ONTARIO POWER GENERATION

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June 18, 2014

VIA RESS AND COURIER

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto, ON
M4P 1E4

Dear Ms. Walli,

Re: EB-2014-0194 - Ontario Power Generation - Section 92 Application for Leave to Construct Transmission Line – New Post Creek Generating Station

Attached please find an Application by Ontario Power Generation Inc. ("OPG") requesting Leave to Construct for a new 115 kV wood pole transmission line from OPG's proposed New Post Creek generating station on the Abitibi River to the Hydro One transmission system.

Also attached is a completed Ontario Energy Board form "Preliminary Filing Requirements For a Notice of Proposal under Sections 80 and 81 Of the *Ontario Energy Board Act, 1998*" as specified in section 4.1 of the Minimum Filing requirements for electricity transmission projects under Section 92 of the Ontario Energy Board Act.

I am providing three (3) hardcopies of OPG's Application and one electronic copy filed through the Board's Regulatory Electronic Submission System (RESS).

OPG's Application will be available on OPG's public website on June 19, 2014 at www.opg.com/About OPG/Regulatory Affairs/OEB Applications (http://www.opg.com/about/regulatory-affairs/oeb-applications/Pages/oeb-applications.aspx).

Yours truly,

[Original Signed By]

Andrew Barrett

cc: Fred Cass, Aird & Berlis LLP
Carlton Mathias, OPG
Regulatory Affairs Records, OPG

ONTARIO ENERGY BOARD

PRELIMINARY FILING REQUIREMENTS
FOR A NOTICE OF PROPOSAL UNDER SECTION 81
OF THE *ONTARIO ENERGY BOARD ACT, 1998*

IN THE MATTER OF an Application by Ontario Power Generation Inc. for an order or orders granting leave to construct a new 115 kilovolt transmission line approximately 7 kilometers in length, near New Post Creek in Northeastern Ontario.

PART I: General Minimum Filing Requirements

1.1 Identification of the Parties

1.1.1 Applicant

Name of Applicant: Ontario Power Generation Inc. ("OPG"). OPG is applying on behalf of itself and Coral Rapids Power Limited Partnership, who are finalizing a partnership agreement.

Address of Head Office:	700 University Avenue
	Toronto, Ontario
	M5G 1X6
	Telephone: (416) 592-2555 (Main Switchboard)
	Facsimile Number: n/a
	E-mail Address: webmaster@opg.com
Name of Individual to Contact:	Greg Towstego
	Telephone: (416) 592-6846
	Facsimile Number: (416) 592-8519
	E-mail Address: greg.towstego@opg.com

1.1.2 Other Parties to the Transaction or Project

Coral Rapids Power Limited Partnership ("Coral Rapids Power" or "CRP")

Address of Head Office:	11 Elm Street North
	Timmins, Ontario
	P4N 6A3
	Telephone: n/a
	Facsimile Number: n/a
	E-mail Address: info@coralrapidspower.com
Name of Individual to Contact:	Wayne Ross
	Telephone: (705) 268-3072 x245
	Facsimile Number: n/a
	E-mail Address: wross@coralrapidspower.com

1.2 Relationship between Parties to the Transaction or Project

1.2.1 The officers, directors and shareholders for OPG are as follows:

OPG Officers:

Bernard Lord	Board Chair
Tom Mitchell	President and Chief Executive Officer
Bruce Boland	Senior Vice President, Commercial Operations and Environment
Carlo Crozzoli	Senior Vice President, Corporate Business Development and Chief Risk Officer
Christopher Ginther	Senior Vice President, Law and General Counsel and Chief Ethics Officer
Robin Heard	Interim Senior Vice President and Chief Financial Officer
Glenn Jager	Chief Nuclear Officer
David Kaposi	Vice President, Chief Investment Officer
Barb Keenan	Senior Vice President, People and Culture
Catriona King	Vice President, Corporate Secretary and Executive Operations
John Lee	Vice President, Treasurer
Scott Martin	Senior Vice President, Business and Administrative Services
Mike Martelli	Senior Vice President, Hydro-Thermal Operations
Bill Robinson	Senior Vice President, Nuclear Projects

OPG Directors:

- Bernard Lord, Board Chair: President and CEO of the Canadian Wireless Telecommunication Association and the Chairman of the Mobile Giving Foundation Canada. He serves as a corporate director for Médavie Blue Cross, and Clean Air Power. He also serves on the North American Advisory Board of Alexander Proudfoot. Former Premier of New Brunswick (1999-2006).
- Tom Mitchell, President and CEO: Chair of the World Association of Nuclear Operators (WANO) Atlanta Centre Governing Board, and by virtue of that appointment, is a member of the WANO Governing Board in London, U.K.
- Nicole Boivin: Business executive with more than 30 years experience in financial services, telecommunications, and public and not for profit enterprises. Ms. Boivin was the Chief Branding and Communications Officer for Manulife.
- William A. (Bill) Coley: Director of Peabody Energy and E.R. Jahna Industries and a member of the International Technical Advisory Committee of Nuclear Electric Insurance Limited.
- Elisabeth (Lisa) DeMarco: Partner at Norton Rose Fulbright Canada LLP, with over 15 years of experience in the law relating to climate change, clean energy and clean technology.
- Brendan Hawley: Principal, Brendan Hawley & Associates (BHA) – a bilingual consultancy specializing in advocacy communications that focuses on working with clients in both the public and private sectors.
- John Herron: Recently retired from Entergy where he was the President, CEO and Chief Nuclear Officer of Entergy Nuclear. Currently serves on the board of directors for Duke Energy.
- Roberta L. Jamieson: President and CEO of Indspire (formerly the National Aboriginal Achievement Foundation).
- Ira T. Kagan: A founding partner of KAGAN SHASTRI LLP (Lawyers).
- M. George Lewis: Member of the RBC Group Executive, also Chairman of RBC Global Asset Management Inc.
- Peggy Mulligan: Was the Executive Vice President and Chief Financial Officer, Valeant Pharmaceuticals International, Inc. until December 2010.

- Gerry Phillips: Former management consultant who served in six cabinet portfolios in Ontario, including two periods as Ontario's Minister of Energy (2007-2008, and on an interim basis in 2009 when he was appointed Minister of Energy and Infrastructure).

OPG's sole shareholder is Her Majesty the Queen in Right of the Province of Ontario, as represented by the Minister of Energy.

The officers, directors and shareholders for CRP are as follows:

CRP Officers:

- Wayne Ross, President
- Rod Reimer, Secretary and Financial Administrator

CRP Directors:

- Stan Sutherland
- Pat Chilton
- Arnold May

CRP's shareholder is Pahquataskahmekook General Corporation, which is owned by the Taykwa Tagamou Nation.

1.2.2 Corporate chart

A corporate chart for the partnership arrangement between OPG and CRP is not yet available as the partnership details are being finalized. Information regarding the overall structure is as follows.

In April 2006, a Memorandum of Understanding was signed between OPG and the Taykwa Tagamou Nation to jointly explore hydroelectric development opportunities within the Abitibi River drainage basin, and as a result of this initiative, a potential waterpower generation location was identified on New Post Creek, a tributary of the Abitibi River. Coral Rapids Power General Partner Inc. was formed as an incorporated company wholly owned by the Taykwa Tagamou Nation, to explore and develop hydroelectric opportunities within the Traditional Territory of the Taykwa Tagamou Nation. Coral Rapids Power Limited Partnership

was subsequently created to enter into a limited partnership with OPG for the purpose of planning, constructing and operating an approximately 25 megawatt run-of-the-river hydroelectric development on New Post Creek. The project is intended to be owned and operated by the limited partnership of which OPG will be a general partner. The proposed partnership agreement was initially negotiated a number of years ago, and is currently being brought up to date in order to have the partnership finalized and in place prior to the start of the execution phase of the project.

1.3 Description of the Businesses of Each of the Parties

1.3.1 Nature of Businesses

OPG:

OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity in Ontario. OPG's focus is on the efficient generation and sale of electricity from its generating assets, while operating in a safe, open and environmentally-responsible manner. OPG was established under the *Business Corporations Act* (Ontario) and is wholly owned by the Province of Ontario.

OPG owns a diversified portfolio of regulated and unregulated electricity generating facilities with a generating capacity of 16,229 MW (as at December 31, 2013), including two nuclear generating stations, 65 hydroelectric stations, three thermal stations and two wind turbines.

OPG also owns two nuclear generating stations which are leased on a long-term basis to Bruce Power L.P.

In addition, OPG has a 49.95 percent partnership interest in Brighton Beach Power L.P. (Brighton Beach LP), a limited partnership formed with ATCO Power Canada Ltd. (49.95 percent) and the general partner of the partnership, Brighton Beach Power Ltd. (0.1 percent). The shareholders of Brighton Beach Power Ltd. are OPG (50 percent) and ATCO Power Canada Ltd. (50 percent). Brighton Beach LP is a 580 MW combined cycle gas turbine electricity generating facility on the site of the former J.C. Keith Generating Station site in Windsor, Ontario.

OPG also has a 49.95 percent partnership interest in Portlands Energy Centre L.P. (Portlands), a limited partnership formed with TransCanada Energy Ltd. (49.95 percent) and the general partner of the partnership, Portlands Energy Centre Inc. (0.1 percent). The shareholders of Portlands Energy Centre Inc. are OPG (50 percent) and TransCanada Energy Ltd. (50 percent). Portlands is a 550 MW combined cycle co-generation natural gas turbine electricity generating facility on the former R. L. Hearn Generating Station site in the port area of downtown Toronto.

Coral Rapids Power Limited Partner Inc.:

Coral Rapids Power General Partner Inc., a company formed and wholly owned by the Taykwa Tagamou Nation to enter into the electricity generation business in Ontario, was incorporated by the Chief and Council in 2004 as a vehicle to carry out potential commercial activities related to electricity generation. Taykwa Tagamou Nation and its incorporated company subsequently created Coral Rapids Power Limited Partnership based in Timmins, Ontario, to enter a limited partnership with OPG for the purpose of planning, constructing and operating an approximately 25 MW run of the river hydroelectric generation facility on New Post Creek. Coral Rapids Power Limited Partnership will also pursue other hydroelectric projects in the Traditional Territory of the Taykwa Tagamou Nation.

1.3.2 Geographic Territory

OPG's geographic territory of operation is the province of Ontario, with generating facilities located across the province. OPG also engages in transactions with neighbouring jurisdictions in Canada and the U.S. through the interconnected markets.

The territory for Coral Rapids Power is the Traditional Territory of the Taykwa Tagamou Nation. The Taykwa Tagamou Nation is in the process of defining and determining the traditional territory that its members use and have used historically. Their current understanding of the size of their territory is the territory covered by Treaty #9, the James Bay Treaty, to which the Taykwa Tagamou Nation is a signatory.

1.3.3 Annual Sales of Existing Generation Output

OPG's annual generation revenues for 2013 through the IESO markets, Energy Supply Agreements with the Ontario Power Authority, and agreements with the Ontario Electricity Financial Corporation was approximately $4.4B. The production volume associated with this amount was approximately 80 TWh. Coral Rapids Power has no existing generation output.

1.3.4 Board Licences

OPG:

- OPG Electricity Generation Licence (EG-2003-0104)
- Lower Mattagami Energy Limited Partnership Electricity Generation Licence (EG-2010-0254)
- Lower Mattagami Limited Partnership Electricity Generation Licence (EG-2012-0354)

OPG currently has an application before the Board for 2014-2015 Payment Amounts for OPG's Prescribed Facilities (EB-2013-0321).

CRP:

CRP currently holds no Board licences.

1.4 Current Competitive Characteristics of the Market

1.4.1 Generation Capacity Prior to Project

OPG's generation capacity prior to the project is 16,229 MW (as at December 31, 2013). CRP currently has no generation capacity.

1.4.2 Generation Market Share Prior to Project

OPG's share of electricity production in Ontario was approximately 52% in 2013. CRP currently has no market share.

1.5 Description of Proposed Project

1.5.1 Detailed Description of Proposed Project

On November 23, 2010, the Ontario Government released a Long Term Energy Plan, where New Post Creek was identified as a project to contribute towards Ontario's goal of 9,000 megawatts of hydroelectric capacity by 2018. On June 26, 2013, the Ontario Minister of Energy issued a directive to the Ontario Power Authority ("OPA") directing the OPA to enter into negotiations for a power purchase agreement with OPG to procure electricity from OPG and the Taykwa Tagamou First Nation proposed 25 megawatt New Post Creek hydroelectric generating station. Further, on August 6, 2013, the Ontario Ministry of Energy issued a News Release announcing that OPG and its partner, Coral Rapids Power, are moving forward to develop approximately 25 megawatts of renewable hydroelectric power through the construction of a generating station on New Post Creek near its outlet to the Abitibi River. Ontario's Long-Term Energy Plan issued in December 2013 again makes reference to New Post Creek, indicating that the government directed the OPA to enter into negotiations with OPG and the Taykwa Tagamou Nation for a power purchase agreement to procure electricity from the proposed New Post Creek hydroelectric generating station, with a capacity of approximately 25 MW.

OPG plans to seek an order or orders granting leave to construct a new 115 kilovolt transmission line, approximately 7 kilometers in length, near the junction of New Post Creek and the Abitibi River in Northeastern Ontario. The new transmission line is required to transmit electricity from the New Post Creek Hydroelectric Project ("New Post Creek Project" or "Project"), to be constructed on the east side of the Abitibi River, to an existing Hydro One transmission line west of the Abitibi River. The project to construct the new transmission line is referred to hereinafter as the "Proposed Line".

The Proposed Line is located in the District of Cochrane within the Geographic Township of Pinard, approximately 75 km north of the Town of Smooth Rock Falls and about 13 km northeast of OPG's Abitibi Canyon Generating Station. The Proposed Line will be located primarily to the west of the proposed powerhouse location, which is on the Abitibi River about 6 km upstream (i.e. south) of the outlet of New Post Creek to the Abitibi River.

