

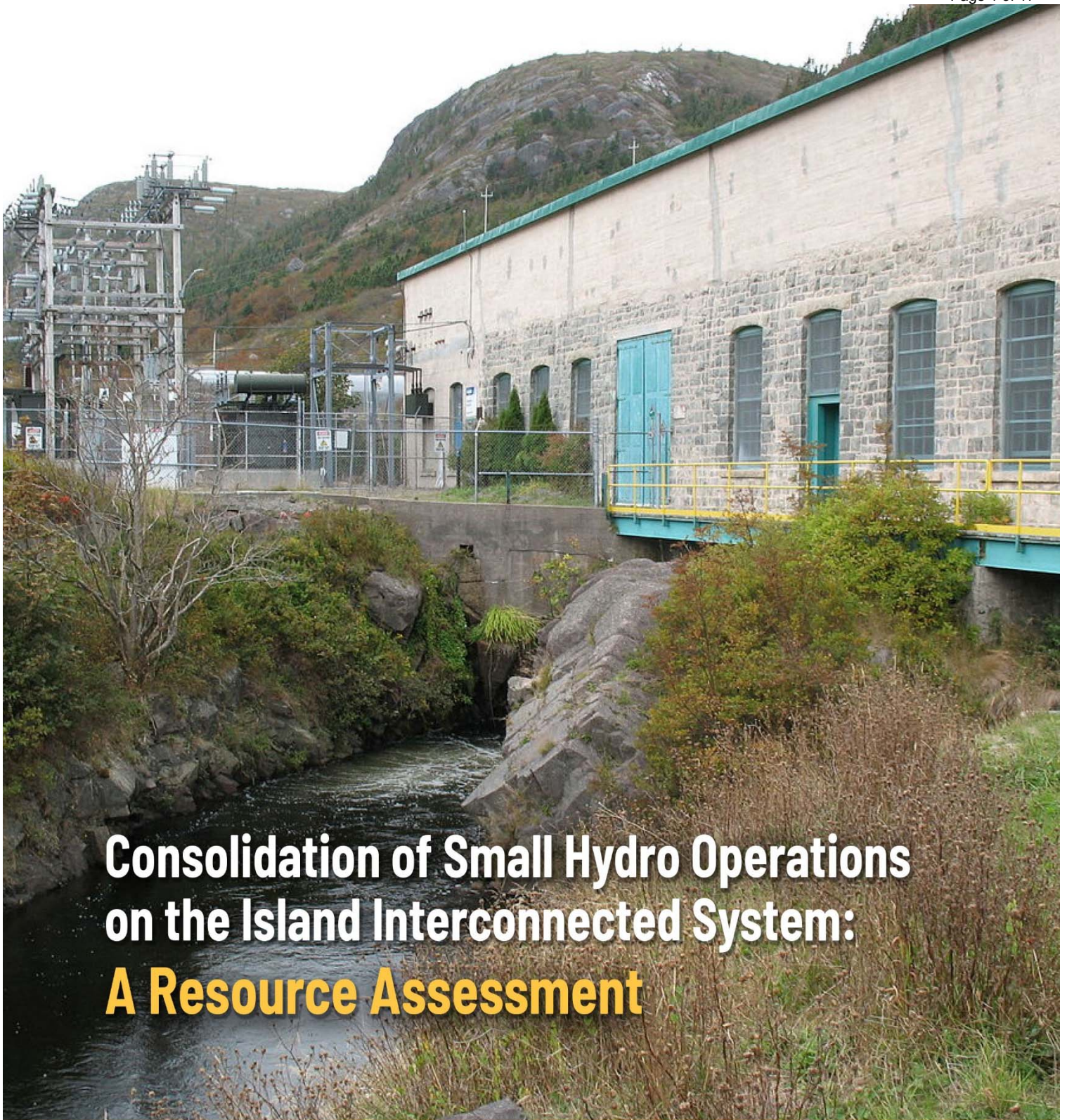
- 1 **Q. Assuming transfer of operation of all Newfoundland Hydro small hydro facilities**
 2 **(termed the “Small Hydro Transfer to NP Option” hereafter in this set of questions),**
 3 **please:**
- 4 **a. Identify which Hydro plants Newfoundland Power considers as “small**
 5 **hydro” and why it considers such designation appropriate.**
- 6 **b. Provide all assumptions, data, and calculations associated with**
 7 **Newfoundland Power’s analyses of staffing required on a steady state basis.**
- 8 **c. Specifically, detail the assumptions which support Newfoundland Power’s**
 9 **projected ability to operate the assets with fewer FTEs than Newfoundland**
 10 **Hydro’s current staffing.**
- 11
- 12 A. a. Newfoundland Power reviewed the capacity of each turbine unit in Newfoundland
 13 and Labrador Hydro’s (“Hydro”) generation facilities on the Island
 14 Interconnected System to identify which plants it considers as “small hydro.” A
 15 total of 7 plants were identified as small hydro, including the: (i) Paradise River
 16 hydro facility on the Burin Peninsula; (ii) Snook’s Arm and Venam’s Bight hydro
 17 facilities on the Baie Verte Peninsula; (iii) Star Lake hydro facility in central
 18 Newfoundland; (iv) Roddickton hydro facility on the Northern Peninsula; and (v)
 19 Grand Falls and Bishop’s Falls hydro facilities on the Exploits River.¹
- 20
- 21 The 32 turbine units at these 7 facilities range in capacity from approximately
 22 0.4 MW to 30 MW. Designation of these facilities as small hydro is consistent
 23 with the definition of small hydro used by Natural Resources Canada.²
- 24 Additionally, these 7 facilities supply a relatively small amount of electricity to
 25 the Island Interconnected System in comparison to Hydro’s larger hydro facilities,
 26 such as the Bay d’Espoir hydro facility where the highest-capacity turbine is
 27 estimated to be 150 MW.
- 28
- 29 b. Newfoundland Power completed an assessment of the incremental resources it
 30 would require to operate 7 small hydro plants currently operated by Hydro, as
 31 listed in part (a). The *pro forma* results of this assessment are provided as
 32 Attachment A to this response. See Appendix C of the assessment for the
 33 assumptions, data and calculations used to develop the estimates.
- 34
- 35 c. The assumptions used in Newfoundland Power’s assessment are contained in
 36 Appendix C of Attachment A to this response.

