for each customer class as part of the CAS.

(b) Please explain when the last time the demand allocation methodology (currently 1CP) was reviewed and approved by IRAC?

a. Please provide relevant documentation from this review.

(c) Please explain why MECL settled on 1CP when it clearly results in extreme allocator swings year-over-year.

(d) Has MECL contemplated demand allocation methodology that smooths the result in any way to ensure demand cost allocation isn't changing so substantially between CAS studies?

(e) Please provide a jurisdictional comparison of other utilities that use the 1 CP method without any averaging done (i.e. use of multiple year coincident peaks).

Response:

(a) Maritime Electric estimates CP values for each customer class as follows:

- Large Industrial is based on individual hourly interval metering data for each customer.
- Street Lighting is based on the connected load for each type of fixture and the number of each type of fixture in service.
- Unmetered is based on the connected load for each account, and the number of hours per day that each account has contracted for.
- Up to and including the 2017 CAS, the Residential and General Service classes were based on the use of load study results from the early 1990s. Residential Farm was assumed to have the same characteristics as Residential.

  For the 2020 CAS, hourly interval data from sample meters was used to estimate the CP loads for Residential, Residential Farm and General Service. Examples of how hourly load data from sample meters are used to estimate 1CP and NCP for the total population for the Residential Farm group were shown in Response to PEIFOA IR-6(g) (Exhibit M-11). The calculations for Residential and General Service classes are similar.
- Small Industrial is based on the residual remaining after the CP values for all the other rate classes have been subtracted from the system peak.

(b) During a period of price cap regulation, the Company's rates were set equal to 110 per cent of New Brunswick Power's rates and Cost Allocation Studies were not done.[3] Following the return to cost-of-service regulation, the first CAS to be done was based on year 2005 data. This study was done by Foster Associates, Inc. of Bethesda, Maryland.

Foster Associates selected the 1CP method to allocate most demand-related plant costs (e.g., generation, purchased power, transmission and distribution substations). This method was selected since it best followed cost behavior in this case. Based on the principle of cost causation, these facilities were sized to meet system winter peak demands. NCP was chosen to allocate demand-related primary line, line transformer and secondary line costs. Given their downstream location, the level of investment is based upon meeting the peak load on each feeder which is more closely represented by class NCP.

The 2005 CAS was filed with the Commission on October 4, 2006.

All subsequent Cost Allocation Studies have been done by Chymko Consulting Ltd. Chymko has continued the use of 1CP allocation for demand-related power supply,

[3] From 1994 – 2003, the Company was legislated by the Province of PEI to operate on a form of price cap regulation or variation thereof and not on cost-of-service regulation.

transmission and substations costs, and NCP allocation for demand-related primary line, line transformer and secondary line costs. The Chymko Cost Allocation Studies have been filed with the Commission.

(c) Please see response to (b) above.

Maritime Electric does not agree with the statement "… on 1CP when it clearly results in extreme allocator swings year-over-year." In Table IR-15(c), the variation between the 14.8 MW Farm load at system peak in 2017 and the 8.8 MW Farm load at system peak in 2020 is due to the use of hourly interval data from sample meters to estimate the 2020 Farm load. For 2014 and 2017 it was assumed that Farm load had the same characteristics as Residential non-farm. However, the sample meter data from the Study for 2020 showed that the Farm load typically peaks in the morning, rather than the late afternoon or early evening, as is the case for Residential non-farm customers. This resulted in the 2020 1CP for Farms being lower than the 2017 1CP estimate.

(d) For the 2023 CAS, Maritime Electric is considering using a 3CP demand allocator instead of 1CP.[4] The reason is the abnormally high peak load for 2023 on February 4 due to a polar vortex event. In this case, Maritime Electric shares PEIFOA's concern that use 1CP would result in a substantial variation from the 2020 CAS.

(e) This has not been completed. Maritime Electric has continued to rely on the professional judgement of the consultants who have done Cost Allocation Studies for the Company. As explained in (b) above, 1CP has been used to allocate power supply, transmission and substation costs because these components of the system are built to be able to serve the 1CP load.

Maritime Electric is aware that some other electric utilities use a 3CP method, which is the average of the three highest monthly peaks in a given year.