The right-of-way for the Proposed Line is an area roughly 7 km long and approximately 30 meters in width running almost directly west from the site of the proposed new powerhouse on the eastern shore of the Abitibi River. The line will terminate at an existing Hydro One 115 kV transmission line located about 7 km west of the proposed powerhouse, running in a roughly northerly direction from Abitibi Canyon Generating Station to OPG's Otter Rapids Generating Station.

1.5.2 Generation Capacity after Completion of Project

Completion of the proposed transmission line, which is the subject of OPG's planned leave to construct application, will have no impact on the generating capacity of OPG or CRP. In the context of the New Post Creek generation project which is driving the need for the transmission line, OPG's generation capacity following completion of the Project will be increased by the capacity of the New Post Creek generating facility, or 25 MW. CRP will move from having no generation capacity to having 25 MW of capacity.

1.5.3 Generation Market Share after Completion of Project

Completion of the proposed transmission line, which is the subject of OPG's planned leave to construct application, will have no impact on the market share of OPG or CRP. In the context of the New Post Creek generation project which is driving the need for the transmission line, due to the small size of the project, OPG's share of electricity production in Ontario following completion of the Project will be essentially unaffected. CRP will move from having no market share to having a negligible share of the Ontario market.

1.5.4 Impact on Competition

The completion of the proposed transmission line is not expected to have any impact on competition. In the context of the New Post Creek generation project which is driving the need for the transmission line, due to the small size of the New Post Creek Project, competition is again not expected to be affected.

1.5.5 Confirmation that the Project will have no impact on Open Access

The completion of the proposed transmission line is not expected to have any impact on open access to the transmission or distribution system.

1.6 Other Information

1.6.1 Compliance with Licence and Code Requirements

All parties to the proposed project are in compliance with all applicable licence and code requirements and will continue to be in compliance after completion of the project.

The design and maintenance of the Proposed Line will be in accordance with good utility practice, as established in the Transmission System Code, and in accordance with Northeast Power Coordinating Council ("NPCC") and North American Electric Reliability Council ("NERC") planning and operating standards.

A connection agreement with Hydro One, to enable electricity to be transferred to the IESO-controlled grid via the Proposed Line, will be negotiated prior to the in-service of the new generating station.

PART II: Section 80 of the Act – Transmitters and Distributors Acquiring an Interest in Generators or Constructing a Generation Facility

Part II of the Preliminary Filing Requirements is not applicable.

PART III: Section 81 of the Act – Generators Acquiring an Interest in Generators or Constructing a Transmission or Distribution System

3.1 Effect on Competition

3.1.1 Description of Transmission or Distribution System being Acquired or Constructed

See item 1.5.1.

3.1.2 Connection to Transmission or Distribution System being Acquired or Constructed

The proposed New Post Creek generating station will be connected directly to the Proposed Line via a small switchyard to be constructed as part of the generating station. The Proposed Line, after traversing its route, will then be connected to the Hydro One transmission system via a tap arrangement.

3.1.3 Generation Servicing of Load Pocket or Constrained On

The proposed facility is not expected to serve a load pocket, and is not expected to be constrained-on due to transmission constraints.

3.1.4 Must-run Contract

The issue of a must-run contract is not relevant for the proposed transmission line. In the context of the New Post Creek generation project which is driving the need for the transmission line, there is no expectation of a requirement for a must-run contract with the IESO.

EXHIBIT LIST			
EXH	TAB	SCH	CONTENTS
A			ADMINISTRATION
	1	1	Exhibit List
B			APPLICATION
	1	1	Application
	1	2	Overview of OPG and Coral Rapids Power
	2	1	Overview of New Post Creek Hydroelectric Facilities
	2	2	Project Location
	2	3	Proposed Line
	3	1	Need for Proposed Line
	4	1	Transmission Alternatives
	5	1	Project Costs and Economics
	5	2	Public Interest Considerations
C			PROJECT PLANNING
	1	1	Construction and In-Service Schedule
	1	2	Construction and Project Administration
D			PROJECT DETAILS
	1	1	Schematic of Proposed Line
	1	2	Pole Structures
	2	1	Maps of Proposed Line
E			DESIGN SPECIFICATIONS AND OPERATIONAL DATA
	1	1	Operation / Codes, Standards and Regulations
F			LAND MATTERS
	1	1	Land Matters
G			COMMUNITY AND STAKEHOLDER CONSULTATION
	1	1	Community and Stakeholder Consultations
	2	1	Environmental Assessment
H			SYSTEM IMPACT ASSESSMENT
	1	1	IESO System Impact Assessment
I			CUSTOMER IMPACT ASSESSMENT
	1	1	Hydro One Customer Impact Assessment

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B;

AND IN THE MATTER OF an Application by Ontario Power Generation Inc. for an order or orders granting leave to construct a new 115 kilovolt transmission line approximately 7 kilometers in length, near New Post Creek, a tributary of the Abitibi River in Northeastern Ontario, approximately 75 kilometers north of the Town of Smooth Rock Falls and 13 kilometers northeast of Abitibi Canyon Generating Station owned by Ontario Power Generation Inc.

APPLICATION

1. The applicant, Ontario Power Generation Inc. ("OPG"), is incorporated under the *Business Corporations Act (Ontario)*, with its head office in the City of Toronto. The principal business of OPG is the generation and sale of electricity in Ontario. OPG is applying on behalf of itself and Coral Rapids Power Limited Partnership ("Coral Rapids Power" or "CRP"), who are finalizing a partnership agreement.

2. In April 2006, a Memorandum of Understanding was signed between OPG and the Taykwa Tagamou Nation to jointly explore hydroelectric development opportunities within the Abitibi River drainage basin, north of Highway 11. As a result of this initiative, a potential waterpower generation location was identified on New Post Creek, a tributary of the Abitibi River. Coral Rapids Power General Partner Inc. was formed as an incorporated company wholly owned by the Taykwa Tagamou Nation, and was given a mandate to explore and develop hydroelectric opportunities within the Traditional Territory of the Taykwa Tagamou Nation.

3. The Taykwa Tagamou Nation and its incorporated company subsequently created CRP to enter into a limited partnership with OPG ("the Partnership") for the purpose of planning, constructing and operating an approximately 25 megawatt run-of-the-river hydroelectric development on New Post Creek. The project is intended to be owned and operated by the Partnership of which OPG will be a general partner. The proposed partnership agreement was initially negotiated a number of years ago, and is currently being brought up to date in order to have the partnership finalized and in place prior to the start of the execution phase of the project. For reasons discussed in Ex. C-T1-S1, this Leave to Construct application is being made at this time to accommodate scheduling constraints for construction of the proposed transmission line.

4. In this Application, OPG applies to the Ontario Energy Board ("OEB") pursuant to section 92 of the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B (the "OEB Act") for an order or orders granting leave to construct a new 115 kilovolt transmission line, approximately 7 kilometers in length, near the junction of New Post Creek and the Abitibi River in Northeastern Ontario. See the map provided as Ex. B-T2-S2 Attachment 1.

5. The new transmission line is required to transmit electricity from the New Post Creek Hydroelectric Project ("New Post Creek Project" or "Project"), to be constructed on the east side of the Abitibi River, to an existing Hydro One transmission line west of the Abitibi River. The project to construct the new transmission line is referred to hereinafter as the "Proposed Line".

6. On November 23, 2010, the Ontario Government released a Long Term Energy Plan, where New Post Creek was identified as a project to contribute towards Ontario's goal of 9,000 megawatts of hydroelectric capacity by 2018. On June 26, 2013, the Ontario Minister of Energy issued a directive to the Ontario Power Authority ("OPA") directing the OPA to enter into negotiations for a power purchase agreement with OPG to procure electricity from OPG and the Taykwa Tagamou First Nation proposed 25 megawatt New Post Creek hydroelectric generating station. Further, on August 6, 2013, the Ontario Ministry of Energy issued a News Release announcing that OPG and its partner, Coral

Rapids Power, are moving forward to develop approximately 25 megawatts of renewable hydroelectric power through the construction of a generating station on New Post Creek near its outlet to the Abitibi River. Ontario's Long-Term Energy Plan issued in December 2013 again makes reference to New Post Creek, indicating that the government directed the OPA to enter into negotiations with OPG and the Taykwa Tagamou Nation for a power purchase agreement to procure electricity from the proposed New Post Creek hydroelectric generating station, with a capacity of approximately 25 MW.

7. Construction of the Proposed Line is scheduled to begin in early 2015, assuming the leave sought in this Application is granted, along with other required approvals. The planned in-service date for the Proposed Line is July 2017. A detailed construction schedule is filed as Ex. C-T1-S1.

8. The Proposed Line is in the public interest because it will accommodate new electricity generation from the available water flows along New Post Creek, a renewable resource, following completion of the proposed New Post Creek Project. It will also promote the use of renewable energy sources consistent with the policies of the Government of Ontario. The Proposed Line will not have a material impact on the price of electricity, and OPG and CRP will pay for all costs of the Proposed Line as part of the overall cost of the New Post Creek Project. Project economics and public interest considerations are discussed further in Ex. B-T5-S1 and Ex. B-T5-S2 respectively.

9. The proposed New Post Creek Project is subject to the "Class Environmental Assessment for Waterpower Projects" (OWA, 2012a) under the Ontario *Environmental Assessment Act*. The Proposed Line is specifically addressed as part of the environmental assessment. A Statement of Completion regarding the requirements of the environmental assessment was issued by OPG and CRP to the Ontario Ministry of the Environment on May 12, 2014. The environmental assessment is discussed further in Ex. G-T2-S1.

10. The Independent Electricity System Operator ("IESO") completed a System Impact Assessment of the New Post Creek Project including the Proposed Line, in accordance with the Grid Connection Requirements of the Market Rules, on October 28, 2010. The System Impact Assessment indicates that the New Post Creek Project, including the Proposed Line, would not have a material adverse effect on the reliability of the IESO-controlled grid. The System Impact Assessment is discussed further and filed in Ex. H-T1-S1.

11. Hydro One completed a Customer Impact Assessment in accordance with its Customer Connection Procedures on February 25, 2010, with the results confirming that the New Post Creek Project, including Proposed Line, could be incorporated with minor impact to Hydro One customers. The Customer Impact Assessment is discussed further and filed in Ex. I-T1-S1.

12. Significant public, First Nations and government agency consultation has been undertaken as part of the environmental assessment. There is broad support for the New Post Creek Project in the First Nations communities and the community at large. The project also has the support of the Ontario Government. Additional details regarding the consultation process are provided in Ex. G-T1-S1.

13. The Proposed Line will be constructed and owned by the Partnership, and operated by OPG through a service agreement between OPG and the Partnership. In accordance with Ontario Regulation 161/99, the Partnership and OPG are exempted from the requirement to hold a licence to own or operate a transmission system where the transmitter is a generator and transmits electricity only for the purpose of conveying it to the IESO-controlled grid.

14. The property rights required for the Proposed Line are on Crown land and the permitting process for the transmission line right-of-way is underway. Land matters are discussed further in Ex. F-T1-S1.

15. The cost of the Proposed Line is estimated to be approximately $7.9M. A project cost estimate is provided in Ex. B-T5-S1.

16. For the reasons provided in support of this Application, OPG respectfully submits that the Proposed Line is in the public interest and should be approved under section 92 of the OEB Act. Accordingly, OPG requests an Order from the OEB pursuant to section 92 of the OEB Act by November 2014, granting leave to construct the Proposed Line. Further detail describing the schedule constraints and rationale for requesting an Order granting leave to construct the Proposed Line by November 2014 is provided in Ex. C-T1-S1.

17. To accommodate environmental schedule constraints on route clearing and any unforeseen events, OPG requests that the conditions of the approval include authorization for leave to construct to terminate no earlier than February 29, 2016. Details are provided in Ex. C-T1-S1.

18. The Application is supported by written evidence. The written evidence filed by OPG may be supplemented or amended from time to time by OPG prior to the OEB's final decision on the Application.

19. OPG further applies to the OEB pursuant to the provisions of the OEB Act and the OEB Rules of Practice and Procedure for such orders and directions as may be necessary in relation to the Application and the proper conduct of this proceeding.

20. OPG requests a written hearing for this proceeding and submits that the evidence supports granting the requested Order.

21. OPG requests that copies of all documents filed with the OEB by each party to this Application, along with copies of all comments filed with the OEB in accordance with Rule 24 of the OEB Rules of Practice and Procedure, be served on the applicant and the applicant's counsel as follows:

(a) The applicant: Greg Towstego
Senior Manager, Ontario Regulatory Affairs
Ontario Power Generation Inc.

Address for personal service: H18 G3
700 University Avenue
Toronto ON M5G 1X6

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700 University Avenue
Toronto ON M5G 1X6

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(b) The applicant's Counsel: Fred D. Cass
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(c) The applicant's Counsel:		Carlton D. Mathias
		Assistant General Counsel
		Ontario Power Generation Inc.
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Dated at Toronto, Ontario, this 18th day of June 2014.

Ontario Power Generation Inc.

[Original Signed By]

Greg Towstego

OVERVIEW OF OPG AND CORAL RAPIDS POWER

1.0 ONTARIO POWER GENERATION

OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity in Ontario. OPG's focus is on the efficient generation and sale of electricity from its generating assets, while operating in a safe, open and environmentally-responsible manner. OPG was established under the *Business Corporations Act* (Ontario) and is wholly owned by the Province of Ontario.

OPG was incorporated on December 1, 1998 under the *Business Corporations Act, Ontario*. The generating assets of OPG's predecessor, Ontario Hydro, along with related liabilities, were subsequently transferred to OPG in April 1999. OPG's sole shareholder is Her Majesty the Queen in Right of the Province of Ontario, as represented by the Minister of Energy. OPG's head office is located in the City of Toronto.

OPG owns a diversified portfolio of regulated and unregulated electricity generating facilities with a generating capacity of 16,229 MW (as at December 31, 2013), including two nuclear generating stations, 65 hydroelectric stations, three thermal stations and two wind turbines.