¹ Newfoundland Power excluded the Buchans hydro facility from its review as it is not clear whether this plant is operable.

² Natural Resources Canada defines small hydro generation facilities as having an installed capacity of between 1 and 50 MW. Each turbine unit included in this assessment is within this capacity range. Other generation facilities operated by Hydro, such as those at Bay d’Espoir where turbine unit capacities range as high as 150 MW, are outside the scope of what would be considered small hydro generation. The Granite Canal hydro facility was excluded from this assessment as it is part of the Bay d’Espoir watershed.

1 Newfoundland Power’s resource assessment regarding the consolidation of small
2 hydro operations on the Island Interconnected System does not include a
3 comparison to Hydro’s current number of FTEs or staffing model. More
4 information would be required to complete such a comparison.

Newfoundland Power Inc.
*Consolidation of Small Hydro Operations on the Island Interconnected System:
A Resource Assessment*



Consolidation of Small Hydro Operations on the Island Interconnected System: **A Resource Assessment**

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1.0 Executive Summary

The integrated electrical system on the Island of Newfoundland (the “Island Interconnected System”) serves approximately 291,000 customers. Both Newfoundland Power Inc. (“Newfoundland Power” or the “Company”) and Newfoundland and Labrador Hydro (“Hydro”) own and operate small hydro generation facilities to supply customers on the Island Interconnected System.

As part of the *Reference on Rate Mitigation Options and Impacts*, the Newfoundland and Labrador Board of Commissioners of Public Utilities (the “Board”) is examining whether consolidating small hydro generation facilities under Hydro or Newfoundland Power may assist in mitigating the potential customer rate impacts associated with Nalcor Energy’s Muskrat Falls Project. The Board has requested Newfoundland Power to estimate the incremental resources required to operate small hydro generation facilities that are currently operated by Hydro.

The provincial power policy requires a utility to manage its operations efficiently and in a manner consistent with the least-cost delivery of reliable service to customers. Newfoundland Power’s small hydro generation operations meet this standard. Newfoundland Power applied this standard in estimating the incremental resources required to operate Hydro’s small hydro generation facilities on the Island Interconnected System.

Newfoundland Power estimates that, on a *pro forma* basis, it would require incremental resources associated with approximately 19.5 Full-Time Equivalent employees to operate 7 small hydro generation facilities that are currently operated by Hydro. This represents an increase of approximately 3% over Newfoundland Power’s total current resource levels.

For customers to benefit in the form of lower rates as a result of the consolidation of small hydro operations under Newfoundland Power, the additional resources incurred by Newfoundland Power would have to be more than offset by reductions in resource expenditures by Hydro.