[4] Preparation of the 2023 CAS is in progress and is not completed as of the filing date of these interrogatory responses.

IR-25 Farm Specific Rates & Response to Exhibit M-11, PEIFOA IR-3

In response to PEIFOA IR3-a MECL states the potential Farm Rate is based on the 2020 CAC and therefore MECL declined to update it in the request. The Farm rate as proposed in IRAC 15 (Exhibit M-10) is as follows:

TABLE 1 **Potential Farm Class, Rate**		
Demand Charge	Per kW of billing demand	$ 8.80
First Block Energy Charge	Per kWh for first 200 kWh per kW of billing demand per month	$ 0.1246
Second Block Energy Charge	Per kWh for balance of kWh per month	$ 0.0825

And is based off collecting 100% of revenue requirement from the Farm Class, or $8.537 million. However, the 2020 CAS has allocated costs at $6.248 million, or $6.631 million after an error that's been corrected (per pdf page 4 of Exhibit M-11).

(a) Please provide an updated proposed Farm rate that recovers only the allocated cost as assigned in the 2020 CAS.

(b) Please explain where the $8.537 million cost figure came from in the 2020 CAS that MECL used in response to IRAC-15. Is this related to the additional seven customers shown in footnote 38 of Exhibit M-10? If no, please explain the source of the difference. If yes,

i. please provide the same response to (a) above excluding these 7 customers.

ii. Please provide the billing determinants, CP, NCP and energy values for these 7 customers.

(c) Please provide the same response as per (b) reflecting the class comprising only farms >5000 kWh (as this is displayed in Table IR-14e from Exhibit M-11) reflecting a revenue requirement of $5.934 million, that utilizes the 2020 CAS total allocated costs and brings the class to the 95% RTC ratio, and comment on range of potential rate impacts for the customers within this proposed class. Please provide an example, in excel, of annual revenue calculations for a sample Farm customer (from the Farm Study) utilizing this rate.

(d) Why did MECL use a 200 kWh threshold for the first and second block design?

(e) Please explain how MECL can reasonably assume this rate structure is revenue neutral given it does not have peak load data for the vast majority of Farm accounts over 5,000 kWh/month.

(f) Does MECL's rate design include all Farm customers that use 5,000 kWh+ in one or more months, or only those who use 5,000 kWh minimum each month? Please explain.

a. If the former, please comment on how customers who do not consistently use at least 5,000 kWh/month would be impacted by a rate based on kW of billing demand.

Based on the per customer data provided in Exhibit M-11a Attachment 1, many Farms may use 5,000 kWh in a given month but fall well under that amount in later months. On the basis of receiving this customer level data, PEIFOA seeks to understand how a range of Farm customers could be impacted and alternative options to MECL's proposal:

(f) Please develop a Farm rate that seeks to collect revenue requirement at 95% RTC that does not have a demand charge but instead consists of a customer charge and flat energy charge for all Farms using 5,000 kWh/month or more.

(g) Please provide the same as (f) above for all farm customers using 2,000 kWh/month or more (i.e. the dataset provided in Exhibit M-11a Attachment 1, 'Farms' tab). Please comment on the range of potential customer rate impact as a result of implementing this rate.

In Order UE20-06, IRAC states that:

201. Instead, the rate structure proposed by Maritime Electric must ensure that the RTC ratios are within the 95 to 105 within a reasonable period of time. The gradual phasing in of the new rate structure is intended to minimize any potential rate shock and is supported by the expert evidence given by Multeese Consulting and Robert Boutilier.

202. The Commission emphasizes that the new rate structure to be proposed by Maritime Electric must be comprehensive. It should not focus solely on the elimination of the Residential second block, the treatment of farm customers, or correcting inequities in the revenue-to-cost ("RTC") ratios.

203. Although these issues must be addressed, the Commission fully expects that Maritime Electric will use this opportunity to present an innovative rate structure that is reflective of the unique mix of customers and classes of customers that the Company serves. The Commission expects that the new rate structure will not only allow the Company to collect revenue in an equitable manner but will also consider new and innovative rate structures that may provide tangible benefits to its customers.

