

December 14, 2018

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

**Attention: Ms. Cheryl Blundon**  
**Director Corporate Services & Board Secretary**

Dear Ms. Blundon:

**Re: Newfoundland and Labrador Hydro - Network Additions Policy**

On October 1, 2018, Hydro filed a Network Additions Policy Review with the Board which concluded that an enhancement to its current policy is warranted for the Labrador Interconnected System ("LIS"). Hydro committed to filing, by December 14, 2018, a proposal to the Board providing a policy that applies the principles set out in the Network Additions Policy Review.

The proposed LIS Network Additions Policy is attached for the Board's review, along with a summary report providing the basis for the proposed Network Additions Policy.

Should you have any questions, please contact the undersigned.

Yours truly,

**NEWFOUNDLAND AND LABRADOR HYDRO**



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Senior Legal Counsel – Regulatory  
SW/kd

cc: Gerard Hayes – Newfoundland Power  
Paul Coxworthy – Stewart McKelvey  
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# Labrador Interconnected System Network Additions Policy Summary Report

December 14, 2018



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1 **1.0 Background**

2 On October 1, 2018, Newfoundland and Labrador Hydro (“Hydro”) filed a Network Additions  
3 Policy Review with the Board of Commissioners of Public Utilities for Newfoundland and  
4 Labrador (“Board”) which concluded that an enhancement to its current policy is warranted for  
5 the Labrador Interconnected System (“LIS”). Hydro concluded that the principles of the  
6 beneficiary pays approach are appropriate for the development of a Network Additions Policy.  
7 Hydro committed to filing, by December 14, 2018, a proposal to the Board providing a policy  
8 that applies the principles set out in the Network Additions Policy Review.

9

10 The Network Additions Policy will be used to determine the contribution requirements from  
11 customers on the LIS related to (i) transmission system extensions to connect new customers or  
12 Non-utility Generators;<sup>1</sup> and (ii) demand requirement requests from customers that,  
13 immediately or over time, may contribute to transmission network extensions or upgrades. The  
14 policy will also be used to determine the contributions required from customers requesting  
15 open access transmission service.<sup>2</sup>

16

17 The purpose of the Network Additions Policy is to limit the rate increases that can result from  
18 investment in new transmission assets to serve new load requests, and to provide a reasonable  
19 sharing of cost responsibility between the customer requesting service and the existing  
20 customers. This report summarizes the basis for the proposed Network Additions Policy which  
21 is provided as Schedule 1 to this report.

22

23 **2.0 Proposed LIS Network Additions Policy**

24 **2.1 General**

25 Hydro’s current practice with respect to transmission network additions is to treat the addition  
26 either as common or specifically assigned assets. Common assets are those that benefit two or

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<sup>1</sup> Non-utility Generator is an entity which is not a public utility but which owns facilities to generate electric power for sale.

<sup>2</sup> In Order No. P.U 3(2018), the Board approved on an interim basis: pro-forma Transmission Service Agreements; the NL Transmission Policies and Procedures; and the Code of Conduct for NL Transmission System Operations. This approval was required to provide an open access transmission regime for the Newfoundland and Labrador transmission system to ensure that all transmission customers are provided with open, non-discriminatory and non-preferential access to transmission service.

1 more customers. Costs for common assets are allocated to all customers on the system and  
2 recovered through published rates. Specifically assigned assets benefit only one customer and  
3 costs are attributed to, and recovered from, the customer to whom the facilities are assigned.

4  
5 The current methodology (i.e., transmission network costs being treated as either fully common  
6 or fully specifically assigned) does not recognize that the benefits provided by new transmission  
7 investment will not necessarily accrue exclusively to the initiating customer or, alternatively,  
8 entirely to the existing customer population as a group. As a result, the current method may  
9 not reflect a reasonable sharing of cost responsibility between the customer requesting service  
10 and the existing customers.

11  
12 Given the potential for material customer rate impacts due to the requirements for  
13 transmission network additions on the LIS to comply with requests to serve increased peak  
14 demand, Hydro is proposing to revise its current policy regarding network additions to achieve  
15 an improved balance in sharing of the benefits and the costs between the requesting customer  
16 and existing customers.

17  
18 The proposed LIS Network Additions Policy includes revisions to the current cost recovery  
19 practices for sustaining capital investments and recovery of operating and maintenance costs  
20 (“O&M”) for assets which are specifically assigned to a single customer.

21  
22 To deal with the recent influx of requests for service on the LIS, Hydro proposes to implement a  
23 contribution requirement to new and existing customers requesting large load additions. The  
24 contributions from customers will support the recovery of upstream network addition costs.  
25 Hydro does not believe it is practical to require a capital contribution for all load addition  
26 requests (i.e., residential, small business, etc.). Hydro is proposing to require contributions from  
27 all customers requiring increased demand requirements greater than 200 kW.<sup>3</sup> The proposed

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<sup>3</sup> In certain circumstances, Hydro may consider multiple applications for 200 kW or less to be one application for a cumulative demand request in excess of 200 kW.

1 approach ensures that the customer requiring a large amount of additional capacity will  
2 contribute equitably towards the cost of network capacity additions.

3

4 The LIS Transmission Expansion Plan filed with the Board on October 31, 2018 identifies future  
5 transmission upgrades to the LIS reflecting Hydro's demand forecast. The LIS Transmission  
6 Expansion Plan also provides the capital projects that are available to serve peak demand  
7 increases that are in excess of Hydro's forecast. For customer requests that require the  
8 acceleration of the LIS Transmission Expansion Plan, Hydro will base its contribution  
9 requirement on the difference between the cost of the acceleration of the LIS Transmission  
10 Expansion Plan and the value of the benefits to existing customers as a result of accelerating  
11 the Transmission Expansion Plan.