2.0 Overview

a. Context

In September 2018, the Provincial Government issued a reference to the Board to examine options for mitigating the impact of Nalcor Energy’s Muskrat Falls Project on customer rates. This followed significant cost overruns on the project and heightened customer concerns regarding the future price of electricity.¹

Newfoundland Power has participated in the *Reference on Rate Mitigation Options and Impacts* (the “Reference”) to assist in assessing potential options to mitigate the impact of Nalcor Energy’s Muskrat Falls Project on customer rates.²

Rates paid by customers served by the Island Interconnected System represent the aggregate cost of service from both Newfoundland Power and Hydro. Both utilities currently operate small hydro generation facilities on the Island Interconnected System. As part of the Reference, the Board is examining whether the consolidation of small hydro generation operations under either Newfoundland Power or Hydro would reduce costs to customers.

On May 22, 2019, the Board issued a series of Information Requests asking Newfoundland Power to provide estimates, on a Full-Time Equivalent (“FTE”) basis, of the resources required for the Company to operate small hydro generation facilities currently operated by Hydro. To enable a meaningful response, Newfoundland Power undertook an assessment of the incremental resources it would require to operate these facilities.

This report provides the *pro forma* results of Newfoundland Power’s assessment.

¹ By June 2017, the estimated cost of the Muskrat Falls Project had increased from a sanctioned cost of \$7.4 billion in December 2012 to an estimated cost of \$12.7 billion. See Nalcor Energy’s *Muskrat Falls Project Update, June 23, 2017* presentation, slide 10.

² On March 8, 2019, Newfoundland Power filed a *Request for Standing* to participate in the Reference. The *Request for Standing* was approved by the Board on March 13, 2019.

1 **b. Current Small Hydro Generation Operations**

2 Generation operations on the Island Interconnected System are primarily divided among 2
3 utilities: Newfoundland Power and Hydro.

4
5 Newfoundland Power currently operates 23 small hydro generation facilities on the Island
6 Interconnected System.³ These facilities have a total installed capacity of approximately 98 MW
7 and have provided low-cost electricity to the Company's customers for over 100 years.⁴ Because
8 these facilities are embedded in Newfoundland Power's distribution system, they also provide a
9 reliability benefit to customers during periods of extended outages.⁵

10

11 Hydro is currently the bulk generator of electricity on the Island Interconnected System.

12 Newfoundland Power relies on Hydro to supply approximately 93% of the electricity necessary to
13 serve its customers. In addition to 5 large hydro generation facilities at Bay d'Espoir and other
14 locations, Hydro also operates several small hydro generation facilities with turbine units that
15 are generally similar in size to those operated by Newfoundland Power.⁶ These include the:

- 16 (i) Paradise River hydro facility on the Burin Peninsula;
- 17 (ii) Bishop's Falls and Grand Falls (collectively, "Exploits") hydro facilities;
- 18 (iii) Snook's Arm and Venam's Bight hydro facilities on the Baie Verte Peninsula;
- 19 (iv) Star Lake hydro facility in central Newfoundland; and
- 20 (v) Roddickton hydro facility on the Northern Peninsula.

³ A list of Newfoundland Power's small hydro generation facilities is provided as Appendix A.