In addition, OPG and TransCanada Energy Ltd. co-own the Portlands Energy Centre gas-fired combined cycle generating station. OPG and ATCO Power Canada Ltd. co-own the Brighton Beach gas-fired combined cycle generating station. OPG also owns two nuclear generating stations which are leased on a long-term basis to Bruce Power L.P.

2.0 CORAL RAPIDS POWER

Coral Rapids Power General Partner Inc., a company formed and wholly owned by the Taykwa Tagamou Nation to enter into the electricity generation business in Ontario, was incorporated by the Chief and Council in 2004 as a vehicle to carry out potential commercial activities related to electricity generation. Taykwa Tagamou Nation and its incorporated company subsequently created Coral Rapids Power Limited Partnership, based in Timmins,

Ontario, to enter a limited partnership with OPG for the purpose of planning, constructing and operating an approximately 25 MW run of the river hydroelectric generation facility on New Post Creek.

This project also provides the Taykwa Tagamou Nation with a long term investment opportunity for a sustainable economic base for the community, and will provide spin off benefits for the entire region. Coral Rapids Power Limited Partner Inc. will also pursue other hydroelectric projects in the Traditional Territory of the Taykwa Tagamou Nation.

OVERVIEW OF NEW POST CREEK HYDROELECTRIC FACILITIES

New Post Creek is located between the Abitibi River and the Little Abitibi River approximately 75 kilometers ("km") north of the Town of Smooth Rock Falls and about 13 km north of OPG's Abitibi Canyon Generating Station ("Abitibi Canyon GS").

In 1963, Ontario Hydro constructed the New Post Creek Diversion Dam on the Little Abitibi River near New Post Creek. The dam was constructed to supply additional water, via New Post Creek which flows from the Little Abitibi River to the Abitibi River, to increase generating capacity at Ontario Hydro's (now OPG's) Otter Rapids Generating Station ("Otter Rapids GS"), located on the Abitibi River about 30 km downstream of (i.e. north of) New Post Creek. The New Post Creek Diversion Channel was also constructed near the dam to increase flows, allowing significant amounts of water to be diverted along the Diversion Channel and New Post Creek to the Abitibi River and Otter Rapids GS. There are currently no generating stations located on New Post Creek. The main facilities near New Post Creek are depicted on the maps provided as Ex. B-T2-S2 Attachment 1 and Ex. D-T2-S1 Attachment 1.

The New Post Creek Project would take advantage of a portion of the diverted flow along New Post Creek where it descends approximately 66 meters between New Post Creek and the Abitibi River, to generate approximately 25 MW of electricity, or approximately 125 GWh annually, which is enough electricity to meets the needs of about 25,000 homes.

The New Post Creek Project would consist of the following main structures and facilities:

- Intake and spillway structures located on New Post Creek.
- Buried (and possibly open) penstocks to transport water from the intake to a new powerhouse.
- Powerhouse with a specified number of turbine generating units (number of turbines will be dependent on the final design, but is currently expected to be four), located adjacent to the eastern shore of the Abitibi River, about 700 meters west of the intake structure. The powerhouse would be located about 13 km downstream from Abitibi Canyon GS.

- An electrical substation including a step-up transformer.
- A transmission line that would cross the Abitibi River and continue on to meet an existing 115 kilovolt ("kV") Hydro One transmission line located about 7 km west of the Abitibi River.

Access roads suitable for transmission line construction would be provided by an existing road network between the interconnection point and the west bank of the Abitibi River.

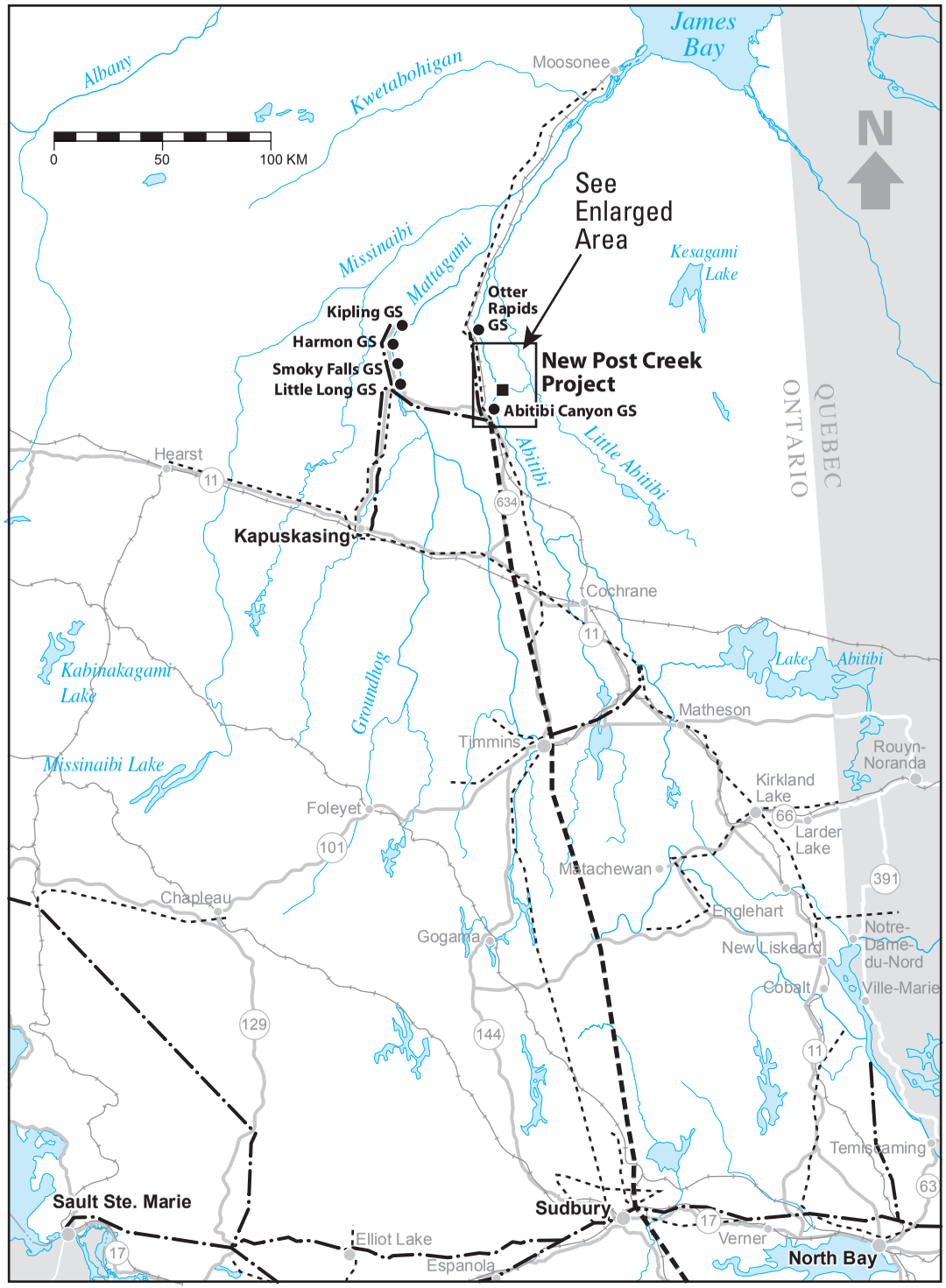
Operation of the proposed New Post Creek generating station would be carried out remotely by OPG, with no permanent staff stationed at the facility. Operating and maintenance personnel would visit the site only to perform periodic routine inspection and servicing tasks, or to deal with necessary investigations and repairs, on an as-required basis. Once placed into service, the proposed GS would be operated from the OPG North East Control Centre in Timmins. The station would be monitored continuously by OPG operators from a control room from which all OPG North East Plant Group generating units are controlled.

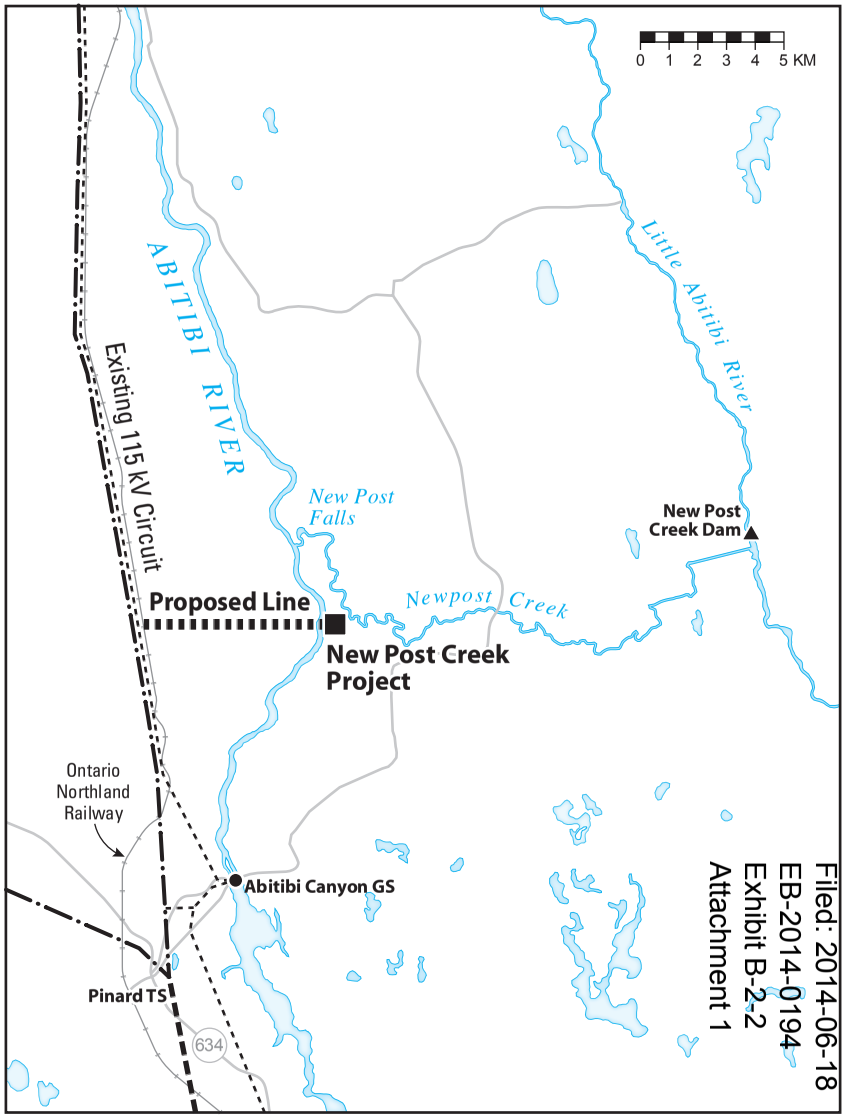
PROJECT LOCATION

1.0 PROJECT LOCATION

The Proposed Line is located in the District of Cochrane within the Geographic Township of Pinard, approximately 75 km north of the Town of Smooth Rock Falls and about 13 km northeast of OPG's Abitibi Canyon GS. The Proposed Line will be located primarily to the west of the proposed powerhouse location, which is on the Abitibi River about 6 km upstream (i.e. south) of the outlet of New Post Creek to the Abitibi River. A map showing the general geographic location of the New Post Creek Project and the Proposed Line is provided as Attachment 1 to this exhibit.

The right-of-way for the Proposed Line is an area roughly 7 km long and approximately 30 meters in width running almost directly west from the site of the proposed new powerhouse on the eastern shore of the Abitibi River. The line will terminate at an existing Hydro One 115 kV transmission line located about 7 km west of the proposed powerhouse, running in a roughly northerly direction from Abitibi Canyon GS to OPG's Otter Rapids Generating Station. Maps showing the Proposed Line in greater detail are provided in Ex. D-T2-S1.





NEW POST CREEK PROJECT
PROPOSED 115 kV LINE

- OPG Owned Generating Station (GS)

- New 115 kV Transmission Line
- Existing Transmission Line 500 kV
- Existing Transmission Line 230 kV
- Existing Transmission Line 115 kV

PROPOSED LINE

The Proposed Line is required to transmit electricity from the proposed New Post Creek Project generating station to the Hydro One transmission system.

The electrical scheme to carry power from the new generating station consists of an electrical substation (transformer) adjacent to the station powerhouse on the east bank of the Abitibi River, the proposed 7 km long 115 kV transmission line beginning at the new transformer substation and continuing to the Hydro One 115 kV D6T (currently C6T) transmission line, and a small switchyard to be constructed at the point of interconnection with the Hydro One 115 kV line. The final tap connecting the Proposed Line to the Hydro One line will be constructed by Hydro One.

This leave to construct application is for the new 7 km transmission line only (including the small connection switchyard near the connection point to the Hydro One line). The powerhouse transformer substation where the line begins is being constructed as part of the powerhouse portion of the New Post Creek Project and is included in the approvals relating to that project. The final tap to the Hydro One 115 kV line is being constructed by Hydro One and is also not part of this leave to construct application.

The following is the specific work and facilities required to complete the Proposed Line (final design may differ in some aspects):

- Construction of a new 115 kV wood pole three-phase single circuit transmission line. The line will originate at the output side of a new 13.8/115 kV step-up transformer substation adjacent to the powerhouse to be constructed on the east side of the Abitibi River. The line will then cross to the west side of the Abitibi River, continue in an approximately straight line for 7 km in a due west direction from the powerhouse, and terminate at a new switchyard at the connection point to the Hydro One 115 kV D6T transmission line.

- The proposed transmission line will cross over land that has been subject to previous forest harvesting, some wet areas and an Ontario Northland Railway rail line. The

western shoreline of the Abitibi River has a fairly rapid rise in elevation, with few changes in elevation from that point to the interconnection with the Hydro One line.

- The proposed transmission line will be constructed within a minimum 30.5 meter wide right-of-way. This will require selective clearing of vegetation within a maximum 50 meter wide corridor along the length of the line to ensure, for example, that any tall trees near the outer edges of the right-of-way that pose a risk of falling near or on the transmission line are removed.