PEI's 2040 Net Zero Framework includes many initiatives that depend on affordable electricity prices for consumer uptake, including electric vehicle adoption and home heating from non-fossil fuel sources.[5]

Synapse concluded in its Report (Exhibit C-4, page 20) that Farms with greater than 5,000 kWh usage be separated into their own class as they have different load profiles from residential, general service and industrial classes.

[5] As explained on pages 14 and 21 of PEJ's 2040 Net Zero Framework, available online: https://www. princeedwardisland.ca/sites/default/files/publications/2040 net zero framework for feb 23 2022.pdf

Now that PEIFOA has a better understanding of customer level data for Farm customers from Exhibit M-11a and MECL's response to PEIFOA IR-14, as well as individual load profiles it seeks to better understand the "innovative rate structures" and options that MECL considered to ensure proper treatment of Farm customers and avoidance of rate shock.

(h) Does MECL agree with the Synapse finding that Farm customers have different load profiles than other rate classes? Please explain why or why not?

(i) Please explain whether MECL agrees a farm class >5000 kWh would be an appropriate addition to the class structure.

(j) Please explain how MECL considered policy objectives such as electrification pursuits, innovative rate structures and tangible customer benefits in its rate proposal.

a. Please separately address this question specifically for Farm customers

i. between the usage levels of 2,000kWh - 5,000 kWh/month on average.

ii. above 5,000 kWh/month.

b. Did MECL consider any potential load usage pattern shifts that may further distinguish Farm customers from other customer classes or benefit from a Farm specific rate, such as carbon reduction initiatives, voluntary rates such as Time Of Use and/or energy efficiency programs/priorities?

Response:

(a) The proposed farm rate provided in Maritime Electric's response to IR-15 from IRAC included the seven "other" customers. An updated proposed farm rate that excludes the seven additional customers and that is updated using the corrected 2020 CAS allocated costs of $6.631 million is provided in Table 6.

TABLE 6
Potential Farm Class Rate
(updated with corrected 2020 CAS and excluding the seven "other" customers)

Demand Charge	Per kW of billing demand	$ 8.58
First Block Energy Charge	Per kWh for first 200 kWh per kW of billing demand per month	$ 0.1228
Second Block Energy Charge	Per kWh for balance of kWh per month	$ 0.0821

If a separate Farm class is established, Maritime Electric believes that these additional seven customers will qualify for it. An updated proposed farm rate from Maritime Electric's response to IR-15 from IRAC, which includes the seven "other" customers, with the updated 2020 CAS results, is provided in Table 7. Table 7 is based on a total allocated cost of $8.517 million as per the corrected 2020 CAS.

TABLE 7 **Update to IRAC-15 Potential Farm Class, Rate** **(updated with corrected 2020 CAS and including the seven "other" customers)**		
Demand Charge	Per kW of billing demand	$ 8.80
First Block Energy Charge	Per kWh for first 200 kWh per kW of billing demand per month	$ 0.1243
Second Block Energy Charge	Per kWh for balance of kWh per month	$ 0.0821

(b) The difference between the updated $6.631 million in the 2020 CAS and the $8.5537 million provided in response IRAC 15 (Exhibit M-10) is related to the additional seven "other" customers shown in footnote 38.

i. Please refer to response IR- 25(a).

ii. The billing determinants for the seven additional customers are as follows:

- CP: 1,864 kW
- NCP: 4,026 kW
- Energy: 14,930 MWh

(c) Maritime Electric has not completed this as designing a new rate that has an RTC ratio of 95 per cent would not be good utility practice. Good utility practice is to design a rate with an RTC ratio of 100 per cent.

(d) As explained in Maritime Electric's Response to Interrogatories from Commission Rate Design Changes IR-15 (Exhibit M-10):

"The first block energy charge is intended to recover half of the demand-related costs plus a full share of energy-related costs. The "200 kWh/kW of demand" sizing factor for first block energy is based on recovering half of the demand-related costs over the first 200 hours of a customer's operations during a month. This sizing is representative of a factory operating for one eight-hour shift per day for five days a week, which equates to approximately 200 hours per month. This is similar to a dairy farmer who requires three hours to milk the herd plus clean up two times per day, which equates to 180 hours per month."