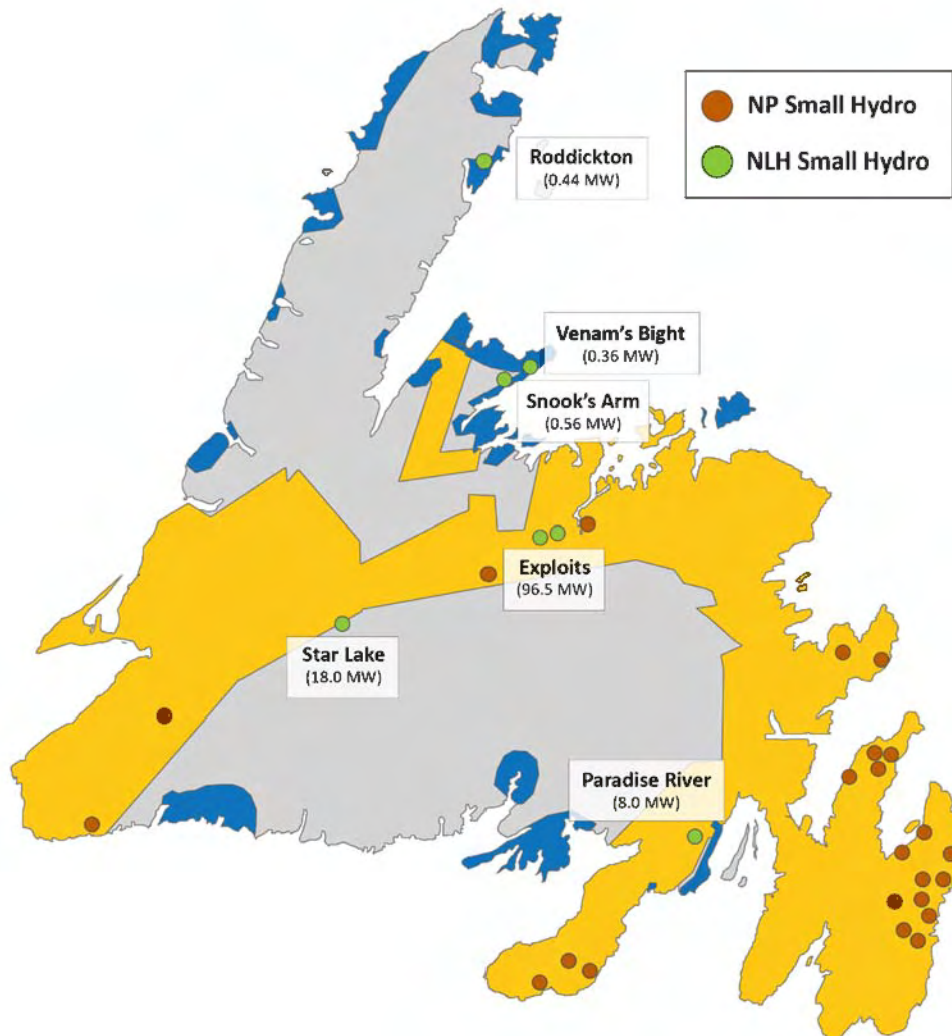
⁴ The age of these facilities currently ranges from 20 to 119 years. Newfoundland Power's small hydro facilities are located adjacent to communities in the Company's service territory. Typically, when electricity was first introduced to these communities, customers in these areas were supplied solely via these small hydro facilities.

⁵ For example, eastern Newfoundland experienced a severe ice storm in March 2010 that caused extensive damage to transmission and distribution lines serving the Bonavista and Avalon Peninsulas and Bonavista North area. A total of 12,538 customers experienced outages, totaling 43.4 million customer minutes. Newfoundland Power operated its small hydro facilities and mobile generators to assist with the restoration effort. This enabled the rotation of electricity to customers over 7 days while damaged transmission and distribution lines were being rebuilt. A detailed description of the March 2010 ice storm can be found in Schedule A of the application filed on April 30, 2010 and subsequently approved by the Board in Order No. P.U. 17 (2010).

⁶ The location and capacity of Hydro's generation facilities was provided in response to Information Request PUB-Nalcor-129, Attachment 1, filed as part of the Reference. Newfoundland Power has not included Hydro's small hydro generation facility at Buchans as it is not clear whether this facility is operable.

- 1 Figure 1 shows the location of small hydro generation facilities currently operated by
- 2 Newfoundland Power and Hydro on the Island Interconnected System.⁷

Figure 1:
Newfoundland Power and Hydro
Small Hydro Generation Facilities



- 3 With the exception of the Roddickton hydro facility on the Northern Peninsula, all of the small
- 4 hydro generation facilities currently operated by Hydro are within or in close proximity to
- 5 Newfoundland Power's existing service territory.⁸

⁷ Newfoundland Power's service territory is shaded in yellow in Figure 1 and Hydro's service territory on the Island Interconnected System is shaded in blue.

⁸ It is approximately 56 km from the Venam's Bight facility to where Newfoundland Power serves customers in Baie Verte. Newfoundland Power has assumed that transfer of the Roddickton facility would only occur if other retail and/or transmission operations of Hydro were consolidated under Newfoundland Power.

3.0 Operating Practices, Methodology and Limitations

a. Operating Practices

Newfoundland Power manages the operation of its small hydro generation facilities in a manner consistent with the efficient production of electricity, as required by the provincial power policy.⁹

The efficiency of Newfoundland Power's small hydro generation facilities is primarily achieved through remote control and automation, which permit the efficient deployment of resources.

All of Newfoundland Power's small hydro generation facilities are remotely controlled by the Company's System Control Centre ("SCC"). The SCC has real-time information on the operation of each plant through its Supervisory Control and Data Acquisition ("SCADA") System. This allows the SCC to monitor and control plant output and observe any maintenance issues that arise through day-to-day operations, mitigating the need to locate staff at each facility.