- The transmission line and terminal switchyard will consist of untreated wood poles (likely cedar), aluminum conductor steel reinforced cables, polymer insulators, and optical ground wire, as well as guy-wire and anchors, as necessary. The aerial cable crossing of the Abitibi River is approximately 150 meters wide. No transmission line-related structures will be placed in the Abitibi River. The interconnection with the Hydro One line will likely utilize a T-tap direct with protection provided by a circuit breaker at the new powerhouse substation.

- The exact configuration of the pole structures will be determined as part of the detailed design to be completed after a contractor has been selected, however it is expected that poles will be of a single pole wishbone structure with steel cross-arms, similar to those depicted in the photograph in Attachment 1 to this exhibit. Larger wood pole “H” structures will likely be used at the terminal ends of the line and the terminal switchyard as required for support at these points. Cross-section drawings of the proposed wood pole structures are provided in Ex. D-T1-S2.

- Access for transmission line construction is provided by an existing road network between the west bank of the Abitibi River and the interconnection point with the Hydro One line. This road is considered to be adequate for construction equipment use. No permanent roads will be constructed to or along the remainder of the proposed transmission line route. The switchyard to be constructed at the point of interconnection will require the construction of a small access area from the existing road. (Road

upgrades will be required on the east side of the Abitibi River, however these are primarily to service construction activities for the main generating station facilities.)

- Temporary structures (e.g. office trailers, washrooms) will be erected as required, although the majority of the construction offices and equipment and lay-down areas will be located near the site of the planned powerhouse. Unused and waste construction materials will be removed from the site following completion of the line, and disturbed areas will be restored, including de-commissioning of any required construction access points.

- Any transmission line or other outages on Hydro One facilities required to accommodate the construction of the Proposed Line will be coordinated with Hydro One.

NEED FOR PROPOSED LINE

The new transmission line is required to transmit electricity from the New Post Creek Project to be constructed on the east side of the Abitibi River, to an existing Hydro One transmission line located approximately 7 km west of the Abitibi River.

Coral Rapids Power was formed as a company wholly owned by the Taykwa Tagamou Nation, and was given a mandate to explore and develop hydroelectric opportunities within the Traditional Territory of the Taykwa Tagamou Nation, which is located in the Abitibi River drainage basin, north of Highway 11. A waterpower generation location was identified on New Post Creek, a tributary of the Abitibi River, and Coral Rapids Power has entered into a Partnership with OPG for the purpose of planning, constructing and operating an approximately 25 MW run-of-the-river hydroelectric development on New Post Creek.

The 115 kV Proposed Line is designed to accommodate the output from the generating station based on standard electrical engineering practice. As discussed in Ex. B-T4-S1, the Proposed Line has been assessed as the preferred alternative to facilitate energy transfer from the New Post Creek Project to the Hydro One transmission system.

TRANSMISSION ALTERNATIVES

A number of alternative transmission routes were assessed before selecting the preferred route. The first step was identification of alternative powerhouse locations based on an assessment of the hydroelectric potential of the diverted flows on New Post Creek and a variety of other factors. The studies to determine the preferred site for the generating station resulted in four alternative locations along the east bank of the Abitibi River in the proximity of New Post Creek. The four alternative powerhouse locations are shown on Attachment 1 to this exhibit.

Depending on the powerhouse site, alternative “east” and “west” routes for the transmission line were then identified and evaluated as part of the evaluation of the overall powerhouse sites. The “east” routes would follow largely existing access roads back to Abitibi Canyon GS and its electrical connection facilities approximately 13 km to the south, whereas the “west” routes would cross the Abitibi River and traverse mainly recently harvested forest areas to meet the existing Hydro One 115 kV transmission line between Abitibi Canyon GS and Otter Rapids SS, approximately 7 km to the west. Although there were four alternative powerhouse locations, a total of two west routes and three east routes were identified, as powerhouse Alternatives 1, 2 and 3 were in close proximity to each other and could all be accommodated by the same east or west route, whereas the Alternative 4 site could be accommodated by one west route and two possible east routes. The alternative transmission routes were identified as Alternative 1 West, Alternative 1 East, Alternative 4 West, Alternative 4A East and Alternative 4B East, as shown on Attachment 2 to this exhibit.

Once the powerhouse location was selected (the selected powerhouse alternative is identified as “Alternative 1” on Attachment 1), the transmission line routing alternatives were narrowed down to Alternative 1 West and Alternative 1 East.

Alternative 1 West for the transmission line was selected on the basis that it was the shortest route with the fewest bends compared to the “east” route, thus reducing both construction cost and line losses. This route was later modified to locate the point of interconnection with the existing Hydro One transmission line at an existing road, to facilitate both construction

and ongoing maintenance activities. The modification to enable the line to meet the existing road resulted in a negligible change in length compared to the originally planned route, and due to terrain considerations it also allows a straighter route compared to the originally planned route. The final route extends from the powerhouse switchyard directly west over a distance of approximately 7 km to the existing 115 kV Abitibi Canyon GS/Otter Rapids SS transmission line, and is depicted in the maps provided in Ex. D-T2-S1.

Alternatives involving connection to the Hydro One 230 kV R21D line which runs adjacent to the 115 kV C6T line, rather than to the C6T line, were not considered for technical reasons. The small size of the New Post Creek Project (approx. 25 MW) does not require or warrant connection to the 230 kV system for electrical engineering reasons, and connection to the 230 kV system would require that the Proposed Line be a 230 kV line, which would be significantly more complex and expensive to construct. 230kV substation equipment would be more expensive than 115kV, a 230kV switchyard would require a larger footprint and larger clearances, and the line would require more expensive hardware (poles, insulators, etc.) and a wider right-of-way. The 230KV line is also located to the west of the 115kV line, which would require a transmission line crossing over the 115 kV line to reach the 230 kV line. This would also require additional Hydro One outages.

The Do Nothing alternative is not viable as the proposed generating station could not be built if there were no access to the Hydro One transmission system.

Further detail on the viable alternatives is provided below.

Alternative 1 West – Traverse Forested Areas to Hydro One Line (Selected Alternative)

This alternative, modified from the initial "Alternative 1 West" to locate the point of interconnection with the existing Hydro One transmission line at an existing road, would cross the Abitibi River from the site of the proposed generating station and travel approximately 7 km west in a straight line to where it intersects with the existing Hydro One transmission line. Key characteristics of this alternative are as follows:

- Installation of the proposed transmission line will require clearing of vegetation (mainly forested) along the transmission line corridor extending from the proposed powerhouse

switchyard directly west over a distance of approximately 7 km to the existing Hydro One transmission line. Installation and maintenance of the transmission line will require localized removal of trees and other vegetation from these communities. Much of the proposed corridor study area consists of areas that have been logged within approximately the last 50 years and were recently replanted with Black Spruce or have regenerated naturally.

- The route traverses five watercourses and a small pond. Transmission line construction and ongoing right-of-way maintenance will be required to adhere to the appropriate environmental mitigation measures, e.g., buffer establishment, erosion and sediment control, management and control of incidental spills, and minimization of adverse effects on fisheries resources and habitat. Additional details are provided in Ex. G-T2-S1.

- Access for transmission line construction is provided by an existing road network between the interconnection point and the west bank of the Abitibi River, which is considered to be adequate for construction equipment use. A small access area from the existing road will be required to accommodate construction of a switchyard at the point of interconnection. No permanent roads will be constructed to or along the proposed route.

Alternative 1 East – Follow Access Roads to Abitibi Canyon GS

This alternative would largely follow an existing access road, approximately 11 km in length, from the Abitibi Canyon GS switchyard to a point located approximately 3 km southeast of the proposed powerhouse site. A new access road would be constructed for the remaining 3 km to the powerhouse site. The total length of the line would be approximately 14 km, or about twice the length of the line in the preferred alternative.

Alternatives 4 West, 4A East and 4b East

These alternatives are not evaluated as powerhouse Alternative 4 was not selected.

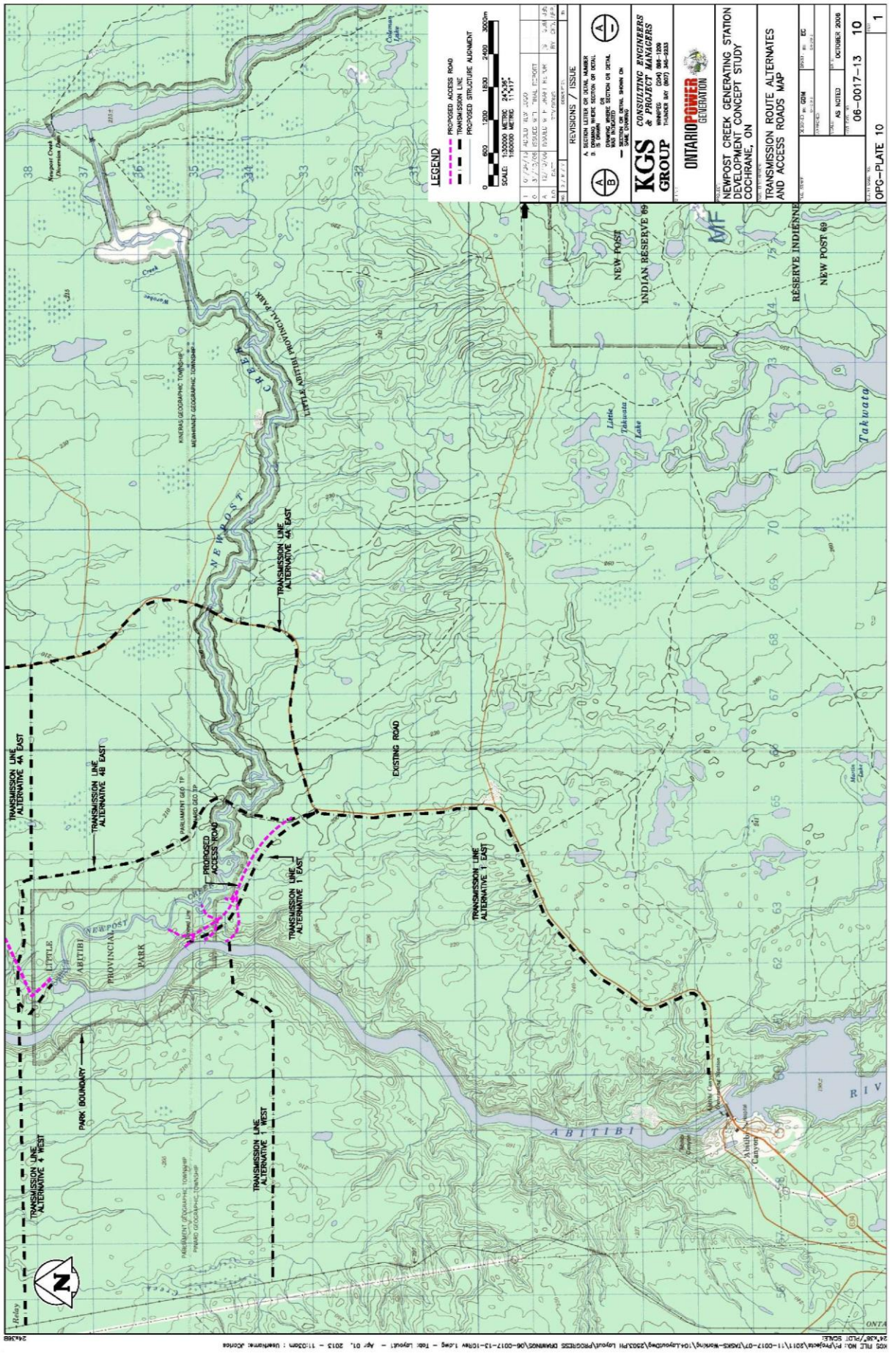
Assessment of Alternatives

The Alternative 1 East route was not recommended due to the longer line length (approximately double the Alternative 1 West route), difficulty connecting into the switchyard at Abitibi Canyon GS due to space and access constraints, and the requirement to construct

a section of new access road. In addition, while the line would follow the route of an existing or to-be-constructed road, a transmission corridor would still need to be cleared and maintained adjacent to the road. A detailed economic analysis to compare the Alternative 1 West route and the Alternative 1 East route was not done, as the Alternative 1 East route would clearly incur much higher cost than the Alternative 1 West route.

New Post Creek Project – Powerhouse Siting Alternatives

New Post Creek Project – Alternative Transmission Line Routes



PROJECT COSTS AND ECONOMICS

1.0 PROJECT COSTS

The total cost of the Proposed Line is estimated to be approximately $7.9M as shown in the cost estimate provided in Table 1 below.

Table 1

Total Estimated Project Cost for Proposed Line

Item	Estimated Cost ($K)
Wood Pole Transmission Line:	
Design & Construction (incl. testing & commissioning)	6,269
Route Clearing	629
Total Transmission Line	**6,898**
Connection to Hydro One D6T Line:	1,000 (Preliminary estimate. Detailed estimate not yet received from Hydro One)
Total Cost	**7,898**

2.0 COST RESPONSIBILITY

OPG and CRP are not rate-regulated transmitters and are not seeking recovery of the cost of the Proposed Line in transmission rates. The Proposed Line will be fully funded and owned by OPG and CRP as part of the New Post Creek Project. Funding to construct the Proposed Line is included in the budget for this Project. This includes the funding of the Proposed Line including all required ancillary equipment required to operate it, including the connection to the Hydro One D6T transmission line.

3.0 PROJECT ECONOMICS

The economic feasibility of the Proposed Line was evaluated as part of the economic evaluation for the New Post Creek Project, and not on a stand-alone basis. Based on the

requirement to deliver electricity from the new generating station, and the evaluation of alternatives as discussed in Ex. B-T4-S1, the Proposed Line is recommended as the preferred alternative.

4.0 RATE IMPACT ASSESSMENT

The payments for the output of the proposed New Post Creek Project will be contractual in nature and will not be regulated by the OEB. OPG and CRP are not rate-regulated transmitters and are not seeking recovery of project costs for the Proposed Line in transmission rates. The project to construct the Proposed Line has no impact on transmission rates.

