

WHENEVER. WHEREVER.
We'll be there.



September 30, 2025

Board of Commissioners
of Public Utilities
P.O. Box 21040
120 Torbay Road
St. John's, NL A1A 5B2

Attention: Jo-Anne Galarneau
Executive Director and Board Secretary

Re: Load Research and Rate Design Update

Dear Ms. Galarneau:

Please find enclosed Newfoundland Power Inc.'s *Load Research and Rate Design Update* – September 30, 2025, as requested by the Board in Order No. P.U. 3 (2025).

If you have any questions, please contact the undersigned.

Regards,

A handwritten signature in blue ink that reads "Dominic Foley". The signature is stylized with a large, sweeping "D" and a long, horizontal stroke extending to the right.

Dominic Foley
Legal Counsel

Enclosures

cc. Shirley Walsh
Newfoundland and Labrador Hydro

Dennis Browne, KC
Browne Fitzgerald Morgan & Avis

Newfoundland Power Inc.

55 Kenmount Road • P.O. Box 8910 • St. John's, NL A1B 3P6

PHONE (709) 737-5500 ext. 6200 • FAX (709) 737-2974 • dfoley@newfoundlandpower.com



Load Research and Rate Design Update September 30, 2025

|TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
2.0 BACKGROUND.....	1
3.0 LOAD RESEARCH	1
3.1 LOAD RESEARCH STUDY UPDATE	2
3.2 UPCOMING LOAD RESEARCH ACTIVITIES.....	3
4.0 RATE DESIGN.....	3
4.1 PHASE ONE.....	4
4.2 PHASE TWO	4
5.0 CONCLUSION.....	6

1.0 INTRODUCTION

In Order No. P.U. 3 (2025) in relation to Newfoundland Power Inc.'s ("Newfoundland Power" or the "Company") *2025/2026 General Rate Application*, the Board requested Newfoundland Power to provide updates every six months on the status of its Load Research Study and Rate Design Review, on or before April 1, as part of its annual return and also on September 30 each year.¹

The *Load Research and Rate Design Update – September 30, 2025* provides an update to Newfoundland Power's load research and rate design activities and plans since the *Load Research and Rate Design Update – March 31, 2025* was provided to the Board. Newfoundland Power remains within its forecast expenditures outlined in the *Load Research and Rate Design Update – March 31, 2025* and is not making any forecast changes at this time.² In addition, progress and timing with respect to the Load Research Study and Rate Design Review remains consistent with the March 31, 2025 update.

2.0 BACKGROUND

Periodic reviews of Newfoundland Power's rate designs are necessary to ensure the Company's rate designs are consistent with good rate making principles and consider utility cost dynamics. Customer load research is periodically required to ensure the appropriate allocation of costs to Newfoundland Power's customer rate classes.

A review of Newfoundland Power's rate designs is timely considering changes to supply cost dynamics resulting from the integration of the Muskrat Falls Project into the provincial electrical system. On May 16, 2024, the Provincial Government announced the finalization of its Rate Mitigation Plan. This provides greater clarity in the near term in relation to customer rate increases associated with the Muskrat Falls Project and Newfoundland and Labrador Hydro ("Hydro") until 2030.³ In Order No. P.U. 1 (2025), and in accordance with a settlement agreement in relation to Newfoundland Power's *2025/2026 General Rate Application*, Hydro's Utility rate to Newfoundland Power was revised to ensure that energy charges from Hydro to Newfoundland Power more closely reflect Hydro's marginal cost of energy and to mitigate customer rate volatility.⁴

Customer load research during this period also provides updated customer load profiles and data that are necessary to evaluate current customer end use activities and cost recovery within Newfoundland Power's various rate classes.

3.0 LOAD RESEARCH

Load research data combined with industry-standard statistical analysis techniques are used to assess the reasonableness of cost recovery from each customer rate class. The output of the analysis provides a means to estimate customer rate class demands on Newfoundland Power's

¹ See Order No. P.U. 3 (2025), page 58, lines 30-32.

² See Load Research and Rate Design Update – March 31, 2025, page 4 Table 1 and page 7, Table 2.

³ See Government of Newfoundland and Labrador News release *Provincial Government Announces Finalization of Rate Mitigation Plan*, May 16, 2024.

⁴ See Order No. P.U. 1 (2025).

electrical system at specific times. This is used to determine the portion of system demand costs that should be recovered from each customer class.