The day-to-day operation of the majority of Newfoundland Power's small hydro generation facilities is automated to achieve the most efficient generation of electricity.¹⁰ This is enabled through the water management systems installed in each facility, which automatically determine the output of generating units. This automated decision-making is based on a variety of factors, including the amount of water available in the reservoir and the most efficient output levels achievable for a particular unit.¹¹

The level of remote control and automation within Newfoundland Power's small hydro facilities minimizes the number of field employees required to manage these facilities on-site.¹² This

⁹ The provincial power policy is contained within Section 3 of the *Electrical Power Control Act, 1994*. Section 3(b)(i) states that all sources and facilities for the production, transmission and distribution of power in the province should be managed and operated in a manner that would result in the most efficient production, transmission and distribution of power.

¹⁰ Newfoundland Power's Mobile and Morris hydro facilities, located near the Town of Mobile, are the Company's only small hydro generation facilities that are not currently automated.

¹¹ The most efficient output for a particular generation unit is determined through studies that derive efficiency curves. These efficiency curves indicate at what level of output a generating unit is producing the most electricity based on the volume of water flowing through the unit.

¹² Newfoundland Power manages its small hydro generation facilities in accordance with its Plant Operating Guidelines. Copies of the Company's Plant Operating Guidelines were provided as Attachment A to response to Information Request PUB-NP-048 filed as part of the Reference.

1 allows the Company to use a flexible approach with a small number of employees managing
2 groups of facilities.¹³ These employees also support other areas of the Company's operations,
3 including emergency standby and backup generation and substation operations.
4

5 **b. Methodology**

6 The majority of the small hydro generation facilities operated by Hydro are similar in capacity to
7 those operated by Newfoundland Power.¹⁴
8

9 In completing this assessment, Newfoundland Power has assumed that Hydro's facilities are
10 similar in condition to those of Newfoundland Power and are generally capable of the same level
11 of remote control and automation. To determine the incremental FTE resources required for
12 Newfoundland Power to operate these facilities, the Company:
13

- 14 (i) Reviewed documentation related to small hydro generation facilities currently
15 operated by Hydro on the Island Interconnected System, including the number
16 and capacity of turbine units within each facility;¹⁵
- 17 (ii) Applied Newfoundland Power's existing operating practices on a plant-by-plant
18 basis, using quantifiable metrics where practical (e.g. number of plant operators
19 per turbine unit); and
- 20 (iii) Completed adjustments to account for environmental and public safety
21 considerations, as required.
22

23 Detailed calculations and assumptions used in completing this assessment are provided in
24 Appendix C to this report.

¹³ As examples, Newfoundland Power employs approximately 1.5 FTEs managing all 5 small hydro generation facilities on the Bonavista and Burin Peninsulas and 4.0 FTEs managing all 7 small hydro generation facilities on the southern shore of the Avalon Peninsula.

¹⁴ In completing this assessment, Newfoundland Power considered capacity on a unit-by-unit basis. Its 23 small hydro generation facilities have a total of 32 turbine units, ranging in capacity from 0.3 MW in Port Union and Fall Pond to 10.5 MW in Mobile. Hydro's 7 small hydro generation facilities included in this assessment have a total of 20 turbine units. Seventeen of these units fall within the range of capacity for Newfoundland Power's existing units.

¹⁵ See Appendix B of this report.

1 **c. Limitations**

2 The results of this assessment are subject to limitations.

3

4 The estimates provided in this report are based on the most up-to-date information available to
5 Newfoundland Power at the time of the assessment. The scope and detail of this information is
6 not commensurate with that available in a typical due diligence exercise. For this reason, the
7 results of this assessment should be seen as broadly indicative as opposed to precisely accurate.

8

9 Changes in the number of FTEs can be used as a reasonable indicator for changes in a utility's
10 overall costs. The use of FTEs will not, however, capture *all* costs. Changes in certain costs, such
11 as those associated with vehicles, buildings and employee technology, will be reasonably
12 reflected in changes in FTEs. Changes in contracted operating and capital costs, on the other
13 hand, will not be reflected in changes in FTEs.

14

15 This assessment indicates the number of FTEs associated with steady state utility operations.
16 The assessment does not account for transitional factors associated with achieving this steady
17 state. Nor does it assess conditions or circumstances that may preclude or hinder the
18 consolidation of utility operations.¹⁶

19

20 **4.0 Resource Assessment**

21 **a. General**

22 A total of 7 generation facilities are defined as “small hydro” and included in this assessment: (i)
23 Paradise River; (ii) Snook’s Arm; (iii) Venam’s Bight; (iv) Star Lake; (v) Grand Falls; (vi) Bishop’s
24 Falls; and (vii) Roddickton.¹⁷

¹⁶ Conditions or circumstances that may preclude or hinder consolidation are outlined in the response to Information Request PUB-NP-052 as part of the Reference.

¹⁷ Information provided by Hydro as part of its *2015 Capital Budget Application* indicates the Venam’s Bight hydro facility requires refurbishment before returning to operation.