12

## 13 **2.2 Specifically Assigned Asset Cost Recovery**

14 Hydro proposes to continue the current approach of requiring a full capital cost contribution  
15 from customers to offset the initial capital investment in specifically assigned assets. Hydro  
16 believes it is appropriate that a customer should also pay a contribution to recover the  
17 sustaining capital associated with the specifically assigned asset, including replacement at the  
18 end of life.

19

20 In the past, Hydro has normally financed sustaining capital and recovered depreciation and  
21 return on the sustaining capital through the specifically assigned charge approved by the Board.  
22 Hydro's practice of financing sustaining capital on specifically assigned assets creates cost  
23 recovery risk in that the customer responsible for the cost may discontinue operations and  
24 provide no avenue for cost recovery. The proposed Network Additions Policy reflects the  
25 requirement of the customer to fund sustaining capital for specifically assigned assets.

26

27 O&M costs for specifically assigned assets are currently recovered from the customer through a  
28 specifically assigned O&M charge. Hydro believes it is appropriate that the customer should be  
29 provided the option of paying the O&M through a specifically assigned charge or engaging in a

1 contractual arrangement in which the customer is charged the actual O&M costs as they are  
2 incurred. The proposed Network Additions Policy reflects this option.

3  
4 Hydro notes that the definition of specifically assigned assets in the proposed Network  
5 Additions Policy also includes the specific assignment of transmission assets required to  
6 interconnect a Non-utility Generator.

7  
8 Customer-assigned costs generally match customer benefits since the beneficiary is typically a  
9 single customer. Hydro considers the proposed approach to cost recovery for specifically  
10 assigned transmission assets to be consistent with the beneficiary pays approach.

11

## 12 **2.3 Transmission Cost Recovery Related to Load Additions**

### 13 **2.3.1 General**

14 Hydro does not believe it is practical to require a capital contribution for all load addition  
15 requests (i.e., residential, small business, etc.). Therefore, Hydro proposes to only require  
16 contributions from all customers requiring greater than 200 kW<sup>4</sup> in increased demand  
17 requirements.<sup>5</sup> This approach will be practical to administer as it will impact a small percentage  
18 of customers and will only charge contributions to the customers that are materially  
19 contributing to load growth on the LIS.

20

21 Under Hydro's proposed approach, a new customer will receive up to 200 kW of maximum  
22 demand requirement with no capacity charge applied ("Basic Capacity Investment Credit") but  
23 will be charged a contribution for any demand requirement in excess of 200 kW ("Upstream  
24 Capacity Charge").<sup>6</sup> Any funds contributed through the Upstream Capacity Charge will be used  
25 to reduce customer impacts that would occur as new transmission investments are required to

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<sup>4</sup> In certain circumstances, Hydro may consider multiple applications for 200 kW or less to be one application for a cumulative demand request in excess of 200 kW.

<sup>5</sup> Approximately 95 of the 1,400 General Service customers on the LIS have demand requirements in excess of 200 kW (i.e. 7%).

<sup>6</sup> Hydro is also proposing to provide 200 kW of Basic Capacity Investment to existing customers that are requesting to increase their demand requirements.

1 serve load growth. Hydro believes the proposed approach is consistent with the beneficiary  
 2 pays approach and will contribute to rate stability on the LIS.<sup>7</sup>

3

4 **2.3.2 Customer Requests less than 1500 kW**

5 Hydro proposes to compute the Upstream Capacity Charge for customers requiring less than  
 6 1500 kW based on the estimated Upstream Capacity Cost less the Basic Capacity Investment  
 7 Credit. The Upstream Capacity Cost is the Expansion Cost per kW multiplied by the increase in  
 8 the Customer’s Peak Demand as a result of the new/additional service request.

9

10 The Expansion Cost per kW is an estimate of the cost of potential transmission upgrades on the  
 11 LIS (not reflected in the Transmission Expansion Plan) divided by the additional capacity  
 12 provided by those transmission upgrades.<sup>8</sup> Table 1 provides the basis for the Expansion Cost  
 13 per kW for use in calculating the customer contribution for load requests that are greater than  
 14 200 kW and less than 1500 kW.

**Table 1  
 Derivation of Expansion Costs per kW**

Region	Capacity kW	Description	2019 Capital Investment (\$000)	Direct Investment \$ per kW
Labrador East	21,000	Transformer Upgrades at HV-GB	5,000	238
	37,000	Transformer Upgrades at HV-GB and MF Terminal Station	15,000	405
	100,000	Construct second line from MF to HV-GB	50,000	500
Labrador West	33,000	Wabush TS Upgrades and 230 kV uprating	16,500	500
<b>Sub-Total</b>	<b>191,000</b>		<b>86,500</b>	<b>453</b>
O&M <sup>9</sup>				12
<b>Total</b>				<b>465</b>

<sup>7</sup> In Hydro’s Network Additions Policy Review, it was noted that the Ontario Energy Board recommended that distribution customers that request large load additions also be required to pay a contribution to support upstream network additions through an Upstream Capacity Charge, effectively applying the concept of the beneficiary pays approach to its distribution customers as well as at the transmission level. Hydro’s proposed approach is consistent with the OEB recommendation.

<sup>8</sup> The LIS Transmission Expansion Plan, filed with the Board on October 31, 2018, supports the project costs used to compute the Expansion Cost per kW.

<sup>9</sup> \$12 per kW derived using the based on the LIS transmission O&M including administration and general (\$4,684,549) divided by the transmission kW (397,271) used in the 2019 Test Year Cost of Service Study (filed October 26, 2018).

1 For example, a customer request for either a new service or an increase in demand  
2 requirements of 500 kW will result in an Upstream Capacity Cost of \$232,500 (500 kW times  
3 \$465 per kW). To determine the Upstream Capacity Charge, the Basic Capacity Investment  
4 Credit of \$93,000 (200 kW x \$465) is deducted from the Upstream Capacity Cost. The result is  
5 the required contribution from the customer of \$139,500 plus HST.