As indicated in Ex. B-T1-S1, the Ontario Minister of Energy has directed the OPA to enter into negotiations for a power purchase agreement to procure electricity from the proposed 25 MW New Post Creek hydroelectric generating station. The output from the New Post Creek Project will therefore be sold to the OPA through a negotiated supply contract. The Proposed Line, as part of the cost of the generating station, would therefore be recovered through this contract. As indicated in the definition for the Global Adjustment provided below, the Global Adjustment is calculated by taking into account payments made for generators contracted to the OPA.

The OPA website (http://www.powerauthority.on.ca/about-us/understanding-electricity-prices/opa-cash-flows-global-adjustment-mechanism-gam) defines the Global Adjustment as follows:

- *The Global Adjustment (GA) is the difference between the total payments made to certain contracted or regulated suppliers of electricity and conservation services and any offsetting revenues they receive from sales to customers.*
- *The GA is calculated by taking into account the payments made for the following functions:*
  - *Non-Utility Generation (NUG) contracts established by the former Ontario Hydro and now administered by the Ontario Electricity Financing Corporation (OEFC)*
  - *Nuclear generation operated by Ontario Power Generation (OPG)*
  - *Certain "prescribed" hydroelectric generation owned by OPG (plants at Niagara Falls, St. Catharines and Cornwall)*

- *Generators and suppliers of conservation services contracted to OPA*

The computation of the Global Adjustment takes into account payments in the billions of dollars for suppliers of electricity as defined above. The Proposed Line, with an estimated cost of $7.9M, therefore represents a very small percentage of the total amounts considered in the computation of the Global Adjustment. The impact of the Proposed Line on consumers is therefore not material in the context of the Global Adjustment.

PUBLIC INTEREST CONSIDERATIONS

The Proposed Line will serve the public interest by facilitating the delivery of additional energy from renewable sources in a financially responsible manner, as follows:

i. It will accommodate new electricity generation following completion of the proposed New Post Creek Project, enabling the supply of additional electricity to the IESO-controlled grid from the available water flows along New Post Creek, a renewable resource.

ii. It is consistent with the policies of the Government of Ontario as it will promote the use of renewable energy sources, and will connect a new generating facility that is specifically noted within the Province's Long Term Energy Plan.

iii. The interests of consumers with respect to prices have been protected because OPG and CRP are not seeking recovery of the costs of the Proposed Line in transmission rates, but will be selling electricity produced by the generating facility pursuant to a contract negotiated with the OPA. The cost of the Proposed Line will not have a material impact on the price of electricity, as discussed in Ex. B-T5-S1.

iv. The interests of consumers with respect to the reliability and quality of electricity service have been protected because the Proposed Line will allow electricity generated from a new facility to be supplied to the IESO-controlled grid. Further, both the IESO and Hydro One have completed assessments that show no material impacts on reliability or customers.

CONSTRUCTION AND IN-SERVICE SCHEDULE

1.0 SCHEDULE

The construction and in-service schedule for the Proposed Line is provided in Table 1 below. This schedule is coordinated with the construction schedule for the overall New Post Creek Project.

Table 1

Construction Schedule for New 7 km 115 kV Transmission Line

Task	Start	Finish
Selection of Design Build Contractor	October 2013	February 2014
Transmission Line Detailed Design	February 2014	September 2014
Route Clearing	December 2014	January 2015
Line Construction	January 2015	July 2015
Commissioning	January 2017	March 2017
In-Service	-	July 2017

Based on the current plan, the start date for route clearing is December 2014, assuming the leave sought in this Application is granted by November 2014 as requested in Ex. B-T1-S1. The majority of the route clearing and construction of the proposed transmission line is planned to be carried out during the winter months to minimize the impact on the natural environment, particularly wet areas (see Ex. G-T2-S1 for additional details). If the winter 2014/15 clearing window is missed, it will be necessary to delay clearing activities by approximately one year, to winter 2015/16. Clearing activities will also occur outside of the migratory bird nesting season.

In the event that the leave sought in this Application is granted later than November 2014 or if the winter 2014/15 line construction window is missed for logistical or other reasons, the start date will be delayed accordingly, while respecting the above seasonal constraints. As indicated in Ex. B-T1-S1, it is therefore requested that the conditions of the approval include

authorization for leave to construct to terminate no earlier than February 29, 2016, to accommodate possible schedule delays.

A more detailed schedule for construction of the proposed Project, including the transmission line, and implementation of associated activities, will be developed by the contractor. The transmission line is scheduled for construction ahead of the final in-service date to provide flexibility regarding supply of power for construction activities at the powerhouse site. The schedule for final commissioning and in-service are based on coordination with the current schedule for completion of the New Post Creek generating station.

2.0 SCHEDULE RISK MITIGATION

The schedule may require adjustment based on other aspects of project development planning and decision making. The project management plan for the New Post Creek Project includes a plan for mitigation, monitoring, and remediation activities to address schedule risk. The plan includes specific steps to be taken to identify and manage risks relating to delay in the start of construction due to a failure to obtain timely approvals, changes in construction windows due to environmental constraints, prolonged adverse weather conditions, and the availability of qualified contractors and/or skilled tradespersons. These measures include monitoring workshops regarding compliance with regulatory and government agency requirements, maintaining open communications with regulators and applicable government agencies, use of contingency funds if needed, and in association with the contractor, creation and monitoring of an organizational chart to identify key positions, ongoing monitoring of project staffing, and use of contractual rights as required to manage staff mobility.

CONSTRUCTION AND PROJECT ADMINISTRATION

To complete the Proposed Line, the construction tasks summarized in Ex. B-T2-S3 will be undertaken. A project schedule showing the key tasks required to complete the Proposed Line by the scheduled in-service date is provided in Ex. C-T1-S1.

A third party design build contractor was selected in February 2014 through a competitive Request for Proposals process. The contractor will be responsible for the detailed design and construction of the proposed Project, including the transmission line. The contractor will be responsible for completing detailed final designs and obtaining all construction-related permits and approvals, e.g., road use and water crossing approvals, aggregate permits, etc. OPG and CRP are committed to working with federal and provincial agencies to address information requirements related to construction and operation approvals and authorizations. At this point, the specific equipment that will be required for the transmission line construction has not been specified, but is expected to include construction equipment typically associated with such projects, such as tree and brush clearing equipment, drilling equipment for setting pole foundations, and conductor stringing machines.

During construction, an Environmental Compliance Monitoring Program will be in effect to ensure all construction related commitments are met. OPG has developed a multi-faceted approach which has been implemented in hydroelectric construction projects, including related transmission facilities, that OPG has completed over the last few years (e.g., re-development of generating stations on the Upper Mattagami River system) and those it is currently undertaking (e.g., the Lower Mattagami Project). The selected contractor will have overall responsibility for environmental management of construction activities, and will be required to ensure that all construction related activities meet all environmental assessment commitments, regulatory requirements, permit terms and conditions, and other related environmental guidance.

The contractor will be required to prepare and implement an Environmental Management Plan (“EMP”) that will outline how this will be done, including identification of all monitoring activities to be undertaken. The EMP will include considerations such as maintaining

equipment in good working order, having equipment such as fire extinguishers and spill kits available to prevent forest fires and accidental releases of deleterious substances, managing waste materials through proper means such as landfill sites and recycling facilities, and ensuring that the site is stabilized and restored with natural vegetation. Clearing of trees and vegetation will require a forest resource licence from the Ministry of Natural Resources that will provide guidance on harvest and utilization, and clearing activities will occur outside of the migratory bird nesting season.

The contractor will be required to monitor the environmental effects of the construction of the proposed Project including, among other things, adherence to the following:

- EMP in general;
- Erosion and Sediment Control Plan;
- Spills Emergency Preparedness and Response Plan;
- Hazardous Materials Management Plan;
- Waste Management Plan;
- environmental water use;
- noise control;
- any Species at Risk requirements;
- in-water construction timing restrictions;
- Cultural Heritage Monitoring Plan; and
- commitments made in the EA Report and associated Technical Support Documents.

OPG and CRP will have an oversight program in place to track and assess contractor compliance with such measures. As well, government regulators will require information as per the specific permits. OPG and CRP will also require a monitoring program to be in place to ensure that all mitigation and compensation measures are being fully implemented.

The contractor will also be required to have an on-site health and safety coordinator who will review and monitor any health and safety issues which arise during the course of construction. During the construction period the contractor will also be required to comply

with cultural heritage monitoring recommendations regarding any previously undocumented archaeological resources or human remains discovered during construction.

The Proposed Line will be designed in accordance with good utility practice and will meet the requirements of the Transmission System Code for licensed transmitters in Ontario.

SCHEMATIC OF PROPOSED LINE

A schematic diagram depicting the Proposed Line is provided in Attachment 1 to this exhibit.

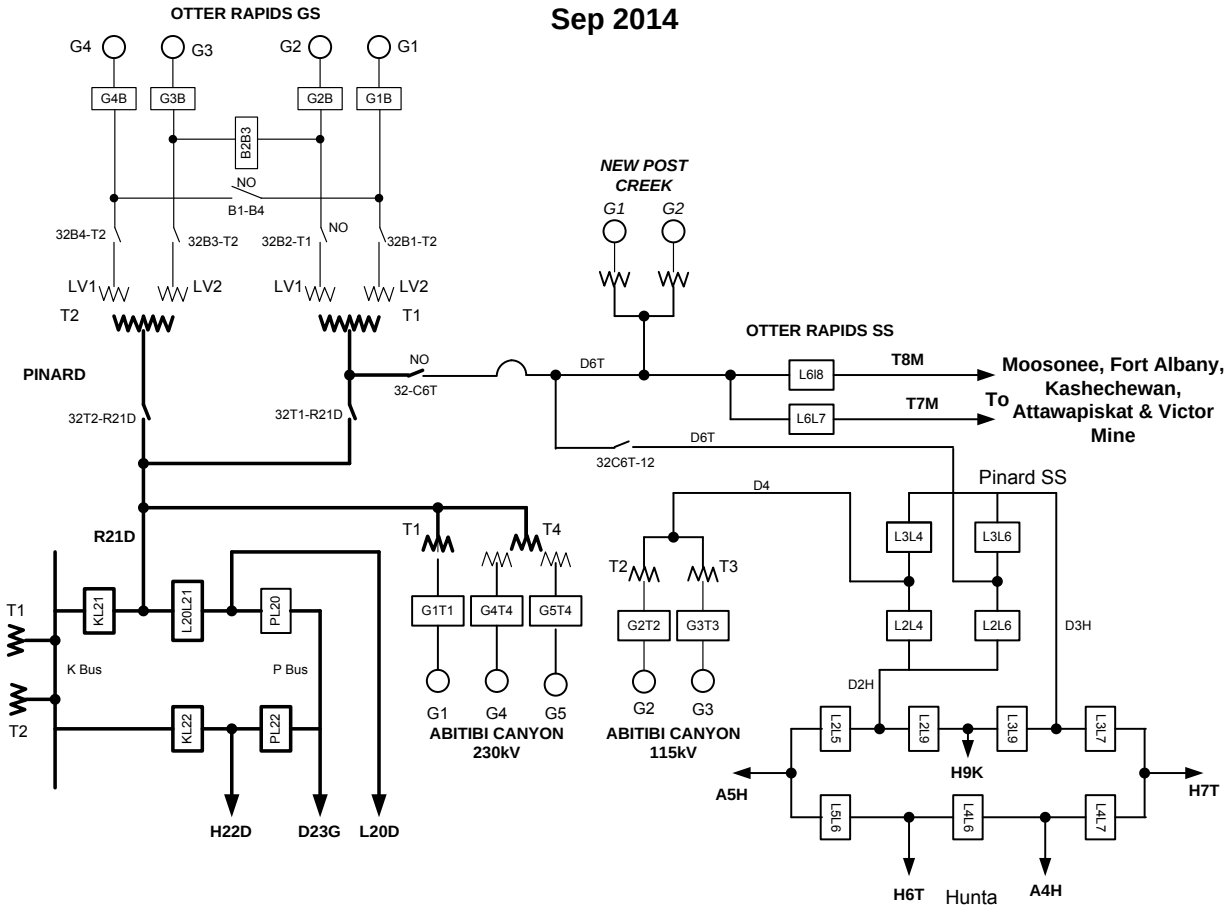
The facility is to be connected to the existing 115 kV Hydro One circuit D6T (formerly C6T) between Otter Rapids SS and Abitibi Canyon GS via a new 7 km 115 kV single circuit line. The connection point is approximately 17 km south of Otter Rapids SS. The proposed generators will be connected to the 115 kV line through a new three phase 13.8/115 kV step-up transformer.

Changes to the transmission system configuration in the vicinity of Pinard TS and Abitibi Canyon GS are planned to be implemented by Hydro One in fall 2014, which will result in 115 kV line C6T being re-designated as D6T. With the re-designation, the line will remain physically unchanged in the vicinity of the New Post Creek Project and will continue to operate at 115 kV. The configuration changes being undertaken by Hydro One are to address broader technical issues with the transmission system in that region and not because of the New Post Creek Project.