1 These facilities have a total of 20 turbine units. Seventeen of these turbine units have an
 2 estimated capacity of 8.0 MW or less. Three turbine units at the Star Lake and Grand Falls
 3 facilities are somewhat larger, with capacity up to an estimated 30 MW.¹⁸

4
 5 Consistent with the Information Requests received by the Board, Newfoundland Power has
 6 separately considered the incremental FTE resources required for: (i) the Exploits generation
 7 facilities at Grand Falls and Bishop’s Falls; and (ii) the other 5 small hydro generation facilities
 8 included in this assessment.

9
 10 **b. Assessment of Exploits Generation Facilities**

11 Table 1 provides Newfoundland Power’s *pro forma* estimate of the incremental FTE resources
 12 required to operate the Exploits generation facilities.

| Table 1: <i>Pro Forma</i> FTE Estimate Exploits Generation Facilities | |
|---|-------------|
| Position | FTEs |
| MANAGEMENT & ENGINEERING | |
| Engineering/Asset Management | 3.0 |
| Generation Engineer | 1.0 |
| Subtotal | 4.0 |
| CRAFT & SUPERVISION | |
| Supervisor Generation Operations | 1.0 |
| Mechanical Maintenance | 2.0 |
| Plant Operations | 8.0 |
| Planner | 1.0 |
| Subtotal | 12.0 |
| TOTAL | 16.0 |

¹⁸ Natural Resources Canada defines small hydro generation facilities as having an installed capacity of between 1 and 50 MW. Each turbine unit included in this assessment is within this capacity range. Other generation facilities operated by Hydro, such as those at Bay d’Espoir where turbine unit capacities range as high as 150 MW, are outside the scope of what would be considered small hydro generation. The Granite Canal hydro facility was excluded from this assessment as it is part of the Bay d’Espoir watershed.

1 In total, Newfoundland Power estimates an additional 16.0 FTEs would be required to oversee
 2 engineering, operation and maintenance of the Exploits generation facilities. This reflects the
 3 number and capacity of turbine units at these facilities and is consistent with Newfoundland
 4 Power’s existing approach for managing its overall generation operations.

5

6 **c. Assessment of Other Small Hydro Generation Facilities**

7 Table 2 provides Newfoundland Power’s *pro forma* estimate of the incremental FTE resources
 8 required to operate all other small hydro generation facilities included in this assessment. This
 9 includes: (i) Paradise River; (ii) Snook’s Arm; (iii) Venam’s Bight; (iv) Star Lake; and (v) Roddickton.

| Table 2: <i>Pro Forma</i> FTE Estimate Other Small Generation Facilities | |
|--|------------|
| Position | FTEs |
| MANAGEMENT & ENGINEERING | |
| Engineering/Asset Management | 1.0 |
| Subtotal | 1.0 |
| CRAFT & SUPERVISION | |
| Plant Operations | 2.5 |
| Subtotal | 2.5 |
| TOTAL | 3.5 |

10 In total, Newfoundland Power estimates an additional 3.5 FTEs would be required to oversee
 11 operation and maintenance of the 5 small hydro generation facilities included in this assessment.
 12

13 An estimated 2.0 FTEs are associated with plant operations at the Star Lake hydro facility, which
 14 is consistent with the Company’s existing approach for managing its similarly sized Rattling Brook
 15 hydro facility.¹⁹ Half an FTE is associated with integrating the Paradise River hydro facility into
 16 the Company’s existing generation operations on the Burin and Bonavista peninsulas.

¹⁹ Newfoundland Power’s Rattling Brook facility is operated and maintained by 2.0 FTEs at that location, who also support the nearby Sandy Brook facility.

1 Due to their small capacity and proximity to Newfoundland Power's existing operations, the
2 Company assessed that no additional FTE resources would be required to assume responsibility
3 for the Snook's Arm and Venam's Bight hydro facilities.

4

5 Newfoundland Power has assumed that transfer of the Roddickton hydro facility would only
6 occur if other retail and/or transmission operations were transferred from Hydro to
7 Newfoundland Power, as is also being considered by the Board.²⁰ If such a transfer were to
8 occur, no additional resources would be required to operate the Roddickton hydro facility.

9

10 This assessment also includes 1.0 FTE associated with engineering and asset management to
11 maintain all 5 small hydro generation facilities included in this scenario.

12

13 Detailed information on the calculations and assumptions used to develop these estimates is
14 provided in Appendix C to this report.