### 7 **2.3.3 Customer Requests of 1500 kW or More**

8 Hydro proposes a more detailed system impact review process to deal with customer requests  
9 of 1500 kW or larger. These requests will trigger a preliminary assessment to determine if  
10 compliance with the request will require an acceleration of the Transmission Expansion Plan.

11  
12 If Hydro concludes there is no material impact on the Transmission Expansion Plan to comply  
13 with the customer request, the Upstream Capacity Charge will be computed in the same  
14 manner as customer requests of less than 1500 kW. If the potential for a material impact exists,  
15 Hydro will conduct a System Impact Study to determine the technical requirements for  
16 interconnection or system upgrades and identify cost implications. The customer will be  
17 required to pay Hydro the cost of the System Impact Study.

18  
19 If acceleration of the Transmission Expansion Plan is necessary, Hydro will determine the  
20 Expansion Advancement Cost. This amount will reflect the difference between the cost of  
21 acceleration of the Transmission Expansion Plan and the value of the acceleration of the  
22 Transmission Expansion Plan to existing customers. The value to existing customers will be  
23 determined based upon the forecast reduction in Expected Unserved Energy (“EUE”) resulting  
24 from the capital advancement.

25  
26 EUE is a measure of the amount of customer demand not served due to capacity shortfalls. For  
27 the purposes of Network Additions Policy analysis, EUE is valued using the approximate cost of  
28 backup generation based on the projected costs of gas turbine fuel. Such approach serves as a  
29 proxy for reliability to customers.

1 Given the high cost of backup generation, there is a potential that the calculated reliability  
2 benefits associated with a new interconnection or transmission upgrade may reach or exceed  
3 its capital cost. Hydro is proposing to limit the value of benefits to 50% of the cost impacts  
4 owing to the acceleration of the Transmission Expansion Plan. This approach acknowledges that  
5 the Transmission Expansion Plan acceleration is prompted by the requesting Customer.

6  
7 For example, if the Transmission Expansion Plan was accelerated to supply a customer's  
8 demand requirements with a cost of acceleration of \$5 million, and the estimated reduction in  
9 EUE was \$4 million (80% of the cost of acceleration), the Expansion Advancement Cost used in  
10 computing the Upstream Capacity Charge would be 50% of the cost of acceleration (i.e. \$2.5  
11 million). Whereas, if the value of EUE was \$1 million in the above example, representing 20% of  
12 the cost of accelerating the Transmission Expansion Plan, the Expansion Advancement Cost  
13 would be \$5 million for the cost of acceleration less \$1 million for EUE value to existing  
14 customers (i.e. \$4 million).

15  
16 Appendix B to the proposed Network Additions Policy provides the transmission planning  
17 procedure used to determine the Expansion Advancement Cost. Hydro believes the use of the  
18 Expansion Advancement Cost, which considers both the cost of acceleration of the  
19 Transmission Expansion Plan and the benefits to existing customers of the acceleration of the  
20 plan, is consistent with the beneficiary pays approach.

#### 21 22 **2.3.4 Labrador Industrial Customers**

23 Hydro included a Labrador Industrial Customer definition for use in the administration of the  
24 proposed Network Additions Policy. Hydro proposes that Labrador Industrial Customers  
25 requesting new or increased demand requirements be provided a revenue-based investment  
26 credit ("Demand Revenue Credit"), in addition to the Basic Capacity Investment Credit, when  
27 determining required Upstream Capacity Charge. The purpose of the Demand Revenue Credit is  
28 to reflect that Hydro anticipates additional future demand revenues from the Industrial  
29 Customer will be sustained for the long-term and will provide revenues that are expected to

1 materially offset the additional cost of the required investment in common assets, thereby  
2 reducing the rate impacts on other customers.

3  
4 The Demand Revenue Credit is determined by applying the Demand Revenue Credit per kW of  
5 \$250 (reflecting the present value of the forecast demand revenues to be paid by Labrador  
6 Industrial Customers) by the increased demand requirement of the Industrial Customer.<sup>10</sup> The  
7 Demand Revenue Credit per kW assumes an Industrial Customer has a Service life of 25 years.  
8 The Demand Revenue Credit per kW will be reduced by 3.0% for each year that the estimated  
9 life of the Customer's operations is less than 25 years. This reduction reflects a reduced current  
10 value in the demand revenues to be provided by the Customer with a projection of less than 25  
11 years of Service life.

12  
13 Given the level of uncertainty associated with duration of service for customers who do not  
14 meet the definition of Industrial Customers in the proposed Network Additions Policy, Hydro is  
15 proposing non-industrial customers not receive a Demand Revenue Credit.

16  
17 Hydro believes its provision of a Demand Revenue Credit to Labrador Industrial Customers is  
18 supported by future cost recovery from the additional demand revenue from Industrial  
19 Customers and is consistent with the requirement of the *Electrical Power Control Act 1994* SNL  
20 1994, Chapter E-5.1 that the rates to be charged should promote the development of industrial  
21 activity in Labrador.

22

### 23 **2.3.5 Transmission Customers of the NLSO**

24 Consistent with the approach proposed for Hydro customer requests of demand greater than  
25 1500 kW, a System Impact Study will be conducted by Hydro to determine if an acceleration of  
26 its Transmission Expansion Plan is necessary for the NLSO to provide a requested service to a

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<sup>10</sup> The proposed credit is calculated based on the proposed Labrador Industrial Transmission Demand Charge of \$1.38 per kW per month reflected in Hydro's 2017 GRA filing of October 26, 2018. If the Board approved a different rate in the Final GRA Order, Hydro proposes to calculate a revised credit. Hydro proposes that it will update the Demand Revenue Credit per kW at the same time as it updates the Expansion Cost per kW.

