

1 Q. **Reference: Volume II, Exhibit 13: 2013 Cost of Service Study**

2 Please identify each major Island Interconnected System change from 2007 Test
3 Year to 2013 Test Year identifying additional transmission lines, sources of energy
4 supply (i.e., including both generation and purchases), terminal stations, power
5 transformers, capacitor banks, etc. For each system change, indicate whether the
6 asset is designated as common or specifically assigned, or in the case of new energy
7 supply, whether the addition changed the designation of existing assets. (Volume
8 II, Exhibit 13)

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11 A. Please see below each major Island Interconnected System change from the 2007
12 Test Year to the 2015 Test Year.

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14 **2007**

- 15 • The Corner Brook Frequency Converter 66/6.6 kV, 21/28 MVA, 50 Hz
16 transformer, T1, was replaced with a new unit. This unit is specifically assigned
17 to Corner Brook Pulp and Paper.

18 **2008**

- 19 • Began purchasing power from the St. Lawrence wind farm. Revenue metering
20 added to NP Laurentian Substation for this interconnection. The revenue
21 metering is assigned Common. There has been no change to existing asset
22 assignments due to this addition.

- 23 • The Hawke's Bay Terminal Station was modified including:

- 24 ○ new 66 kV and 12.5 kV bus work, and
25 ○ new 12.5 kV disconnect switches (B2T1-1, B3T2-1, B3T3-1, and
26 B2B3-1).

- 1 • At the Corner Brook Frequency Converter, 12 new 66 kV wall bushings were
2 purchased, with six installed in 2008 (the remaining six were installed in 2012
3 through a contract paid by Corner Brook Pulp and Paper). In addition, both the
4 50 Hz and 60 Hz rotors were rewound. This equipment is specifically assigned
5 to Corner Brook Pulp and Paper.
- 6 • The Wiltondale transformer failed and was replaced with a spare transformer
7 purchased from Newfoundland Power. This equipment is specifically assigned to
8 Hydro Rural.

9 **2009**

- 10 • The Cat Arm Unit 2 governor system was replaced. This equipment is assigned
11 Common.
- 12 • Energy receipts commenced from the base generation former Abitibi-
13 Consolidated generating facilities¹. The addition did not change the designation
14 of existing assets.
- 15 • A spare 13.8/230 kV, 60/80/100 MVA generator unit transformer was
16 purchased for use in multiple hydro-electric generating stations. It is located at
17 Upper Salmon. This equipment is assigned Common.
- 18 • At the Corner Brook Frequency Converter, the automatic voltage regulators
19 (AVR) and liquid rheostat were replaced. This equipment is specifically assigned
20 to Corner Brook Pulp and Paper.
- 21 • At the Howley Terminal Station, the 69 kV circuit breaker L51T2 was replaced.
22 This equipment is assigned Common.
- 23 • Began purchasing power from the Fermeuse wind farm. Revenue metering was
24 added to NP Fermeuse Substation for this interconnection. The revenue

¹ This is the base generation at Grand Falls, Bishop's Falls and Buchans that was formerly used to supply Abitibi's paper mill operations in Grand Falls-Windsor.

1 metering is assigned Common. There has been no change is existing asset
2 assignments due to this addition.

- 3 • At the Hawke’s Bay Terminal Station, a 138 kV disconnect switch L41-1 was
4 added to facilitate the installation of the mobile transformer substation P-235.
5 This equipment is specifically assigned to Hydro Rural.

6 **2010**

- 7 • At the Bay d’Espoir Generating Station, Unit 2 stator was rewound. This
8 equipment is assigned Common.
- 9 • At the Bottom Brook Terminal Station, the 138 kV circuit breaker B3L50 was
10 replaced. This equipment is assigned Common.
- 11 • At the Daniel’s Harbour Terminal Station, all seven 66 kV disconnect switches
12 and both 66 kV ground switches were replaced. This equipment is specifically
13 assigned to Hydro Rural.
- 14 • At the Cow Head Terminal Station, the 66 kV bus work, all five 66 kV disconnect
15 switches and both 66 kV ground switches were replaced. This equipment is
16 specifically assigned to Hydro Rural.