15

16 **5.0 Conclusion**

17 In total, Newfoundland Power has assessed that an additional 19.5 FTEs would be required to
18 operate 7 small hydro facilities on the Island Interconnected System that are currently operated
19 by Hydro. The majority of these resources (82%) are associated with engineering, operation and
20 maintenance of the Exploits generation facilities. These findings are consistent with
21 Newfoundland Power's approach to managing its existing generation operations.

22

23 An increase of 19.5 FTEs represents an overall increase of 3% above the Company's total current
24 resource levels.²¹

²⁰ For more information concerning the examination of transferring retail and transmission operations from Hydro to Newfoundland Power, see response to Information Request PUB-NP-084 filed as part of the Reference.

²¹ In 2018, Newfoundland Power had approximately 619 FTEs ($19.5 / 619 = 0.03$, or 3%).

1 Appendix A: Newfoundland Power Small Hydro Generation 2 Facilities

3 Table A-1 provides a list of Newfoundland Power’s existing small hydro generation facilities.

| Table A-1: Small Hydro Generation Facilities Operated by Newfoundland Power | | | |
|--|-----------------|-----------|------|
| Operating Area | Facility | Generator | MW |
| St. John's | Cape Broyle | G1 | 6.3 |
| St. John's | Horsechops | G1 | 8.1 |
| St. John's | Mobile | G1 | 10.5 |
| St. John's | Morris | G1 | 1.1 |
| St. John's | Petty Harbour | G1 | 1.5 |
| | | G2 | 1.4 |
| | | G3 | 2.5 |
| St. John's | Pierre’s Brook | G1 | 4.1 |
| St. John's | Rocky Pond | G1 | 3.3 |
| St. John's | Seal Cove | G1 | 1.3 |
| | | G2 | 2.3 |
| St. John's | Topsail | G1 | 2.6 |
| St. John's | Tors Cove | G1 | 2.1 |
| | | G2 | 2.1 |
| | | G3 | 2.4 |
| Avalon | Victoria | G1 | 0.6 |
| Avalon | Heart’s Content | G1 | 2.7 |
| Avalon | New Chelsea | G1 | 4.3 |
| Avalon | Pittman’s Pond | G1 | 0.6 |
| Bonavista | Lockston | G1 | 1.5 |
| | | G2 | 1.5 |
| Bonavista | Port Union | G1 | 0.3 |
| | | G2 | 0.3 |
| Burin | Fall Pond | G1 | 0.3 |
| Burin | Lawn | G1 | 0.6 |
| Burin | West Brook | G1 | 0.7 |
| Grand Falls | Rattling Brook | G1 | 7.4 |
| | | G2 | 7.4 |
| Grand Falls | Sandy Brook | G1 | 6.3 |
| Stephenville | Lookout Brook | G3 | 2.8 |
| | | G4 | 3.0 |
| Stephenville | Rose Blanche | G1 | 6.0 |

1 Appendix B: List of Hydro's Small Hydro Generation 2 Facilities

3 Table B-1 provides a list of the small hydro generation facilities included in Newfoundland
4 Power's assessment.

| Table B-1: Small Hydro Generation Facilities Operated by Hydro | | | |
|---|-----------------------|-----------|-------------------------|
| Location | Facility | Generator | Estimated Capacity (MW) |
| Burin Peninsula | Paradise River | Unit 1 | 8.0 |
| Baie Verte Peninsula | Snook's Arm | Unit 1 | 0.6 |
| | Venam's Bight | Unit 1 | 0.4 |
| Central Newfoundland | Star Lake | Unit 1 | 18.0 |
| Northern Peninsula | Roddickton Mini Hydro | Unit 1 | 0.4 |
| Exploits River | Grand Falls | Unit 4 | 29.0 |
| | | Unit 5 | 4.0 |
| | | Unit 6 | 4.0 |
| | | Unit 7 | 4.0 |
| | | Unit 8 | 4.0 |
| | | Unit 9 | 30.0 |
| | Bishop's Falls | Unit 1 | 3.0 |
| | | Unit 2 | 3.0 |
| | | Unit 3 | 3.0 |
| | | Unit 4 | 3.0 |
| | | Unit 5 | 3.0 |
| | | Unit 6 | 3.0 |
| | | Unit 7 | 2.0 |
| | | Unit 8 | 1.0 |
| | | Unit 9 | 1.0 |

Appendix C: Descriptions and Assumptions

a. Exploits Generation Facilities

The following are brief descriptions of the functions completed by the FTE resources outlined in Table 1 of this report concerning the Exploits generation facilities, and the assumptions and calculations used to develop the FTE estimates:

Engineering/Asset Management (3.0)

Newfoundland Power currently employs 6 Engineers responsible for the design, project management and execution of work associated with the operation of 32 turbine units at its hydro facilities. This assessment includes 3 additional Engineers to accommodate engineering and asset management for 15 additional turbine units at the Exploits generation facilities.