1 Transmission Customer.<sup>11</sup> If acceleration of the Transmission Expansion Plan is required, Hydro  
2 will determine the Expansion Advancement Cost.

3

4 Any required contribution from a Transmission Customer for acceleration of the Transmission  
5 Expansion Plan will be based on the calculation of the Expansion Advancement Cost to the  
6 transmission system. However, Transmission Customers requesting service will not be eligible  
7 for the Basic Capacity Investment Credit or the Demand Revenue Credit as these credits are  
8 only available to Hydro customers.

9

### 10 **2.3.6 Review Process**

11 Hydro proposes a review process to ensure the estimated demand requirements provided by  
12 the customer for computing the Upstream Capacity Charges are reasonable. The review process  
13 provides for the recalculation of the charge if the customer's demand requirements indicate a  
14 material understatement of their demand requirements.

15

16 Hydro also proposes to review Upstream Capacity Charges where the use of the Expansion  
17 Advancement Cost approach has resulted in the customer paying a charge that reflects a  
18 system capacity addition materially exceeding customer's demand request. The review process  
19 provides for a refund to be provided to the initial customer based on the payment of Upstream  
20 Capacity Charges from new customers that utilize the excess capacity that resulted from the  
21 capital project advancement.

22

## 23 **3.0 Conclusion**

24 Hydro's proposed Network Additions Policy for the LIS provides for a fair approach to recovery  
25 of future transmission investments required to interconnect new customers and serve  
26 increased customer load requirements. The approval of the proposed Network Additions Policy  
27 will also assist to limit the future rate increases to the customers on the LIS that can result from  
28 investment in new transmission assets to serve new load requests.

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<sup>11</sup> The Transmission Customer requesting service will be required to pay the cost of the System Impact Study.

**NEWFOUNDLAND AND LABRADOR HYDRO**

**NETWORK ADDITIONS POLICY – LABRADOR INTERCONNECTED SYSTEM**

**December 14, 2018**

## 1. THE POLICY: GENERAL

The purpose of this Network Additions Policy (“Policy”) is to limit rate increases that can result from investment in new transmission assets to serve new load requests, and to achieve a reasonable balance in the sharing of the benefits and the costs of new transmission investments between the Applicant and existing Customers.

This Policy will be used to determine the contribution requirements from Applicants on the Labrador Interconnected System related to (i) transmission system extensions to connect Applicants or Non-utility Generators; and (ii) demand requirement requests from Applicants that, immediately or over time, may contribute to transmission network extensions or upgrades. The Policy will also be used to determine the Customer Contributions required from Transmission Customers requesting open access transmission service.

This Policy does not address Customer Contributions required for distribution extensions or upgrades.<sup>1</sup>

## 2. DEFINITIONS

**Applicant** means any person who applies for Service. An Applicant can be an existing Customer. Multiple applications for Service may be treated as a single Application for the purposes of this Policy.

**Basic Capacity Investment** is the amount of capacity investment in Common Assets provided for Permanent Service to Applicants from which an Applicant requesting Service is excused payment. The Basic Capacity Investment is 200 kW.

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<sup>1</sup> General Service Customer contributions for distribution extensions or upgrades are determined based on the Contribution in Aid of Construction Policy: Distribution Line Extensions and Upgrades to General Service Customers, as approved by the Board.

**Basic Capacity Investment Credit** equals the Basic Capacity Investment multiplied by the Expansion Cost per kilowatt (“kW”).

**Board** means the Board of Commissioners of Public Utilities for Newfoundland and Labrador.

**Capacity** means the capability to provide energy, measured and expressed in kW.

**Common Assets** means transmission assets that provide benefit to two or more Customers.

**Customer** means any person who accepts or agrees to accept Service.

**Customer Contribution** means the payment required from the Applicant/Customer requesting Service.

**Demand** means the quantity of electricity delivered. It is expressed in kW or kilovolt amperes (“kVA”), either at a given point in time or averaged over a period of time.

**Demand Revenue Credit** equals the Demand Revenue Credit per kW multiplied by the net of the Applicant’s additional Peak Demand requirement less the Basic Capacity Investment. The Demand Revenue Credit is provided to an Industrial Customer Applicant requesting Permanent Service and is required to pay an Upstream Capacity Charge. Its purpose is to reflect that additional future Demand revenues from the Applicant are expected to partially offset the cost incurred to serve the Applicant’s Peak Demand requirements.

**Demand Revenue Credit per kW** means a per kW credit based on the present value of the forecast revenue to be recovered through the transmission demand charges to be paid by the Industrial Customer Applicant. The Demand Revenue Credit per kW assumes an Industrial Customer Applicant has a Service life of 25 years.

**EPCA** means the *Electrical Power Control Act, 1994* SNL 1994, Chapter E-5.1.

**Expansion Advancement Cost** means the difference between the cost of acceleration of the Transmission Expansion Plan and the value to existing Customers from acceleration of the Transmission Expansion Plan.

**Expansion Cost per kW** means an estimate of the cost of potential transmission upgrades, as provided in the Transmission Expansion Plan, divided by the additional capacity provided by those transmission upgrades. Hydro will update the Expansion Cost per kW within three months of filing a new Transmission Expansion Plan with the Board.

**Expected Unserved Energy** is a measure of the amount of customer demand not served due to generation shortfalls.

**General Service Customer** means a Customer eligible for Permanent Service or Temporary Service pursuant to any Rate #'s 2.1L, 2.2L, 2.3L or 2.4L of Hydro's Schedule of Rates, Rules and Regulations.