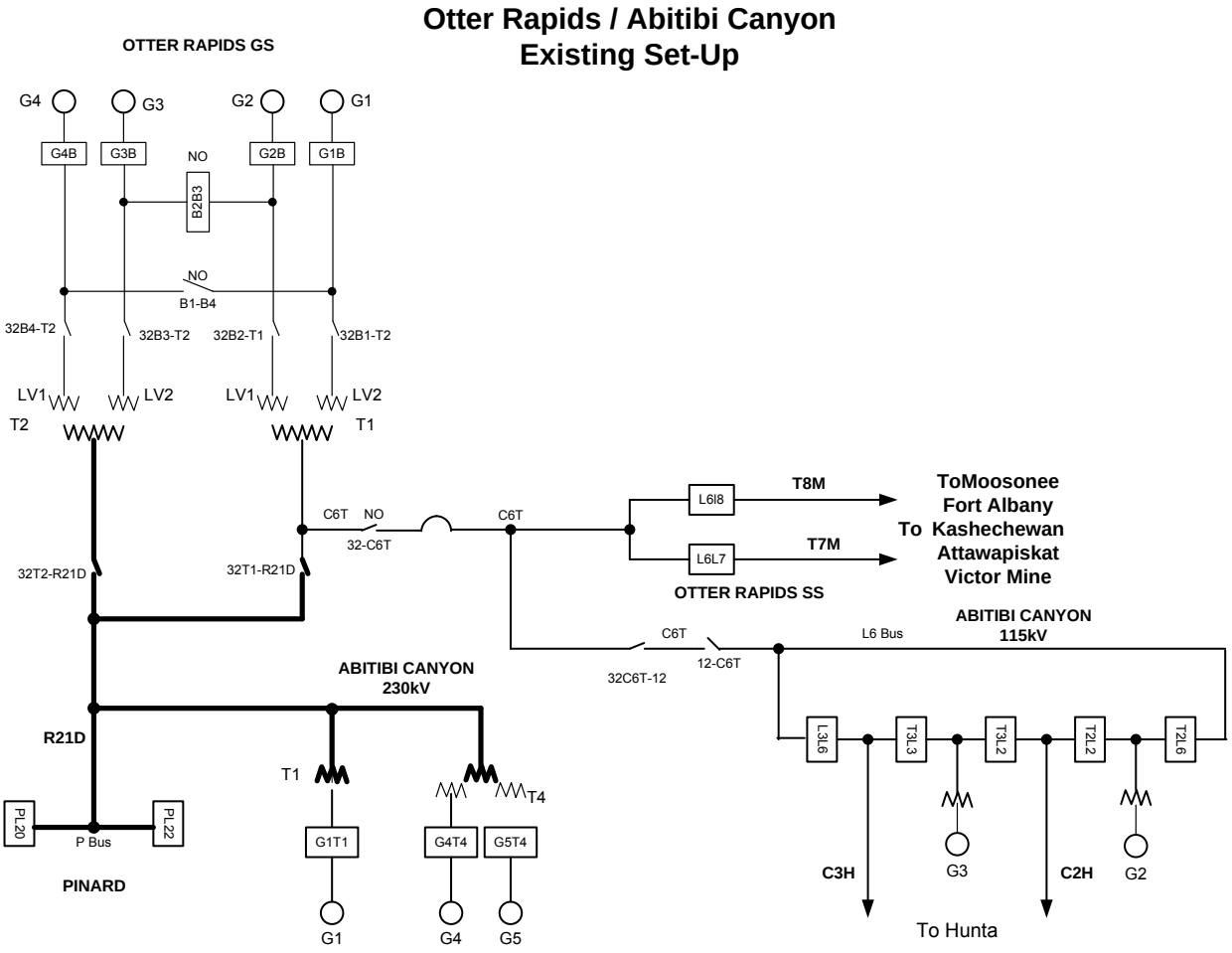
The schematic diagram provided as Attachment 1 to this exhibit depicts the transmission system as it will exist at the time the Proposed Line is connected to the Hydro One system, i.e. after the planned fall 2014 changes have been completed. For reference, the schematic diagram provided as Attachment 2 to this exhibit depicts the transmission system as it currently exists, i.e., prior to the proposed modifications by Hydro One.

Schematic of Proposed Line

Otter Rapids / Abitibi Canyon / Pinard SS
Post Canyon Re-configuration
Sep 2014



Schematic of Existing Transmission Facilities in New Post Creek Project Study Area



POLE STRUCTURES

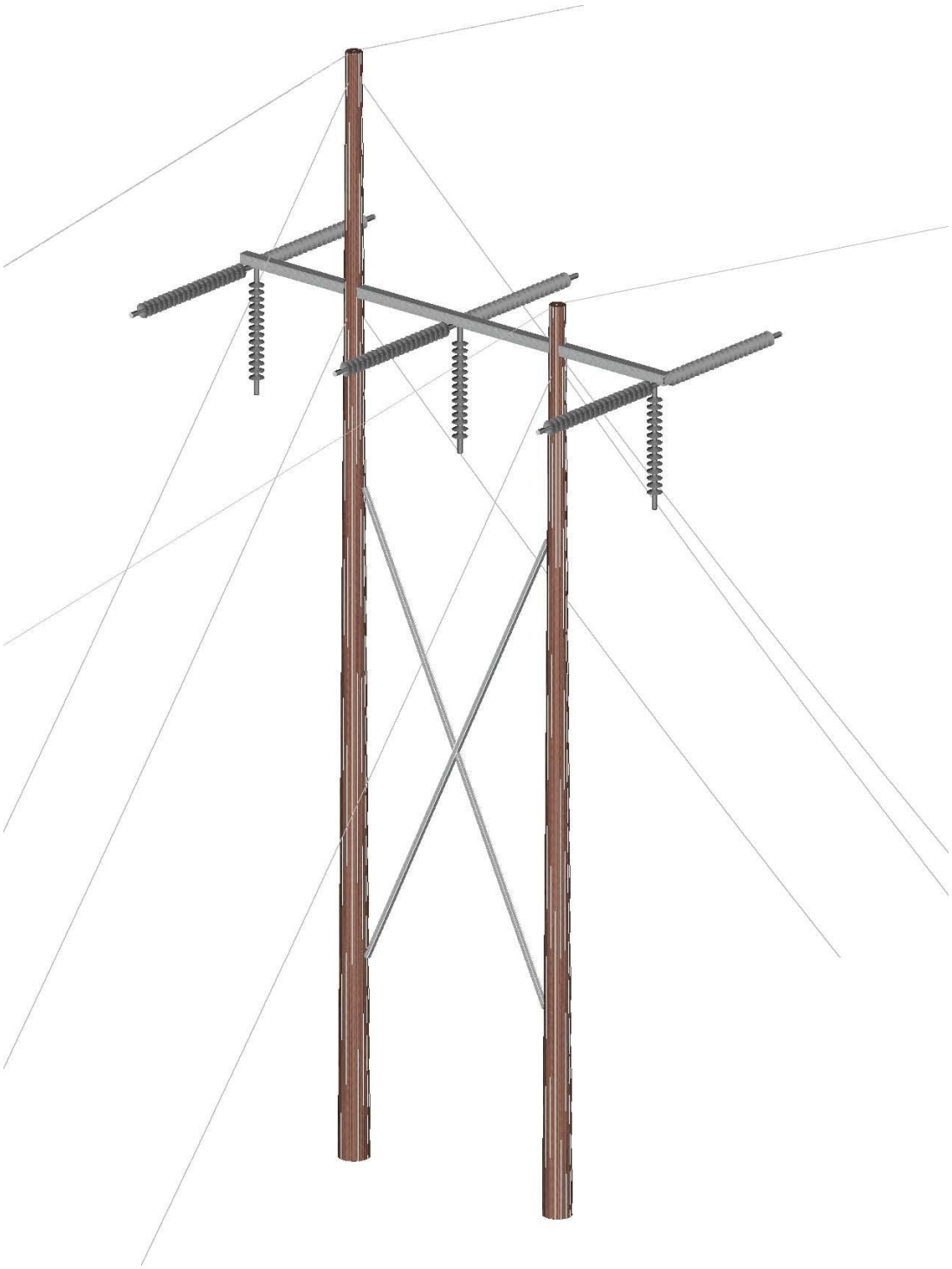
The attachments to this exhibit depict the wood pole types and structures to be used for the Proposed Line, as follows:

- Attachment 1 – Proposed Wood Pole Structures (photo)
- Attachment 2 – Single Wood Pole Wishbone Structure with Steel Cross-arms
- Attachment 3 – Wood “H” Frame Dead-end Structure

New Post Creek Project – Proposed Line – Proposed Wood Pole Structures

Single Wood Pole Wishbone Structure with Steel Cross-arms

Wood “H” Frame Dead-end Structure



MAPS OF PROPOSED LINE

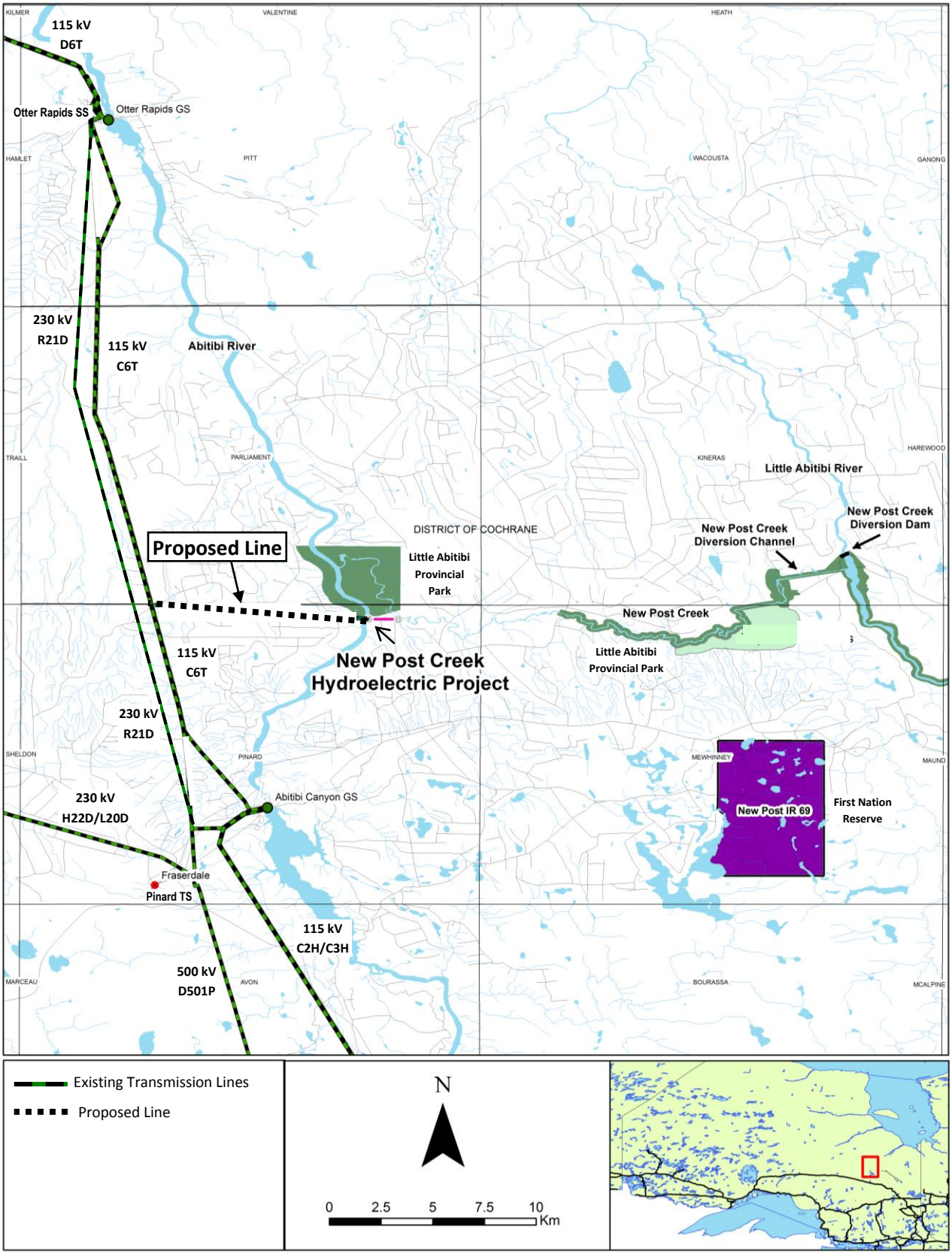
The Proposed Line is located in the District of Cochrane within the Geographic Township of Pinard, approximately 75 km north of the Town of Smooth Rock Falls and about 13 km north of OPG's Abitibi Canyon GS. It will be located primarily to the west of the Abitibi River, about 6 km upstream (i.e. south) of the outlet of New Post Creek to the Abitibi River. A map showing the general geographic location of the New Post Creek Project and the Proposed Line is provided as Ex. B-T2-S2 Attachment 1.

As shown in Attachment 1 to this exhibit, the closest transmission lines to the site of the proposed powerhouse are the Hydro One 115 kV transmission line designated as C6T, which connects Otter Rapids Substation ("SS") and Abitibi Canyon GS, and the 230 kV R21D line from Pinard Transmission Station ("TS") to Otter Rapids SS, both of which pass approximately 7 km to the west of the proposed powerhouse. As discussed in Ex. D-T1-S1, changes to the transmission system configuration in the vicinity of Pinard TS and Abitibi Canyon GS planned to be implemented by Hydro One in fall 2014 will result in 115 kV line C6T (to which the Proposed Line will be connected) being re-designated as D6T.