The Island Interconnected System is a winter peaking system. Customer demand requirements are approximately twice as high in winter months than in summer months. Generation and transmission demand costs are allocated by customer classes in the cost of service study based on each customer class's contribution to the winter system peak (i.e., based on coincident peak).⁵ Distribution demand costs are allocated based on the relative size of the class peak demands (i.e., based on non-coincident peak).

3.1 Load Research Study Update

Newfoundland Power and its load research consultant, DNV, completed several milestones related to its Load Research Study so far in 2025. These included: (i) successful data collection for the 2024-2025 winter season; (ii) validating, editing and estimating the collected data; and (iii) analyzing the customer load data. DNV is currently in the process of completing its report for the 2024-2025 winter season.

Customer Data Collection for the 2024-2025 Winter Season

Newfoundland Power has successfully collected, aggregated and transferred all interval data from the 2024-2025 winter season to DNV. This was done by using load research meters capable of recording customer load data over 15-minute intervals. To minimize costs, data collection from these meters was accomplished by leveraging the Company's existing meter reading infrastructure and meter reading processes.⁶ This is consistent with the approach outlined in the *Load Research and Rate Design Framework*.⁷

Data collection for the non-winter months has continued throughout the remainder of 2025. This requires continued review of the customer sample and potential installation of additional load research meters to ensure the statistical integrity of the customer load data is maintained. A full calendar year of customer load data will be collected by November 30, 2025.⁸ Data collection will continue into the 2025-2026 winter season.

Data Validating, Editing and Estimating ("VEE")

Data VEE is necessary to ensure that as much original data as possible is captured and maintained for the load research analysis phase. Once the data is received from the load research meters, it is reviewed by DNV using industry standard best practices which identify missing intervals, zero intervals, and peak outliers. In addition, the consumption derived from aggregating the load research meter interval data is checked against billing consumption. Any

⁵ This is referred to as the single coincident peak method (1 CP). For the purposes of the Load Research Study, the system peak is based on the time of Hydro's system peak because the majority of Newfoundland Power's generation and transmission demand costs are related to Hydro's assets.

⁶ Newfoundland Power commissioned and brought into service its Customer Care & Billing ("CC&B") system in August 2023, replacing the Company's legacy Customer Service System ("CSS").

⁷ Newfoundland Power filed its Load Research and Rate Design Framework with the Board on December 30, 2022.

⁸ Newfoundland Power began collecting customer load from its full sample of customers beginning prior to the beginning of the 2024-2025 winter season (December 1, 2024).

data flagged as missing or potentially erroneous is estimated using time-temperature regression modelling and is flagged as estimated data.

DNV and Newfoundland Power have been working together throughout 2025 to establish VEE activities and verify the quality of the data to be used in the load research analysis. To date, 100% of the customer samples have complete data with only 2% of the data intervals being estimated. Less than 0.001% of the intervals were flagged as outliers. This demonstrates the high quality of load research data received to date.

Data Analysis and Reporting

In addition to its data VEE, DNV has been actively engaged in completing the statistical analysis of the customer load data and preparing a report of the results for the 2024-2025 winter season. The analysis for the study period includes: analyzing the sample data to determine relative precision and confidence level; analyzing total usage and average monthly usage of each rate class; analyzing and estimating the class non-coincident peak demand (NCP); analyzing and estimating the class coincident peak demand (1CP); analyzing the contributions from subdomains such as customers with electric vehicles and heat pumps; analyzing class loads in relation to weather; development of class load factors for the 2024-2025 winter period; and estimating annual load factors for each rate class.

DNV is currently in the process of completing its report for the 2024-2025 winter season which will be shared with the Parties once completed this fall.

3.2 Upcoming Load Research Activities

Newfoundland Power continues to actively manage its Load Research Study toward completion. The Company is collecting customer load data each month from its load research meters and routinely works with DNV to complete the necessary VEE activities. In addition, an ongoing review of the customer sample is required throughout the study period to ensure adequate customer load data is being collected from each customer rate class. The installation of additional load research meters is planned in the fall to ensure the statistical integrity of the customer load data is maintained.

Once customer load data has been received for the 2025-2026 winter season, DNV will prepare a second report detailing the results for a full calendar year together with a comparison of how the results from the 2025-2026 winter season compared to the 2024-2025 winter season. The report will be provided to the Parties once complete.