**Hydro** means Newfoundland and Labrador Hydro.

**Industrial Customer** means a Customer in Labrador who is served at Transmission Voltage; whose Peak Demand is 5,000 kW or more; and whose line of business is principally related to Industrial Development.

**Industrial Development** means all actions involved in the manufacture, assembly or processing of tangible merchandise, or the extraction or processing of raw materials.

**NLSO** means the Newfoundland and Labrador System Operator.

**Non-utility Generator** is an entity which is not a public utility but which owns facilities to generate electric power for sale.

**Peak Demand** means the maximum demand in kW required to serve a Customer.

**Permanent Service** means electrical service required for at least three years.

**Proportionate Sharing Approach** is the reflection of the Peak Demand requirements for each Applicant in the allocation of the aggregate Upstream Capacity Charge for multiple Applicants.

**Schedule of Rates, Rules and Regulations** means the schedule setting out the rates, rules and regulations relating to Hydro's service, as approved from time to time by the Board.

**Service** means any service provided by Hydro pursuant to the Schedule of Rates, Rules and Regulations.

**Specifically Assigned Assets** means transmission assets that provide benefits to only one Customer. Specifically Assigned Assets also include Hydro's transmission assets required to interconnect the assets of a Non-utility Generator.

**Sustaining Capital** means incremental capital investment in transmission assets so that the transmission assets can continue to provide the capacity and functionality originally intended. Sustaining Capital includes the cost of replacement at the end of the asset life.

**System Impact Study** means an assessment conducted by Hydro regarding the adequacy of the transmission system to accommodate an interconnection or load addition request from an Applicant or a Non-utility Generator and the costs and benefits associated with transmission upgrades or additions to comply with the Service request.

**System Impact Study Charge** refers to all costs and expenses incurred, directly or indirectly, by or on behalf of Hydro in conducting the System Impact Study. Payment of costs and expenses shall include a security deposit as specified in an agreement between the Applicant and Hydro that details the System Impact Study scope, cost, schedule, and other contractual clauses as appropriate. The security deposit shall be payable prior to the commencement of the System Impact Study. The remaining portion of the System Impact Study Charge will be due upon the completion of the System Impact Study.

**Temporary Connection Fee** is calculated as the estimated labour cost of installing and removing lines and equipment necessary to provide the Service plus the estimated cost of non-salvageable material (i.e., consistent with the Schedule of Rates, Rules and Regulations).

**Temporary Service** means a service that is required for a period of less than three years. Applicants requiring Temporary Service will be required to pay a Temporary Connection Fee.

**Transmission Customer** means a Customer that will receive service under the NLSO open access transmission tariff.

**Transmission Expansion Plan** refers to the most recent transmission system expansion plan for the Labrador Interconnected System filed with the Board. The Transmission Expansion Plan identifies Transmission Upgrades required to serve various load growth scenarios and the estimated costs to implement each upgrade.

**Transmission Upgrade** means capital projects undertaken to meet transmission system requirements, for example, to increase capacity, to improve reliability, to meet load growth, to meet generation interconnection and service requests, or to provide congestion relief.

**Transmission Voltage** means 46 kV or higher.

**Upstream Capacity Charge** means the contribution required from an Applicant requesting an increase in access to Capacity on Common Assets. The Upstream Capacity Charge cannot be less than zero.

**Upstream Capacity Cost** means the Expansion Cost per kW multiplied by the Applicant's Peak Demand increase as a result of their new/additional service request.

**3. POINT OF DELIVERY**

Hydro shall determine the point at which power and energy is delivered to the Customer's electrical system from Hydro's facilities.

**4. CUSTOMER CONTRIBUTION FOR SPECIFICALLY ASSIGNED ASSETS**

The Customer Contribution will equal the amount necessary to fully recover the initial capital investment from the Customer to whom the assets are specifically assigned. An additional Customer Contribution will apply to recover all Sustaining Capital for the Specifically Assigned Asset, as required.

Hydro will also recover the estimated annual operating and maintenance costs from the Customer through either a specifically assigned charge or payment to Hydro in accordance with a contractual arrangement.

Hydro will monitor new connections to Specifically Assigned transmission assets for a period of ten years. If other Customers come to be served by the Specifically Assigned Assets, Hydro will charge a Customer Contribution to the new Customer and reduce appropriately the original Customer Contribution through a refund.

**5. UPSTREAM CAPACITY CHARGE TO SUPPLY DEMAND REQUESTS**

This section will apply to determine the required Upstream Capacity Charge to supply demand requests<sup>2</sup> of greater than 200 kW from an Applicant.<sup>3</sup>

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<sup>2</sup> As stated in Section 2 Definitions, applications for multiple Services may be treated as a single Application.

<sup>3</sup> Applicants that are required to pay Customer Contributions for other Services (e.g., provision of Specifically Assigned Assets, distribution extensions or distribution upgrades, or a Temporary Service Fee) are also subject to the determination of the Upstream Capacity Charge computed in accordance with this Policy.

**5.1 Applicant Demand Requests of less than 1500 kW**

For Applicant Demand requests of less than 1500 kW, the Upstream Capacity Charge is calculated to equal the Upstream Capacity Cost less the Basic Capacity Investment Credit.

The Upstream Capacity Cost is computed based on the Applicant's projected increased Peak Demand valued at the Expansion Cost per kW. The Expansion Cost per kW is provided in Table 1 of Appendix A. The Upstream Capacity Charge is a one-time charge for both Temporary Service and Permanent Service to be paid in advance of Hydro providing the Service.

**5.2 Applicant Demand Requests of 1500 kW or greater**

Upon receipt of an Applicant's Demand request of 1500 kW or greater, Hydro will conduct a preliminary assessment to determine if compliance with the request would require acceleration of the Transmission Expansion Plan.