"The second block energy charge is based on recovering the full share of energy-related costs and assumes that the costs incurred by the utility are largely energy-related beyond the first 200 hours of service in a month. Because the customer's demand-related costs have been fully recovered through a combination of the demand charge and the first block energy charge, this also sends the correct price signal to customers such as a factory that is considering adding a second shift or a dairy farmer considering increasing the size of his herd [in order to make greater use of their existing infrastructure]."

(e) Please refer to Response to IR-20(g). As is typical of statistical sampling and studies of this kind, the sample for each farm type in the Study was determined to be representative of the total population of that type. The results of the Study can therefore be considered as representative of the larger farm population and extrapolated to estimate its peak load.

(f) The rate design is based on the (average 523 bills per month) farms that made up the Farm class in the 2020 CAS. This group includes Farms using more than 5,000 kWh for at least one month.

Half of the demand-related costs are recovered through the demand charge with the remaining half recovered through the first block energy charge. This results in less than a full contribution towards demand-related costs for months with a load factor of less than 27 per cent (200 operating hours / 744 total hours in a month). A second point is that the kW of billing demand for a month would apply to only that month and would not impact bills in subsequent months.

(f) See response to IR-25(c) regarding designing a new rate with a 95 per cent RTC ratio.

A potential rate for Farms using over 5,000 kWh/month without demand charges and with a customer charge and a flat energy charge to achieve an RTC ratio of 100 per cent is provided in Table 8. This is based on the 523 average monthly farm accounts from the Residential Farm group in the 2020 CAS.

TABLE 8
Potential Farm Rate for Farms Using >5,000 kWh per Month
to Achieve an RTC Ratio of 100 Per Cent and Excluding Demand Charges

Service Charge	Per bill	$ 25.91
Demand Charge	Per kW of billing demand	$ 0
First Block Energy Charge	Per kWh	$ 0.1359

(g) 1CP and NCP data for farms greater than 2,000 kWh per month is not available because the Study was based on farms greater than 5,000 kWh per month.

(h) Maritime Electric agrees that Farm customers, on average, have different load profiles than domestic residential customers.

(i) As explained in Maritime Electric's Response to Synapse Report (Exhibit M-8):

"Maritime Electric is not convinced by Synapse's analysis that a separate farm class is warranted. The Company believes that some farm customers, if allowed to choose between remaining in the residential class after the elimination of the declining block rate or moving to the small industrial class, will choose to move to the small industrial class, potentially addressing the concerns expressed by Synapse. However, Maritime Electric will consider Synapse's recommendation in the future broader analysis necessary to determine the second phase of rate design."

(j) As explained in Maritime Electric's Response to Synapse Report (Exhibit M-8):

"As indicated in Stage 1 Rate Design Application and in Synapse's report, the Company plans to replace its Customer Information System ("CIS") and install AMI, subject to Commission approval. When completed, a new CIS along with AMI will enable more innovative rate design, such as time-of-use rates."

a. Maritime Electric's application to replace its CIS and install AMI is currently being reviewed by the Commission. If approved, the project will provide further insight into how customer consumption patterns impact system peaks. Additionally, Maritime Electric's application lists the following benefits to Maritime Electric and its customers:

- Continued and enhanced customer service and self-service, through access to detailed account and electricity usage information;
- Improved reliability for customers through outage notification;
- Modernization of the electrical grid through two-way communication with meters at customer premises;
- The opportunity to design and implement innovative rate structures, such as new rate classes and time-of-use billing to help manage system peak; and
- Future innovations to enhance service to customers such as increased distribution system automation (e.g., remote connect/disconnect), the ability to support home automation (e.g., smart homes/appliances) and demand response, streetlight monitoring, and the ability to control EV charging or vehicle-to-grid capabilities.

b. Please refer to Response IR-25(j). A new CIS and AMI are required before Maritime Electric can effectively analyze customer consumption patterns and the potential to shift load usage patterns using time-of-use rates. Implementing of time-of-use rates is not possible with Maritime Electric's existing metering infrastructure and customer information system.

Currently, the Government of PEI develops and administers customer carbon reduction initiatives and energy efficiency programs through an Energy Efficiency and Demand-Side Resources Plan, as required under the *Electric Power Act*.