

**IRAC Public Hearing  
2019/22 Electricity Rate Application  
(UE20944)**

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# Opening Remarks

- IRAC Order UE-16R (July 2016) states: “The Commission fully expects that MECL and the Government will work together over the next two years to develop a proposed rate structure that is fair and non-discriminatory for all ratepayers”
- An inconsistent reduction in the Residential Rural Service rate and a “no alternative” elimination of the second block for most High Use Residential/Farming customers is NOT a comprehensive rate structure
- Application exhibits debate the degree of customer second block “rate shock” rather than proposing alternatives for customer engagement
- The Commission’s concern for second blocks can be answered by segmenting customers into smaller and different customer tariffs using new pricing signals. Customer grouping should be based upon energy USE, not energy APPLICATION. There is no immediate need to separate the majority of Farming customers from High-Use Residential customers
- The three Cost Allocation Studies (2008, 2014 and 2017) spanning nine years provide consistent conclusions for setting a comprehensive Rate Structure. I propose that “Load Factor” should become the central cost control message for all customers

# Chymco Cost Allocation Studies (CAS) Extracts

- 2014 CAS.: “The benefit of a declining block rate structure is the ability to fairly recover fixed costs when there is a wide range of low and high use customers in one rate class.”
- Primary CAS Conclusions: RTCs & Classified MECL Revenue Requirement:
- Percent of total:

	Demand	Energy	Site	Total
• 2017 Revenue Requirement	32%	55%	14%	100%
• 2014 Revenue Requirement	37%	50%	13%	100%
• 2008 Revenue Requirement	30 %	60 %	10 %	100 %
• General Service Billing (P163)	21 %	78 %	1 %	100 %
• High Use Residential Billing (Typ.)	0 %	96 %	4 %	100 %
- GS comments: only 25%/40% metered for Demand; P163 Load factor is 28%!

# Customer Grouping by Winter Monthly Use (KWh) and Peak Demand (%) (rounded 2014 Chymco data):

Rate Class/KWh	Customers	Peak Load Demand %	
Industrial: 147GWh/year	280	17%	(presumably fully metered)
Gen. Ser./ 4,000 to 400,000	7049	27%	(only 1700/2800? with Demand meters)
Res: tier 4/ 2,000 to 17,000	7000+	21%	(some use electricity space heating and DHW)
Res: tier 3/ 1,250 to 2,000	7,000+	15%	(no electricity space heating BUT DWH)
Res: tier 2/ 400 to 1,250	25,000	17%	(do not use electricity space heating or DHW)
Res: tier 1/ <400	15,000	3%	(do not use electricity space heating or DHW)

# The Importance of Load Factor

- Load Factor is a measure of the effectiveness/efficiency of any Transmission/Distribution/Wired infrastructure ; it is calculated as the percentage (%) ratio between Average Demand and Peak Demand
- MECL: 2018: 141MW/244MW: 58%. 2019: 145MW/256MW: 57%. Summerside Electric Utility (SEU) reports 65% to 72%
- If only annual energy consumed increases (not peak load demand), the existing infrastructure is good for more than 10 years
- Approximately 50% of MECL annual capital budget (\$15M) is driven by the annual growth in peak load
- The future cost control challenge is Peak Load Demand and not the inevitable accelerating amount of electricity consumed
- Load Factor can apply to individual customers where Demand is metered; Nova Scotia Power is using customer Load Factor as a pricing and education mechanism.

## NS Power Tariffs & Load Factor – General Service

Energy/Demand/Site Elements for NS Power Tariffs					
54%/32%/14% Chymco model:	Unit cost	Unit cost	Unit cost	Unit cost	Load
General Tariff for >32,000KWh/Y	Energy	Demand	Site	\$/KWh	Factor
<b>Independent of Energy Used</b>					
\$10.497/KW Demand (no first block)	0.08733	0.029609	0	0.116939	
\$0.12012*200/KWDemand	<b>75%</b>	<b>25%</b>	<b>0%</b>		80% LF
\$0.08733/KWh balance	0.08733	0.059219		0.146549	25%
No Service charge	<b>60%</b>	<b>40%</b>	<b>0%</b>		40% LF

## NS Power Tariffs & Demand Content – Residential Service

Energy/Demand/Site Assessment for NS Power Tariffs				
	Unit cost	Unit cost	Unit cost	Unit cost
54%/32%/14% target model:	<b>Energy</b>	<b>Demand</b>	<b>Site</b>	<b>\$/KWh</b>
<b>Domestic "Time-of Day" Tariff:</b>	<b>Dec to Feb: ON/MID/OFF:12/4/8 hours resp.</b>			
	<b>March to Nov: MID/OFF only: 16/8 hours resp.</b>			
\$18.82 Customer charge				
TOD: 0.08676/0.15603/0.19961				
1500KWh/winter months:	0.08676	0.011328	0.022	0.12009
For 70/30/0% off/mid/peak	<b>72%</b>	<b>9%</b>	<b>18%</b>	
	0.08676	0.038256	0.022	0.14702
For 50/20/30% off/mid/peak	<b>59%</b>	<b>26%</b>	<b>15%</b>	
<b>Domestic Service Tariff:</b>				
Charge \$10.83 & 0.15603/KWh	0.08676	0.04727	0.022	0.15603
\$10.83 for 500 KWh = \$.022 Site	<b>56%</b>	<b>30%</b>	<b>14%</b>	
<b>MECL 2018 Residential Tariff:</b>				
Service Charge \$24.57/\$26.92	(Reveals/confirms that energy cost is passed on)			
For First Block, 2000KWh \$0.1437	\$0.0776	\$0.0460	\$0.0201	\$0.1437
Possible First block rationale:	<b>54%</b>	<b>32%</b>	<b>14%</b>	
Second Block > 2000KWh: \$0.1142	\$0.0776	\$0.0366	\$0.0000	\$0.1142
Possible second block rationale:	<b>68%</b>	<b>32%</b>	<b>0%</b>	