If Hydro concludes there is no acceleration of the Transmission Expansion Plan from complying with the Applicant request, the Upstream Capacity Charge will generally be computed using the same approach as described in Section 5.1. However, for Industrial Customer Applicants, the Demand Revenue Credit will be applied in addition to the Basic Capacity Investment Credit. (The Demand Revenue Credit is detailed further in Section 5.3).

If the potential exists for a material impact on the Transmission Expansion Plan, Hydro will conduct a System Impact Study to determine the technical requirements for interconnection or system upgrades and identify cost implications. The Applicant requesting Service will be required to pay Hydro the System Impact Study Charge.

If acceleration of the Transmission Expansion Plan is required, Hydro will determine the Expansion Advancement Cost. This cost reflects the difference between the cost of acceleration of the Transmission Expansion Plan and the value to existing Customers from plan acceleration. The value to existing Customers will be determined based the forecast reduction in Expected Unserved Energy resulting from the capital advancement. However, the credit provided based on the Expected Unserved Energy value to Customers will not exceed 50% of the cost of acceleration of the Transmission Expansion Plan. The procedures used to determine the Expansion Advancement Cost are provided in Appendix B to this Policy.

The Upstream Capacity Charge will then be computed as the Expansion Advancement Cost less the Basic Capacity Investment Credit and, when applicable, less the Demand Revenue Credit.

### **5.3 Demand Revenue Credit**

The Demand Revenue Credit is provided to Industrial Customer Applicants to reflect that future Demand revenues resulting from providing the new or additional service will partially offset the cost incurred to serve the Applicant's Peak Demand requirements.

The Demand Revenue Credit equals the Demand Revenue Credit per kW multiplied by the net of the Applicant's additional Peak Demand requirement less the Basic Capacity Investment. The Demand Revenue Credit per kW is provided in Table 1 of Appendix A. Hydro will update the Demand Revenue Credit per kW at the same time as it updates the Expansion Cost per kW.

The Demand Revenue Credit per kW will be reduced by 3.0% for each year that the estimated life of the Applicant's operations is less than 25 years. This

reduction reflects a reduced current value in the demand revenues to be provided by the Applicant with a Service life projection of less than 25 years.

The Demand Revenue Credit for Industrial Customer Applicants reflects that demand revenues from those Applicants are anticipated to be sustained for the long-term and will provide Demand revenues that are expected to materially offset the additional cost of the Common Assets, thereby reducing the existing Customer rate impacts. Given the level of uncertainty associated with duration of service for Applicants who do not meet the definition of Industrial Customer, Hydro will not provide a Demand Revenue Credit to non-industrial customers.

#### **5.5 Multiple Concurrent Requests**

In cases where new or increased Demand requirements have been requested concurrently by more than one Applicant that amount to 1500 kW or greater, the aggregate Upstream Capacity Charge shall be allocated among the Applicants based on a Proportionate Sharing Approach. In this circumstance, the Basic Capacity Investment Credit provided and the Demand Revenue Credit provided, if applicable, will reflect the number of Applicants used when computing the aggregate Upstream Capacity Charge.

#### **5.6 Transmission Customer Requests**

Hydro will conduct a System Impact Study to determine if an acceleration of its Transmission Expansion Plan is necessary to permit the NLSO to provide a requested service to a Transmission Customer. The Transmission Customer Applicant requesting service will be required to pay the System Impact Study Charge.

Any required contribution from a Transmission Customer Applicant is based on the calculation of the Expansion Advancement Cost. Transmission Customer

Applicants requesting Service are not eligible for a Basic Capacity Investment Credit.

#### **5.7 Common Asset Replacement and the End of Life**

Applicants that pay an Upstream Capacity Charge are not required to pay a Customer Contribution for the replacement of those Common Assets at the end of the asset life.

### **6. REVIEW OF UPSTREAM CAPACITY CHARGES**

#### **6.1 Accuracy of Peak Demand Forecast**

Hydro will conduct a 2-year review of the reasonableness of the forecast Peak Demand used in computing Upstream Capacity Charges. If the Customer's actual Peak Demand exceeds the forecast Peak Demand used in computing the Upstream Capacity Charge by greater than 10%, the Upstream Capacity Charge will be recalculated and will result in an additional charge to the Customer that paid the Upstream Capacity Charge.

#### **6.2 Refund Reviews**

In cases where the Upstream Capacity Charge paid by a Customer was computed using the Expansion Advancement Cost approach and resulted in a Transmission Upgrade providing a system Capacity addition exceeding the Customer's Peak Demand requirement by greater than 10%, the Upstream Capacity Charge will be reviewed to determine if a refund to the initial Applicant is appropriate as a result of the subsequent payment of Upstream Capacity Charges by new Customers.

Any refunds will be based on the amount of additional Upstream Capacity Charges facilitated by the Capacity made available by the initial Customer. The

refund review will be conducted annually and the eligible refund period is ten years from the date the Service is provided to the initial Customer.

**7. PROVISION OF SPECIAL FACILITIES OR ASSET RELOCATIONS**

Where special facilities are required or requested by the Applicant or any facility is relocated at the request of the Applicant, the Applicant shall pay Hydro in advance the estimated additional cost of providing the special facilities and the estimated cost of the relocation less any betterment.

**8. BOARD APPROVALS**

Hydro shall apply to the Board for approval of:

- (i) all Customer Contributions for Specifically Assigned Assets;
- (ii) all Upstream Capacity Charges that are calculated as greater than \$200,000; and
- (iii) any deviations from this Policy in the calculation of Customer Contributions or Upstream Capacity Charges.

**Appendix A**

Table 1 provides the Expansion Cost per kW and the Load Based Investment per kW applicable to the calculation of Upstream Capacity Charges. These factors will be updated as necessary with approval of the Board.