17 **2011**

- 18 • At the Oxen Pond Terminal Station, the 66 kV disconnect switch B2B5-2 was
19 replaced. This equipment is assigned Common.
- 20 • The mobile transformer substation P-235 was upgraded, including new
21 transformer bushings, cooling system, trailer, protection and control panel,
22 breaker and disconnect switches. This equipment is assigned Common.
- 23 • At the Conne River Terminal Station, 69 kV disconnect switches L20T1 and T1
24 power fuses were replaced. This equipment is specifically assigned to Hydro
25 Rural.
- 26 • At the English Harbour West Terminal Station, the 69 kV disconnect switch
27 L20T1 was replaced. This equipment is specifically assigned to Hydro Rural.

- 1 • At the Hawke’s Bay Terminal Station, the 66 kV disconnect switches, B1L21-1,
2 B1L21-2 and B1L21-BP were replaced. This equipment is specifically assigned to
3 Hydro Rural.
- 4 • At the St. Anthony Airport Terminal Station, 69 kV circuit breaker B1T1 was
5 replaced. This equipment is specifically assigned to Hydro Rural.
- 6 • At the Come By Chance Terminal Station, four 38.35 MVar capacitor banks and
7 associate equipment were installed and paid for by Nalcor Energy. Two were
8 installed in December 2011 and two were installed in February 2012.

9 **2012**

- 10 • At the Bay d’Espoir Generating Station, Unit 4 stator was rewound. This
11 equipment is assigned Common.
- 12 • The Long Harbour Terminal Station was removed from service and the Voisey’s
13 Bay Nickel (VBN) Terminal Station added. Transmission line TL208 was
14 extended from Long Harbour to VBN. At the Western Avalon Terminal Station,
15 the 230 kV disconnect switches B1L08-1 and B1L08-2, circuit breaker B1L08 and
16 ground switch L08G have had their plant assignments changed from Common to
17 specifically assigned to Vale. New 230 kV disconnect switches B1L08-1 and
18 B1L08-2 and a new ground switch L08G replaced the original equipment at
19 Western Avalon as part of the Vale interconnection. Transmission line TL208
20 has had its plant assignment changed from Common to specifically assigned to
21 Vale. The Voisey’s Bay Nickel Terminal Station assets are specifically assigned to
22 Vale. All assets located at the Long Harbour Terminal Station have been
23 removed from service and are no longer included in the cost of service.
- 24 • At the St. Anthony Airport Terminal Station, 69 kV circuit breaker B1L57 was
25 replaced. This equipment is specifically assigned to Hydro Rural.
- 26 • At the Hinds Lake Generating Station, the excitation system was replaced. This
27 equipment is assigned Common.

- 1 • At the Hawke’s Bay Terminal Station, the 66 kV circuit breaker B1L21 and the 66
2 kV ground switch L21G were replaced. This equipment is specifically assigned to
3 Hydro Rural.
- 4 • The Rocky Harbour Terminal Station was rebuilt, including 66 kV and 12.5 kV
5 buses, 66 kV disconnect switch L26T1 and associated power fuses, control
6 panels and cables, station grounding and station service transformer. The
7 66/12.5 kV power transformer was not replaced. This equipment is specifically
8 assigned to Hydro Rural.
- 9 • At the Sunnyside Terminal Station, the 230 kV circuit breaker L03L06 was
10 replaced. This equipment is assigned Common.
- 11 • At the Massey Drive Terminal Station, the 66 kV circuit breaker B2T2 was
12 replaced. This equipment is assigned Common.
- 13 • At the Doyles Terminal Station, the 66 kV circuit breaker B1L15 was replaced.
14 This equipment is specifically assigned to Newfoundland Power.
- 15 • At the Bottom Brook Terminal Station, the 138 kV circuit breaker B2L14 was
16 replaced. This equipment is assigned Common.

17 **2013**

- 18 • At the Upper Salmon Generating Station, the generator excitation system was
19 replaced. This equipment is assigned Common.
- 20 • At the Holyrood Thermal Generating Station, the Unit 3 generator excitation
21 system was replaced. This equipment is assigned Common.
- 22 • At the Bay d’Espoir Generating Station, Unit 1 stator was rewound. This
23 equipment is assigned Common.
- 24 • At the Springdale Terminal Station, the 138 kV circuit breaker B1L22 was
25 replaced. This equipment is assigned Common.
- 26 • At the Holyrood Terminal Station, the 66 kV circuit breaker B7L38 was replaced.
27 This equipment is assigned Common.

- 1 • At the Hardwoods Terminal Station, the 230 kV disconnect switch B1T2 was
2 replaced. This equipment is assigned Common.