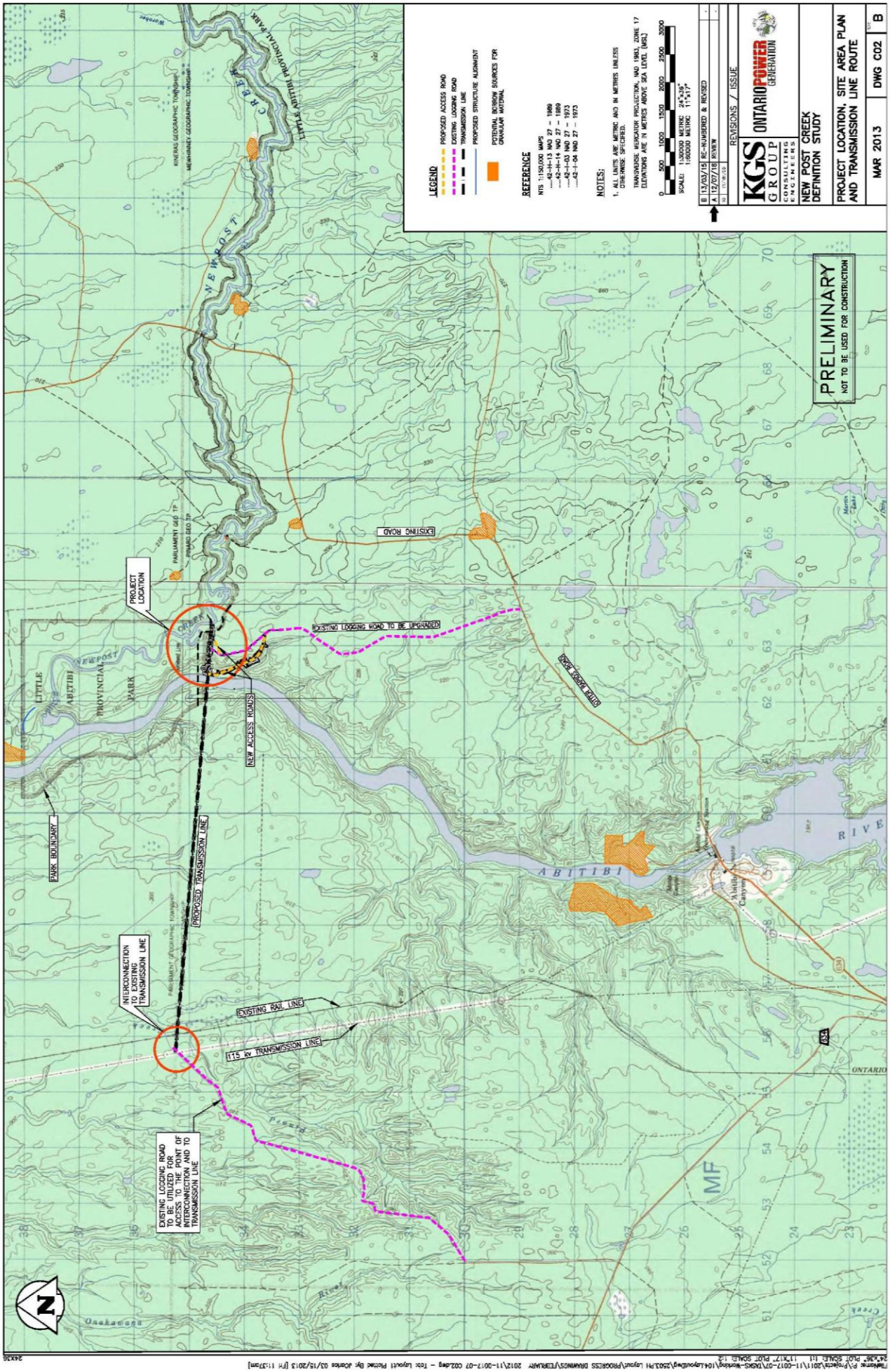
The right-of-way for the Proposed Line is an area roughly 7 km long and approximately 30 meters in width running almost directly west from the site of the proposed new powerhouse on the eastern shore of the Abitibi River. The aerial line traverses the Abitibi River shortly after leaving the powerhouse switchyard and terminates at the Hydro One 115 kV Otter Rapids SS/Abitibi Canyon GS transmission line about 7 km east of the proposed powerhouse. The proposed transmission line will cross over land that has been subject to previous forest harvesting, some wet areas and an Ontario Northland Railway rail line. Maps showing the Proposed Line in greater detail are provided as Attachments 2, 3 and 4 to this exhibit, as follows:

- Attachment 2 – Proposed Line – Detail View
- Attachment 3 – Proposed Line Route
- Attachment 4 – Proposed Line Plan and Profile

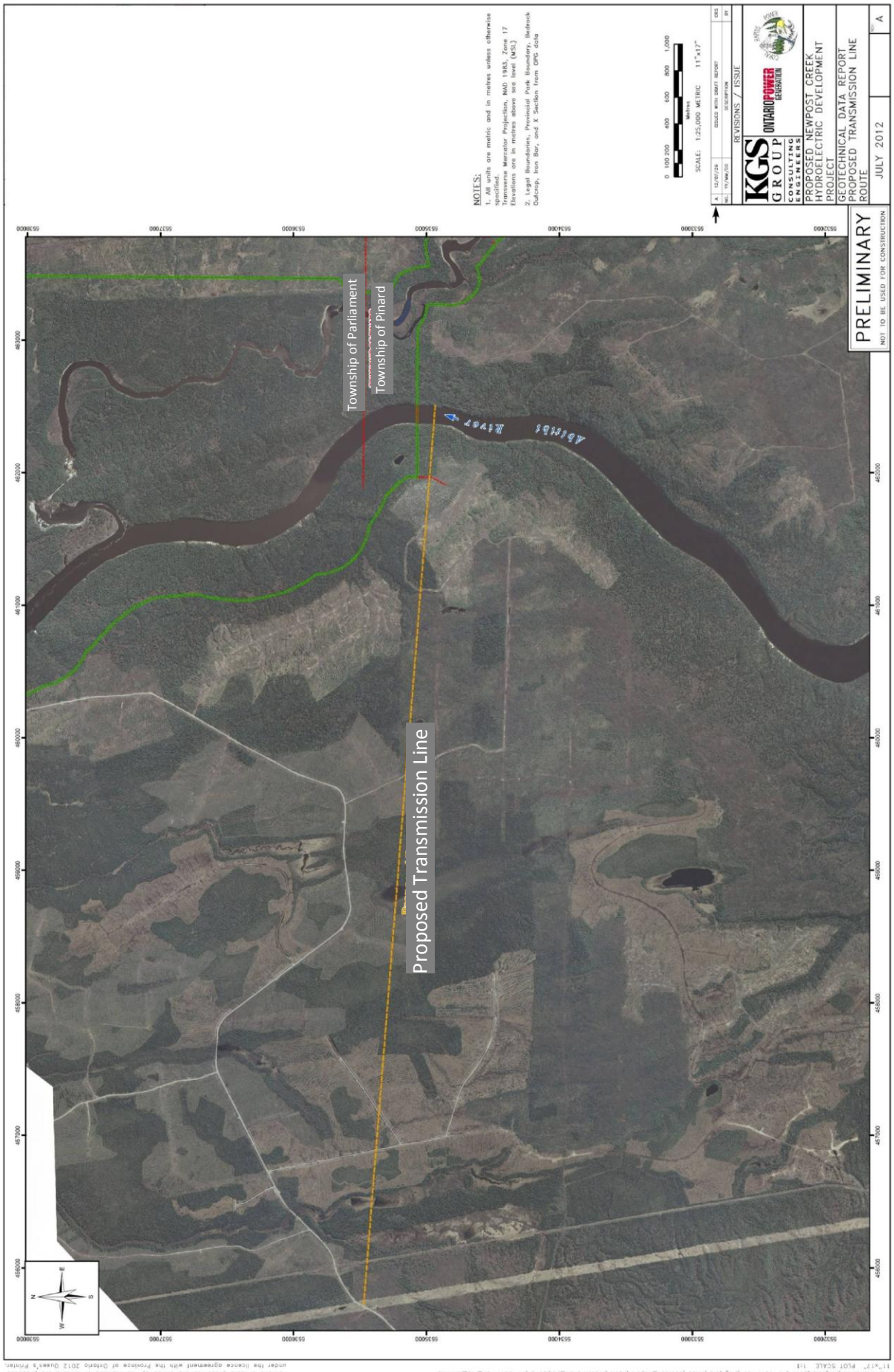
Map of Transmission Facilities and Proposed Line



New Post Creek Project – Proposed Line – Detail View



New Post Creek Project – Proposed Line Route



New Post Creek Project – Proposed Line Plan and Profile

OPERATION / CODES, STANDARDS AND REGULATIONS

1.0 OPERATION

The Proposed Line will be operated by OPG through a service agreement between OPG and the Partnership, in accordance with good utility practice, as established in the Transmission System Code, and in accordance with Northeast Power Coordinating Council ("NPCC") and North American Electric Reliability Council ("NERC") operating standards.

2.0 COMPLIANCE WITH INDUSTRY STANDARDS AND CODES

The design and maintenance of the Proposed Line will be in accordance with good utility practice, as established in the Transmission System Code, and in accordance with Northeast Power Coordinating Council ("NPCC") and North American Electric Reliability Council ("NERC") planning and operating standards.

A connection agreement with Hydro One, to enable electricity to be transferred to the IESO-controlled grid via the Proposed Line, will be negotiated prior to the in-service of the new generating station.

3.0 SUMMARY OF REQUIRED PERMITS AND APPROVALS

Various environmental permits and approvals will be required for construction, including approvals from the MOE and the Ontario Ministry of Natural Resources ("MNR"). The contractor will be responsible for securing the necessary licences and permits such as those for timber removal along the right-of-way, watercourse crossing installations and the overhead crossing of the Ontario Northland Railway rail line.

Table 1 below provides a summary of the status of key permits and approvals required to construct the Proposed Line. This list is not exhaustive - the requirement for other permits and approvals (e.g. roads, forest resources, fisheries & waterways, ownership and maintenance, waste management, archaeological resources, etc.) will be based on the final designs and the detailed construction execution plan prepared by the contractor for both the generating station and transmission line.

Table 1

Summary of Key Permits and Approvals

Permit or Approval	Status
Permits and Approvals for New Post Creek Project (required for New Post Creek Project including the Proposed Line)	
Provincial Environmental Assessment	Statement of Completion issued by OPG/CRP on May 12, 2014. (see Ex. G-T2-S1)
IESO System Impact Assessment Report (SIA)	SIA report issued by IESO. (see Ex. H-T1-S1)
Hydro One Customer Impact Assessment (CIA)	CIA report issued by Hydro One. (see Ex. I-T1-S1)
Permits and Approvals Specific to Proposed Line	
Property easement from the Crown from the proposed generating station to the connection point with the Hydro One D6T 115 kV line	Application will be made to the MNR for this easement. An Easement Agreement will be developed as part of the application process. (see Ex. F-T1-S1)
Lakes and Rivers Improvement Act permit (for approvals for location and design of water crossings)	To be requested from MNR.
MNR Work Permit under the Public Lands Act for site alteration and temporary occupation (construction camp) on Crown lands	Contractor will apply to the MNR for a Work Permit prior to commencing any work in the area of the transmission line corridor. (see Ex. F-T1-S1)
Temporary access rights and tree cutting approval as required	Requirements for temporary access rights and tree cutting approval will be identified in the construction planning stage, and will be included in the MNR Work Permit as required. (see Ex. F-T1-S1)
Land Use Permit under the Public Lands Act for infrastructure on or over Crown lands/water	Application will be made to the MNR for a Land Use Permit prior to the start of construction of the Proposed Line. (see Ex. F-T1-S1)

LAND MATTERS

1.0 DESCRIPTION OF LAND REQUIRED

The Proposed Line is located in the District of Cochrane within the Geographic Township of Pinard, approximately 100 km north of the Town of Smooth Rock Falls and about 13 km northeast of OPG's Abitibi Canyon GS. It will be located primarily to the west of the Abitibi River, about 6 km upstream (i.e. south of) the outlet of New Post Creek to the Abitibi River. A map showing the general geographic location of the New Post Creek Project and the Proposed Line is provided as Ex. B-T2-S2 Attachment 1.

The right-of-way for the Proposed Line is an area roughly 7 km long and approximately 30 meters in width running almost directly west from the site of the proposed new powerhouse on the eastern shore of the Abitibi River. The line will terminate at the Hydro One 115 kV Otter Rapids SS/Abitibi Canyon GS D6T transmission line about 7 km west of the proposed powerhouse. Maps showing the proposed transmission line corridor are provided in Ex. D-T2-S1.

Approximately 226 hectares of land will need to be cleared for the permanent facilities including the generating station, flooded area, and transmission line. Of this 226 hectares, approximately 34 hectares are for the transmission line. As discussed in Ex. G-T2-S1, the proposed transmission line corridor is situated mainly in areas that were previously logged and are now regenerating both naturally and artificially.

As noted in Ex. G-T2-S1, the New Post Creek Project will require the deregulation of an approximately 200 hectare portion of land within the existing Little Abitibi Provincial Park and its replacement with an approximately 400 hectare park addition, to comply with the *Provincial Parks and Conservation Reserves Act, 2006*. The Proposed Line is located entirely on Crown Land owned by the Province, outside of the existing and proposed replacement lands of Little Abitibi Provincial Park.

No federal or First Nation reserve lands will be affected by the New Post Creek Project, however the proposed transmission line would cross within overlapping Traditional Territories

of the TTN and MCFN. As discussed in Ex. G-T1-S1, TTN is involved in and supports the Project through CRP, and MCFN has been consulted and supports the project.

It has been confirmed that no private owners are impacted by the Proposed Line.

2.0 LAND ACQUISITION PROCESS

Application will be made to the MNR for permits to construct the Proposed Line along the corridor from the new generating station to the connection point with the Hydro One 115 kV line. An Easement Agreement with the Crown will be developed as the final tenure acquisition for the line, and registered in the Land Titles Office.

Application has been made to the MNR to request that it refrain from disposing of any Crown lands or issuing any land rights within the area for the Proposed Line. The MNR has confirmed, through a joint Mining Disposition with the MNR and Ministry of Northern Development, Mines and Forestry (“MNDM”), that no further rights have been granted over the proposed transmission line route. Rights have also been secured from the MNDM and MNR, through the Mining Disposition, to withdraw these lands from future mining claims.

Temporary access rights to the lands will be required during construction and after the Proposed Line is completed. The contractor will complete the MNR's "Application for Work Permit" prior to commencing any work in the area of the proposed transmission line corridor. A Land Use Permit will be applied for prior to the start of construction of the Proposed Line to bridge through to the registration of the final transmission line easement.

COMMUNITY AND STAKEHOLDER CONSULTATIONS

1.0 INTRODUCTION

The consultation process for the New Post Creek Project, including the Proposed Line, has been coordinated as part of the provincial Class environmental assessment. Significant consultation has been undertaken and there is broad support for the project in the First Nations communities and the community at large. The provincial government has also expressed support for the project. OPG and CRP are committed to ensuring that the general public, Aboriginal Peoples, relevant government ministries and any other interested stakeholders are kept informed of the status of the New Post Creek Project and the Proposed Line, and that any concerns are addressed.