<b>Table 1</b>	
<b>Network Addition Policy – Computation Factors</b>	
Expansion cost per kW	\$465
Demand Revenue Credit per kW	\$250

**Appendix B**  
**Determining Expansion Advancement Cost**

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# 1 Introduction

If acceleration of the Transmission Expansion Plan for the Labrador Interconnected System (“LIS”) is required to comply with a request for Service from an Applicant, Hydro will determine the Expansion Advancement Cost. This cost reflects the difference between the cost of acceleration of the Transmission Expansion Plan and the value to existing customers from plan acceleration. This document provides the methodology used to determine the Expansion Advancement Cost.

Figure 1 illustrates Hydro’s Network Additions Policy process.

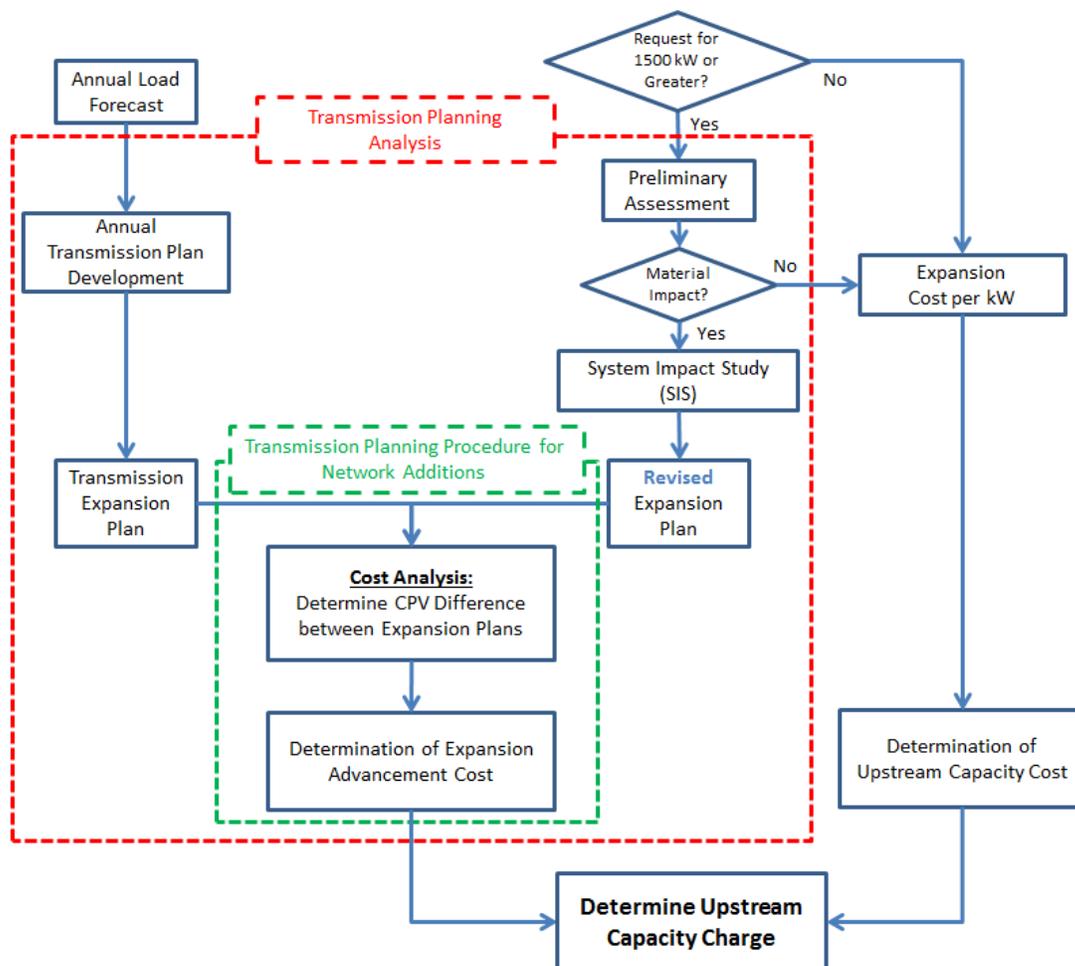


Figure 1 - Network Additions Process

## 1.1 Transmission Plan Development

Hydro performs an annual assessment of the previous Transmission Expansion Plan for the LIS based on its current demand forecast. This assessment allows for the determination of the timing of transmission system additions and modifications necessary to ensure safe, reliable, and economical long-term operation. On this basis, a new Transmission Expansion Plan is developed.

Hydro filed its Transmission Expansion Plan for the LIS on October 31, 2018.

## 1.2 System Impact Study

When Hydro receives an interconnection or load addition request from a Customer in excess of 1500 kW<sup>1</sup>, a preliminary assessment of the potential impact is undertaken to determine if compliance with the request would require acceleration of the Transmission Expansion Plan.

If there is potential for a material impact on the Transmission Expansion Plan, Hydro will conduct a System Impact Study to determine the technical requirements for interconnection or system upgrades and identify cost and benefit implications.<sup>2</sup> The Applicant is responsible for the costs of the System Impact Study.

If Hydro concludes there is no acceleration of the Transmission Expansion Plan from complying with the Applicant's request, the Upstream Capacity Charge will be computed as described in Section 5 of the Network Additions Policy. If acceleration of the Transmission Expansion Plan is required, Hydro will determine the Expansion Advancement Cost.

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<sup>1</sup> The request may be for a new customer or for increased demand from an existing customer. Large requests may also include the conversion of temporary or curtailable loads to permanent or firm loads.

<sup>2</sup> A customer interconnection or load addition is deemed to have a material impact if it requires an advancement of transmission system expansion, as defined in the Transmission Expansion Plan, or requires additional transmission system expansion which is not yet reflected in the Transmission Expansion Plan.