3 **2014**

- 4 • At Bay d'Espoir Generating Station, Unit 3 stator was rewound. This equipment
5 is assigned Common.

- 6 • At the Holyrood Thermal Generating Station, a 123.5 MW combustion turbine
7 was added. The combustion turbine is connected to the Holyrood Terminal
8 Station via the unit 13.8/230 kV step up transformer T4 and a new 230 kV circuit
9 breaker B4B15 and associated 230 kV motor operated disconnect switches
10 B4B15-1 and B4B12-1. This equipment is assigned Common.

- 11 • At Oxen Pond Terminal Station, 230/66 kV, 40/53.3/66.6 MVA transformer T1
12 was replaced with a 150/200/250 MVA transformer. The 230/66 kV,
13 75/100/125 MVA transformer T3 was replaced with a 150/200/250 MVA
14 transformer. The 66 kV circuit breakers B2T1 and B5T3 and 66 kV disconnect
15 switches B2T1-1 and B5T3-1 were replaced with new 66 kV circuit breakers and
16 disconnect switches having a higher current rating. This equipment is assigned
17 Common.

- 18 • At Sunnyside Terminal Station, 230/138 kV, 75/100/125 MVA transformer T1
19 that was destroyed by fire is replaced with the 230/138 kV, 75/100/125 MVA
20 transformer T8 from Holyrood. The Sunnyside 230 kV motor operated
21 disconnect switch B1T1-1, and 138 kV circuit breaker B2T1 damaged by the fire
22 associated with the Sunnyside T1 failure was replaced with new equipment. The
23 230 kV circuit breaker B1L03 was replaced. Station services damaged by the T1
24 fire were replaced. This equipment is assigned Common.

- 25 • At Holyrood Terminal Station, a new 230/138 kV, 75/100/125 MVA transformer
26 was installed to replace the transformer capacity loss associated with the

1 relocation of Holyrood T8 to Sunnyside Terminal Station. This equipment is
2 assigned Common.

3 • At Holyrood Terminal Station, 230 kV circuit breakers B1L17, B1B11, and B2B11
4 were replaced with a new 230 kV circuit breaker. This equipment is assigned
5 Common.

6 • At Wiltondale Terminal Station, rebuild 66 kV and 12.5 kV buses including
7 replacement of 66 kV disconnect switches B1T1, B1L29-1, B1L29-2 and B1L29-
8 BP, circuit breaker B1L29, 12.5 kV recloser and station service transformer. This
9 equipment is assigned Hydro Rural.

10 • At Cow Head Terminal Station, the 66 kV circuit breaker B1L27 was replaced
11 with a new circuit breaker. This equipment is assigned Hydro Rural.

12 **2015**

13 • At Sunnyside Terminal Station, a new 230 kV circuit breaker (B1T1) is scheduled
14 to be installed to provide a dedicated high side circuit breaker for 230/138 kV
15 transformer T1. This equipment is assigned Common.

16 • At Oxen Pond Terminal Station, a 230 kV bus tie circuit breaker (B1B6) and
17 associated 230 kV motor operated disconnect switches B1B6-1 and B1B6-2 are
18 scheduled to be installed. The 230 kV line TL218 is scheduled to be relocated
19 from its bus B1 tie in location to a new bus B6 location using a new 230 kV
20 circuit breaker B6L18 and associated 230 kV motor operated disconnect
21 switches B6L18-1 and B6L18-2. The 230 kV circuit breaker B1L18 and associated
22 230 kV disconnect switches B1L18-1 and B1L18-2 are scheduled to be removed
23 from service. This new equipment is assigned Common.

24 • At Hardwoods Terminal Station, the 230/66 kV, 40/53.3/66.6 MVA transformer
25 T1 is scheduled to be removed from service and replaced by the 230/66 kV,
26 75/100/125 MVA transformer from Oxen Pond (old Oxen Pond T3). The 66 kV

1 disconnect switch B7T1-1 is scheduled to be replaced with a new disconnect
2 switch with a higher current rating. This equipment is assigned Common.

3 • At Holyrood Terminal Station, 230 kV circuit breakers B2L42, B3B13, and B3L18
4 are scheduled to be replaced. This equipment is assigned Common.

5 • At Bay d'Espoir Terminal Station, #1 circuit breaker B4B5 is scheduled to be
6 replaced. This equipment is assigned Common.