# Summary of My IRAC Submission of March 2019

- Build a new “Residential” rate structure starting with a dominant Demand element similar to the existing General Service tariff that is currently used for 7000+ Commercial customers
- Separate the 6,917 High-Use Residential and 635 Farming customers using more than 2,000KWh/Month into a new 7000+ High-Use, load factored tariff group. A second block is NOT required but bridge meters will measure demand
- Offer Time-of-Day metering for customers using between 1,300 to 2,000 KWh/Month - 6,458 Residential, 297 Farmers. This would set in place the third “range-of-use” tariff group. Again no second block and expanded deployment of smart bridge meters
- The remaining segment of residential/farming customers – about 40,000 – using less than 1300KWh/Month would remain metered and billed as the current tariff (with no second block but an adjusted service rate); some customers would migrate, as electricity consumption increased, to the “Time-of-Day” tariff
- Extension to my March 2019 Input:
  - 1) The General Service tariff would need to become more “Load Factor” sensitive enabling correction to the current high Revenue-to-Cost (RTC) ratio. Seem-less integration with the two new “range-of-use” tariffs would be the end goal
  - 2) Examples of an adjusted General Service Tariff and a High-Use Residential follow:



# General Service Customer Example

## A New Load Factor (LF) Centric Tariff

- General Service Customer (Page 163): Each Month: 50KW peak demand, 10,000KWh energy consumed - 14KW average load. Load Factor is poor at 28%!
- 2019 Pre HST forecast monthly cost = \$1908; with no obvious customer cost incentive to improve poor Load Factor of 28%:

LF	Service	Demand	Energy	Total
28%	\$24.57/1.3%	\$407/21%	\$1476/77%	\$1908
50%	\$24.57/1.3%	\$109/7%	\$1476/92%	\$1610/-15%

- With a new tariff structure of: Service @ \$8/KW, Demand @ \$20/KVA, Energy @ \$0.075/KWh (Service based on Capacity, Demand on Capacity and Power Factor)

LF	Service	Demand	Energy	Total
28%	\$400/18%	\$1000/47%	\$750/35%	\$2150/+13%

- With customer reaction to improve Load Factor (peak 28MW):

LF	Service	Demand	Energy	Total
50%	\$224/15%	\$560/37%	\$750/49%	\$1574/-17%

- Incentive to improve Load Factor also reduces revenue and the high RTC

# High Use Residential Customer Examples

## A New Load Factor (LF) Centric Tariff

- High Use Customer (typical): 7KW average load, 5,000KWh each month. Example demand loads 18KW, 14KW and 9KW = LF: 40%, 50%, 80%.
- 2019 pre HST monthly cost = \$663 (before second block is removed)

Service	Demand	Energy	Total
\$25/4%	\$0/0%	\$638/96%	\$663
<u>Target: 14%</u>	<u>32%</u>	<u>55%</u>	<u>2017 CAS Model</u>

- With a new tariff structure of: Service @ \$6/KW, Demand @ \$15/KVA, Energy @ \$0.075/KWh (Service based upon Capacity, Demand upon Capacity and Power Factor)

LF	Service	Demand	Energy	Total
40%	\$104/13%	\$289/38%	\$375/49%	\$769/+16%
50%	\$83/12%	\$231/34%	\$375/54%	\$690/+4%
80%	\$52/9%	\$145/25%	\$375/66%	\$572/-14%

# Recommendations

- Withdraw the token reduction in the service charge for rural residential customers until a comprehensive Rate Structure for ALL residential customers is submitted for the Commission's approval
- Eliminating the second block for ALL non-commercial customers should be equitable. A comprehensive Rate Structure with a focus upon Demand cost provides energy use incentives for affected customers
- Segmenting groups of customers across a suite of tariffs encourages customers to change energy use habits as an alternative to rate shock
- By revealing the three constituents of unit cost and providing a choice of transferring to Demand based rates, engages and educates the customer
- A focus upon the General Service (7000+) and the High Use Customer (7000+) energy USE groups has the potential to solve current RTC inequity and second block issues
- With a 47% peak load reduction opportunity this Rate Structure would be a major step in controlling Island wide Load Demand growth resulting in reductions in future annual capital expenditures
- There is no justification for delaying the introduction of new tariffs to 2021

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I thank the Commission for the  
opportunity to share my critique and to  
present alternative proposals for the  
Application