## 2 Network Additions Analysis

This section provides a description of the process for calculating the Expansion Advancement Cost based on the cumulative present value (“CPV”) impact associated with the acceleration of the Transmission Expansion Plan as well as the valuation of the reliability benefits for existing customers. The costs and benefits associated with each new large service request are examined over a 25-year study period and are evaluated in terms of CPV.

### 2.1 Inputs

The following inputs are required for the analysis:

- Hydro’s Transmission Expansion Plan, including capital costs, asset replacement schedules and operating costs;
- A revised peak demand forecast reflecting the Customer’s request;
- Details of the acceleration of the Transmission Expansion Plan,<sup>3</sup> including capital costs, asset replacement schedules, and operating costs;
- Escalation and discount rates in accordance with corporate assumptions;
- Fuel price forecasts in accordance with corporate assumptions; and
- Canadian Electricity Association (“CEA”) reliability statistics for transmission system elements.<sup>4</sup>

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<sup>3</sup> As per the results of the System Impact Study.

<sup>4</sup> CEA statistics are used as the default basis for the assumed availability of an asset. In the event that specific Hydro assets have a performance history that is notably different from CEA data, Hydro availability data shall be used.

## 2.2 Procedure

The Network Additions analysis includes the following considerations:<sup>5</sup>

- Capital Project Costs;
- Operating and Maintenance (“O&M”) Costs; and
- Reliability Assessment.

### 2.2.1 Capital Project Costs

Acceleration of the Transmission Expansion Plan will impact capital expenditures. Revised costs and timing are determined as part of the System Impact Study. The CPV for both the Transmission Expansion Plan and the accelerated Transmission Expansion Plan are determined using appropriate escalation indices and discount rates, permitting the calculation of the CPV difference between the two plans.

### 2.2.2 O&M Costs

Acceleration of the Transmission Expansion Plan also produces O&M cost impacts. These impacts can relate to equipment or to operating costs associated with peak shaving or backup generation, as appropriate.<sup>6</sup> Additionally, there may be an advancement of asset retirements where costs associated with the removal and/or decommissioning of existing equipment are incurred.<sup>7</sup> As is the case for capital costs, the CPV for O&M costs is determined for both the Transmission Expansion Plan and the accelerated plan using appropriate escalation indices and discount rates. The CPV difference for O&M costs is calculated accordingly.

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<sup>5</sup> Transmission losses are not considered in the Network Additions analysis. Rather, losses are a technical and economic design consideration in the System Impact Study. Losses are a factor in the determination of the least-cost technically viable solution and associated costs/benefits would be shared by all customers.

<sup>6</sup> In Labrador, this may include operation of the Happy Valley Gas Turbine or other generation as required.

<sup>7</sup> It is assumed that if an asset with remaining net book value is removed from service, it will be returned to inventory. Special consideration will be given to cost allocation in cases where it is not practical to return all assets to inventory.

### **2.2.3 Reliability Assessment**

The addition of a new large load and the resulting acceleration of increased transmission capacity has the potential to influence technical characteristics of the transmission system such as equipment ratings, voltage levels, and transient stability. Analysis may be performed to determine how relevant parameters affect the capacity of the LIS transmission system and thereby affect reliability. A System Impact Study therefore includes an assessment of the reliability impacts for existing customers.

The reliability impact is quantified in terms of expected unserved energy (“EUE”). EUE is a measure of the amount of customer demand not served due to capacity shortfalls. For the purposes of Network Addition analysis, EUE is valued using the cost of backup generation approximated by the projected costs of gas turbine fuel. Such an approach serves as a proxy for reliability to customers.

Given the high cost of backup generation, there is a potential that the calculated reliability benefits associated with a new interconnection may reach or exceed its capital cost. Hydro will limit the value of reliability benefits to 50% of the cost impacts resulting from the acceleration of the Transmission Expansion Plan, in accordance with Hydro’s Network Addition Policy. This approach acknowledges that the Transmission Expansion Plan acceleration is prompted by the requesting Customer.

The following procedure is used to determine the EUE for the study period.

1. Prepare a set of cases to reflect a range of loading conditions for the Transmission Expansion Plan and the accelerated plan scenarios.
2. Assess system capacity in consideration of applicable Transmission Planning Criteria<sup>8</sup>. Assessments will include a review of equipment ratings, voltages, and

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<sup>8</sup> NLSO Standard - Transmission Planning Criteria, TP-S-007.

- the transient stability metrics for the Labrador Integrated Transmission System, as applicable. Identify transfer limits for each case for all contingency conditions.
3. Prepare profiles of peak loads for the study period, based on historical load data, as well as peak load and energy forecasts.
  4. Determine the capacity shortfall for the various peak load profiles, measured as the difference between transmission transfer capability and expected loads.
  5. Calculate EUE based on the probability associated with the set of possible peak load levels and capacity shortfall multiplied by the expected unavailability of each system element. The assumed unavailability of each element is based on CEA reliability data.
  6. Multiply the EUE by the cost of backup energy to determine the proxy value power outage costs of EUE.
  7. Calculate the CPV of the EUE cost for the Transmission Expansion Plan and the accelerated plan using appropriate discount rates.

A positive reliability impact is considered to be a benefit to existing customers. Adverse reliability impacts associated with the interconnection of new customers will be addressed as part of the System Impact Study. Required transmission system upgrades will be identified to ensure acceptable reliability for all customers.

### **2.3 Results**

The results of the Network Additions analysis enable the calculation of the Expansion Advancement Cost based on a comparison of the CPV for all costs and benefits resulting

from the acceleration of the Transmission Expansion Plan. The items reflected in the analysis include:

- Capital Costs;
- Operating and Maintenance Costs; and
- Reliability benefits.

As stated previously, the reliability benefits shall be limited to 50% of the cost of acceleration of the Transmission Expansion Plan.