4.0 Rate Design

Newfoundland Power serves approximately 278,600 customers. This includes approximately 242,600 Domestic Customers, 24,500 General Service Customers, and 11,500 Street and Area Lighting Customers. The majority of the Company's Domestic customers' rates include monthly Basic Customer Charges and a flat kWh energy rate.⁹ General Service customers' rates include

⁹ Approximately 1,100 of Newfoundland Power's customers avail of the Domestic Seasonal – Optional rate which includes seasonal energy charges for consumption during December through April and May through November.

monthly Basic Customer Charges, demand charges that vary by season, and energy charges that vary depending on monthly consumption.¹⁰ Street and Area Lighting customers pay a monthly rate based on the type and size of equipment installed.

The standard for assessing the appropriateness of customer rate design is guided by the Criteria of Sound Rate Structure described by James Bonbright in *Principles of Public Utility Rates*.¹¹ These criteria include effectiveness, practicality, stability, revenue sufficiency, price efficiency, and fairness. The Board has previously recognized these criteria in establishing customer rates.¹²

Newfoundland Power is continuing with its phased approach to the Rate Design Review as described in the Load Research and Rate Design Framework.

4.1 Phase One

Newfoundland Power completed Phase One of its Rate Design Review in 2024. This included completion of the Christensen Associates Energy Consulting ("Christensen") *Rate Design Review: Phase 1* report (the "Phase One Report") which was provided to the Parties on April 2, 2024. The Phase One Report included: (i) a review of Newfoundland Power's existing rates; (ii) a review of Newfoundland Power's existing metering capabilities; (iii) anticipated changes in Newfoundland Power's marginal supply costs; (iv) a review of customer rates in other Canadian jurisdictions; and (v) a description of alternatives that should be considered in Phase Two of the Rate Design Review.

The Phase One Report indicated that Newfoundland Power seems well-positioned with its current rate designs. The Phase One Report recommended Newfoundland Power leave current rate designs in place, adjusting the customer, energy, and demand charges to ensure full cost recovery under Hydro's new price levels and to more adequately reflect changes in Hydro's marginal costs. The Phase One Report also recommended consideration of seasonal prices for the Company's default rate designs, a dual electric space heating rate, and a longer-term curtailable rate for large customers.

4.2 Phase Two

The purpose of Phase Two is to evaluate the impact of alternative rate designs on Newfoundland Power's customers with consideration given to changing marginal supply costs, embedded costs, and updated load research.

Newfoundland Power is currently conducting Phase Two of the rate design review. This follows: (i) the completion of Phase One Rate Design Review; (ii) additional clarity regarding cost

Domestic Seasonal – Optional customers are charged the same monthly Basic Customer Charge as all other Domestic customers. Domestic customer Basic Customer Charges are dependent on the size of the customer's service (i.e. those not exceeding 200 Amp Service, and those exceeding 200 Amp Service). Newfoundland Power's Domestic customer rates also include a 1.5% early payment discount.

¹⁰ Newfoundland Power's three General Service Rate Classes include: Rate 2.1 0-100 kW (110 kVA); Rate 2.3 110 kVA (100 kW) – 1000 kVA; and Rate 2.4 1000 kVA and Over. General Service customer charges also include a 1.5% early payment discount, a Minimum Monthly Charge, and a Maximum Monthly Charge.

¹¹ Bonbright, *Principles of Public Utility Rates*, Public Utilities Reports, 1988, Pages 383-384.

¹² See, for example, Order No. P.U. 19 (2003).

recovery associated with the Muskrat Falls Project due to finalization of the Provincial Government rate mitigation plan; and (iii) the establishment of a new Utility rate charged from Hydro to Newfoundland Power which more accurately reflects marginal supply costs.¹³ In addition, initial results from the ongoing Load Research Study will also enable the Company to evaluate alternative rate designs with updated customer load data.

Consistent with the activities described in Newfoundland Power's March 31, 2025 update, key tasks underway in 2025 include: (i) establishing a customer engagement plan with feedback from the Parties; (ii) conducting customer engagement activities; (iii) completion of a marginal cost study; (iv) working with Christensen to establish a model for assessing Newfoundland Power's existing rates and rate design alternatives; and (v) modelling alternative rate designs and conducting technical analysis to inform future rate designs.¹⁴

In addition, Newfoundland Power has engaged Christensen to evaluate the reasonableness of the existing rate structure and cost recovery for Memorial University and the customers primarily served by transmission assets and complete a review of Newfoundland Power's general service contribution policy for transmission assets. This is consistent with direction from the Board following Newfoundland Power's *2025/2026 General Rate Application*.¹⁵