Generation Engineer (1.0)

The Exploits generation facilities are located on the Exploits River, an area prone to severe flooding with various public safety and environmental considerations, including fish management. This assessment includes 1 on-site Engineer responsible for water management, flood monitoring, and environmental and fish management at the Exploits generation facilities.

Supervisor Generation Operations (1.0)

Supervisors Generation Operations have responsibility for the operation and maintenance of all generation facilities in their region, and supervise plant operations staff. Currently, Newfoundland Power operates with ½ an FTE as a Supervisor Generation Operations in its Western Region responsible for the operation of 6 turbine units. This assessment includes 1 additional Supervisor Generation Operations to accommodate 15 additional turbine units and 10 employees at the Exploits generation facilities.

Mechanical Maintenance (2.0)

Newfoundland Power currently employs 4 Mechanical Maintenance staff responsible for supporting Plant Operators in completing preventative and corrective maintenance of mechanical equipment for 32 turbine units. This assessment includes 2 additional Mechanical Maintenance FTEs to accommodate 15 additional turbine units at the Exploits generation facilities.

Plant Operations (8.0)

Plant Operators are responsible for the day-to-day operation of Newfoundland Power's hydro facilities, including the routine inspection and corrective and preventative maintenance of plant equipment. Typically, due to remote control and automation, 1 Plant Operator supports multiple facilities. However, the Company's highest capacity facility, Rattling Brook, has 2.0 FTEs primarily responsible for the operation of that facility. This assessment includes 4.0 FTEs responsible for Plant Operations at the largest capacity turbine units at the Exploits generation facilities (2.0 FTEs per turbine unit). The remaining 13 turbine units at the Exploits generation

1 facilities would be operated by an additional 4.0 FTEs. This is consistent with Newfoundland
2 Power's current practice of employing 1 plant operator per 3 turbine units.

3 4 **Planner (1.0)**

5 Newfoundland Power currently employs 1 Planner to execute the preventative maintenance
6 program for 32 turbine units at its hydro facilities. Their responsibilities include planning
7 maintenance projects, creating, reviewing and closing work orders, and making
8 recommendations on required maintenance. This assessment includes 1 additional Planner to
9 accommodate 15 additional turbine units at the Exploits generation facilities.

10

11 **b. Other Small Hydro Generation Facilities**

12 The following are brief descriptions of the functions completed by the FTE resources outlined in
13 Table 2 of this report concerning all other small hydro generation facilities, and the assumptions
14 and calculations used to determine the estimates:

15

16 **Engineering/Asset Management (1.0)**

17 Newfoundland Power currently employs 6 Engineers responsible for the design, project
18 management and execution of work associated with the operation of 32 turbine units at its
19 hydro facilities. This assessment includes 1 additional FTE to accommodate Engineering and
20 Asset Management at 5 additional turbine units.

21

22 **Plant Operations (2.5)**

23 Plant Operators are responsible for the day-to-day operation of Newfoundland Power's hydro
24 facilities, including the routine inspection and maintenance of plant equipment. Typically, due to
25 remote control and automation, 1 plant operator supports multiple facilities. However, a higher
26 level of resources is dedicated to facilities of higher capacity. This assessment includes:

27

28 • 2.0 FTEs to oversee plant operations at the Star Lake hydro facility. This is
29 consistent with the Company's current approach for staffing its Rattling Book
30 hydro facility, which is similar in capacity to Star Lake.²²

31

32 • 0.5 FTEs associated with operation of the 1 turbine unit at the Paradise River
33 hydro facility. This facility would be managed in conjunction with the Company's
34 existing small hydro generation facilities on the Burin and Bonavista peninsulas,
35 where 1.5 FTEs currently operate 7 turbine units.

36

37 • No FTEs associated with operation of the hydro facilities at Venam's Bight and
38 Snook's Arm. Newfoundland Power has assessed that, due to their small capacity
39 and location, these plants can be operated within existing resources in the area.

37

38 • No FTEs associated with operation of the Roddickton hydro facility. Given it is
39 significantly outside of Newfoundland Power's existing service territory, the
Company assumes responsibility for this facility would only be transferred if other

²² Newfoundland Power's Rattling Brook hydro facility has a capacity of approximately 15 MW. This compares to a capacity of 18 MW at Star Lake.

1 retail and/or transmission operations were also transferred from Hydro to
2 Newfoundland Power. In that case, FTE resources responsible for diesel
3 generators in that area would also be responsible for operation of the Roddickton
4 hydro facility.