Evaluation of Alternative Rate Designs

Newfoundland Power has been working with its consultant in 2025 to support the development of a model that can be used to evaluate customer rate alternatives. The model has been developed by Christensen using Stata software which incorporates Newfoundland Power's customer billing determinants from April 1, 2024, through March 31, 2025, for a large sample of customers from all classes.¹⁶

The Stata model developed by Christensen estimates bill impacts across Newfoundland Power's customer rate classes, segmented by deciles based on customer consumption and load factor characteristics. The model is currently being used to evaluate the effect of variations in alternative rate designs on Newfoundland Power's Domestic and General Service customer rate classes. Evaluation and technical analysis of customer rate alternatives will continue throughout the remainder of 2025.

Customer Engagement

Newfoundland Power has engaged MQO Research ("MQO") to aid in the development of a customer engagement plan and facilitate customer engagement activities. The customer engagement plan includes a survey of residential and general service customers. The survey will be delivered by email and telephone to gather information from customers that receive their bill electronically as well as through the mail.

¹³ Changes to Hydro's Utility rate to Newfoundland Power was approved by the Board in Order No. P.U. 1 (2025).

¹⁴ Newfoundland Power's *Load Research and Rate Design Update, March 31, 2025*, was filed with the Board on March 31, 2025, as part of the Company's 2024 Annual Report to the Board.

¹⁵ See Order No. P.U. 3 (2025), page 59, lines 27-30, and page 60, lines 26-27.

¹⁶ Stata is an integrated statistical software package commonly used to evaluate and model large datasets (<https://www.stata.com/>).

In addition to the customer survey, MQO is proposing an online bulletin board with each customer group to explore the customers' opinions of alternative rate designs in more detail.¹⁷ Online bulletin boards offer the flexibility of searching a geographically diverse pool of participants, allowing for in-depth exploration of topics and capturing real-time responses. A separate online bulletin board will be conducted with residential and commercial customers with each board including approximately 20-25 participants.

Newfoundland Power will circulate a copy of the customer engagement plan, including proposed survey questions, with the Parties for feedback in October.

Marginal Cost Study

Newfoundland Power has engaged Christensen to develop estimates of the Company's marginal costs for its Domestic and General Service customer rate classes and complete a marginal cost study. Results from the marginal cost study will further inform Newfoundland Power's customer rate designs.

Christensen is utilizing Newfoundland Power's data and information pertaining to facility investments and operating expense for each element of the Company's system necessary for providing service. This includes transmission lines, distribution substations, primary lines, transformers, and secondary lines. Customer related expenses are also being considered in the marginal cost study including costs related to service drops, meter installation, meter reading, billing and customer service.

General Service Contribution Policy for Transmission Assets

In accordance with Order No. P.U. 3 (2025), Newfoundland Power has increased the scope of its Rate Design Review to consider the Company's General Service contribution policy for transmission assets and cost recovery for Memorial University ("MUN") and other customers primarily served by transmission assets.¹⁸

To ensure compatibility with the Rate Design Review, this additional scope has been added to the ongoing work undertaken by Christensen. To date, Christensen has provided preliminary results from a jurisdictional review of selected utilities in Canada and the United States in relation to their contribution policies for customers serviced by transmission assets. These preliminary results are currently under review by Newfoundland Power.

5.0 Conclusion

Newfoundland Power continues to advance its Load Research Study. Using load research meters capable of recording customer load data over 15-minute intervals and the Company's existing meter reading infrastructure and processes, Newfoundland Power successfully collected customer data over the 2024-2025 winter season. The quality of the data received to date has been verified and analysis by DNV for the 2024-2025 winter season will be shared with the

¹⁷ Online bulletin board research methodology is a qualitative research approach that utilizes virtual platforms to gather insights from participants.

¹⁸ See Order No. P.U. 3 (2025), page 59 line 35 to page 60 line 27.

Parties this fall. The successful collection of customer load data continues to be a focus to ensure data integrity remains appropriate for the remainder of the study.

The Rate Design Review has also been progressing throughout 2025. With the completion of the Phase One, focus in 2025 has been directed towards Phase Two activities. Christensen has developed a rate design model which is being used to model and evaluate customer rate alternatives. Newfoundland Power has engaged MQO to assist with customer engagement activities and the customer engagement plan will be sent to the Parties for feedback in October. Newfoundland Power is also advancing its work in relation to the completion of a marginal cost study and a review of General Service contribution policies for transmission assets.