The consultation process consists of three initiatives: (1) consultation with the general public, (2) consultation with government and regulatory agencies, and (3) consultation with First Nations, Métis and other Aboriginal Communities.

A database of 58 stakeholders was developed for purposes of notification regarding the consultation. The database was developed based on previous consultation processes for hydroelectric development projects in the region, discussions with government agencies, and knowledge of the local communities. Further detail on the process used for identification of Aboriginal interests is provided in section 4.0 below. The database includes the following key groups:

- general public
- business owners and contractors with an interest in the construction of the proposed Project
- government agency stakeholders
- outfitters
- Aboriginal individuals and organizations
- other energy and resource companies (e.g., mining and forest products)
- resource users (e.g., canoeists)
- municipal interests

The database is maintained and updated as required during the course of the Project. All individuals in the database received notifications for the open houses and newsletters as discussed below.

2.0 PUBLIC CONSULTATION

A public consultation plan was prepared with the objectives of providing the public with an opportunity to have meaningful input on the project and to address concerns where feasible. The public consultation plan included the following components, designed to ensure that the public was able to readily obtain information on the proposed Project:

- open houses/public meetings
- project newsletters (two newsletters were issued – one in November 2011 and the other in November 2012)
- a public website
- management of ongoing public inquiries

The website for the project has been available since October 2011 and can be found at www.newpostcreek.com. Since it became available there have been several thousand visits to the website.

Two rounds of open houses were held. The first round consisted of two open houses, one on November 30, 2011 in Smooth Rock Falls and the other on December 1, 2011 in Cochrane. The second round also consisted of two open houses held in Smooth Rock Falls and Cochrane, on December 5 and 6, 2012, respectively. Notices including the Notice of Commencement and an invitation to attend the first open house were published in the following publications:

- The Cochrane Times Post (English) on November 16 and 23, 2011
- Kapuskasing Northern Times (English) on November 16 and 23, 2011
- Kapuskasing L'Horizon (French) on November 16 and 23, 2011
- Kapuskasing Weekender (French and English) on November 17 and 24, 2011

The second Open House was advertised in the following:

- Cochrane Times Post (English) on November 15 and 22, 2012
- le Weekender (French and English) on November 15 and 22, 2012
- Kapuskasing Northern Times (English) on November 14 and 21, 2012

All individuals, businesses and organizations on the stakeholder database received a copy of the Notice of Commencement and first Open House, and a notice of the second Open House. Notices were sent via e-mail or Canada Post and were also posted on the website.

The first set of open houses in late 2011 included a joint presentation by OPG, CRP, SENES Consultants Limited ("SENES") (SENES was retained by OPG/CRP to undertake the environmental assessment for the New Post Creek Project), and KGS Group (retained as the owner's engineers). Twenty-two individuals attended the Open House in Smooth Rock Falls and seven attended in Cochrane. The attendees represented the general public, resource users (e.g., anglers, canoeists), business interests (e.g., possible contractors), Aboriginal interests and government agency stakeholders. Taykwa Tagamou Nation Chief Linda Job and Councillor Peter Archibald attended both Open Houses, as did representatives of MNR Cochrane District, Ontario Parks and the MOE. The presentation introduced the proponents (OPG and CRP), discussed the history of New Post Creek in terms of use by both the Taykwa Tagamou Nation and for hydroelectric generation, the project location, the proposed generating station and the benefits of undertaking the project, the local environment and the environmental assessment process, and potential impacts of the project after it goes into operation. Twenty-five information panels were available for the public to review and attendees were encouraged to ask questions and complete comment sheets providing any further concerns or questions.

The second set of open houses in late 2012 provided similar background information as was provided in the first round, but with additional details on the Project and in particular the environmental assessment, which had progressed significantly over the past year since the first open houses were held. This included more detailed information on preliminary findings relating to flora and fauna, water quality and flows and their impacts on fish, forestry, culture,

socio-economic impacts, and proposed mitigation measures. Nineteen individuals attended in Smooth Rock Falls and 10 in Cochrane, representing similar interests as at the first round a year earlier. Representatives of MNR Cochrane District, Ontario Parks and MOE also attended. There continued to be strong support for the Project.

In summary, public interest has been modest with about 30 people attending each round of open houses. The open houses demonstrated that the vast majority of individuals that attended are supportive of the proposed Project, recognizing its energy and economic benefits, and its importance to Tayka Tagamou Nation. A few individuals, particularly outfitters, expressed concerns mainly regarding the operating regime and impacts on fisheries resources, and aesthetic effects on the New Post Creek waterfalls. Efforts have been made to follow up with these individuals to address their concerns. No individuals have indicated outright opposition to the proposed Project.

3.0 GOVERNMENT AGENCY CONSULTATION

Government agency consultation was initiated in the Concept Phase of the proposed Project in 2006, becoming more formal once the environmental assessment commenced in 2011. Consultation has been on-going throughout the proposed Project and has focused primarily on the deregulation of a small area of Little Abitibi Provincial Park (see Ex. G-T2-S1) and the proposed generating station operating regime and impacts on the local environment.

The consultations beginning in 2006 were primarily with the MNR, Department of Fisheries and Oceans (“DFO”), Indian and Northern Affairs Canada (“INAC”, now known as Aboriginal Affairs and Northern Development Canada or “AANDC”) and the Canadian Environmental Assessment Agency (“CEA Agency”). Significant consultation with MNR and Ontario Parks has continued to the current period.

A summary of key agency consultation activities is as follows:

- May 25, 2011 – Multi-agency meeting to introduce the Project. Representation from MNR/Ontario Parks, MOE, Ontario Ministry of Tourism, Culture and Sport, DFO, Transport Canada and Environment Canada.
- June 6, 2011 – Meeting with the CEA Agency and AANDC introducing the proposed Project.
- October 20, 2011 – Meeting with the MNR, Ontario Parks and DFO on an approach to developing an operating regime for the proposed generating station.
- October 27, 2011 – Conference call with MOE to discuss their hydrological and hydraulic analysis requirements for waterpower projects.
- November 30, 2011 – Visit to proposed New Post Creek Project site for interested regulators.
- November 2011 – Discussions with MOE regarding the Aboriginal Consultation Plan.
- April 5, 2012 – Meeting with MOE on the proposed Project.
- April 11, 2012 – Meeting with MNR/Ontario Parks, MOE and DFO on the proposed operating regime.
- September 19, 2012 – Meeting with MNR and Ontario Parks to discuss proposed operating regime.
- October 23, 2012 – Meeting with MNR/Ontario Parks (DFO invited) to discuss the proposed operating regime.
- October 30, 2012 – Meeting with MNR (DFO invited) to discuss the proposed operating regime.
- November 2012 – Facilitated MOE, MNR, Ontario Parks and AANDC attendance at community meetings in Moose Factory and Moosonee with TTN and MCFN members.

In addition to the formal meetings noted above, OPG/CRP have had ongoing communications with the MNR Cochrane District Office, Ontario Parks, MOE and the Ministry of Tourism, Culture and Sport throughout the environmental assessment process. The draft environmental assessment report and associated Technical Support Documents were reviewed by the MNR, Ontario Parks, MOE and DFO. All issues, comments, clarification requests and edits were resolved through an iterative process prior to document finalization for public review, and a Disposition Report was prepared providing OPG/CRP responses to

all of the review comments from DFO, MNR and MOE. All comments were deemed by the agencies as having been addressed in the responses.

OPG/CRP have also had regular and special communications with Members of Parliament, Members of Provincial Parliament, municipal representatives and similar agencies in northeastern Ontario. Key communications to these recipients regarding the proposed Project are as follows:

- December 8, 2009 – Kapuskasing Community Dinner (presentation made to community leaders and businesses).
- March 22, 2010 – Town of Cochrane Update (presentation to mayor and council)
- May 20, 2010 – Timmins Regional Economic Outlook Conference

- January 12, 2011 – Update letters to:
  - Charlie Angus, MP, Timmins-James Bay
  - Michel Arseneault, Mayor, Smooth Rock Falls
  - Gilles Bisson, MPP, Timmins-James Bay
  - Dan Cleroux, Mayor, Coleman Township
  - Carol Hughes, MP, Algoma-Manitoulin-Kapuskasing
  - Carman Kidd, Mayor, Temiskaming Shores
  - Tom Laughren, Mayor, Timmins
  - Victor Mitchell, Mayor, Moosonee
  - Peter Politis, Mayor, Cochrane
  - David Ramsay, MPP, Timiskaming-Cochrane
  - Anthony Rota, MP, Nipissing-Timiskaming
  - Al Spacek, Mayor, Kapuskasing

- June 9, 2012 – Temiskaming Shores and Area Chamber of Commerce Annual Dinner
- October 15, 2012 – Timmins Regional Economic Outlook Conference (annual conference hosted by the Timmins Chamber of Commerce)

- December 10, 2012 – Update to:
  - Charlie Angus, MP, Timmins-James Bay
  - Michel Arseneault, Mayor, Smooth Rock Falls
  - Jay Aspin, MP, Nipissing-Timiskaming
  - Gilles Bisson, MPP, Timmins-James Bay
  - Dan Cleroux, Mayor, Coleman Township
  - Carol Hughes, MP, Algoma-Manitoulin-Kapuskasing
  - Carman Kidd, Mayor, Temiskaming Shores
  - Tom Laughren, Mayor, Timmins
  - George Lefebvre, Mayor, Latchford
  - Victor Mitchell, Mayor, Moosonee
  - Peter Politis, Mayor, Cochrane
  - Al Spacek, Mayor, Kapuskasing
  - John Vanthof, MPP, Timiskaming Cochrane

- March 19, 2013 – Timmins Economic Development Corporation board insight presentation

In summary, government agencies have been consistently supportive of the proposed Project, and the focus of the consultations has been to ensure that environmental and related issues such as the proposed generating station operating regime and the deregulation of a portion of Little Abitibi Provincial Park are adequately addressed. Positive letters of support have been provided by local mayors in Cochrane District.

4.0 CONSULTATIONS WITH ABORIGINAL PEOPLES

4.1 Consultation Plan Development

The first step in developing an Aboriginal consultation program was to determine which First Nations and Métis groups should be consulted. This assessment was based on local knowledge within OPG and CRP regarding traditional territories and users in the area, and information gathered from other planning exercises and consultations in the area (e.g., forest management planning). Based on this assessment the following First Nations and Aboriginal

organizations were identified as having or potentially having an interest in the area of the proposed Project:

- Taykwa Tagamou Nation ("TTN")
- Moose Cree First Nation ("MCFN")
- Wahgoshig First Nation
- MoCreebec Council of the Cree Nation ("MoCreebec")
- Métis Nation of Ontario, Northern Lights Métis Council

As TTN is a co-proponent on the proposed Project and has a significant interest, it was clear that they would need to be included in the consultation process. Determining the balance of First Nations and Métis groups to be consulted required a more rigorous process.

An important consideration was the government's Co-planning Commitment policy on Aboriginal involvement in hydroelectric development in the Moose River Basin. In a letter to the Chairman of the Moose River/James Bay Coalition, from then Minister of Environment and Energy, Bud Wildman, the provincial government agreed that "within the Moose River Basin north of Highway 11, there will be no hydroelectric development beyond Ontario Hydro's Mattagami River Hydroelectric Station Extensions project until such time as a co-planning process has been developed, agreed to and applied by the affected First Nations and Ontario" (the "Co-planning Commitment"). Correspondence dated August 1, 2007 from A/Assistant Deputy Minister David de Launay of the MNR invited discussion on the Moose River Basin Co-planning Commitment, and proposed to the MCFN, TTN and MoCreebec that (1) lands within the Moose River Basin north of Highway 11 could be directly allocated where such applications for new hydroelectric projects are proposed by the local First Nation and/or their development partner; (2) there not be a megawatt limit on the installed capacity of a project; and (3) the current Northern Rivers Policy for the Albany, Winisk, Attawapiskat and Severn Rivers remain in place for the time being.

Based on the Co-planning Commitment and also recognizing that the MCFN self-described Homeland Declaration extends to the western bank of the Abitibi River, which includes the

lands for the proposed transmission line, MCFN was also included in the consultation process. The MCFN subsequently agreed, in a written agreement with TTN, to actively support the New Post Creek Project. The MCFN further agreed that the Project could proceed as an exception to the Co-Planning Commitment.

MoCreebec was also consulted and subsequently provided a letter of support to TTN for the proposed New Post Creek Project in light of the co-planning discussions.

Based on a review of Wabun Tribal Council's Traditional Territory map, it was determined that all components and any effects of the proposed Project would fall outside of this Traditional Territory. It was concluded that consultation with Wabun Council First Nations was not required.

Wahgoshig is a First Nation with its community located near the Québec border east of Iroquois Falls. Wahgoshig was informed of the proposed Project by letter even though there was no information indicating that the Project and its extent of effects would impact their Traditional Territory.

Through its experience with other projects in northeastern Ontario, OPG was aware that the Métis Nation of Ontario would likely express an interest to be consulted. The Northern Lights Community Council based in Cochrane, which is the closest Métis Nation of Ontario Council to the proposed Project, was therefore also included for consultation.

OPG/CRP further consulted with government agencies to ensure that the list of First Nations, Métis and/or other Aboriginal organizations was comprehensive. Direction provided by the MOE with respect to projects subject to the *Environmental Assessment Act* was followed, whereby the MOE identifies government agencies to which proponents can send letters to assist in identifying First Nations communities and Aboriginal organizations. Consequently, letters were sent to the following agencies:

- INAC, Specific Claims Branch
- INAC, Environment Unit
- INAC, Comprehensive Claims Branch (Consultation and Accommodation Unit)
- INAC, Litigation Management and Resolution Branch
- INAC, Office of the Federal Interlocutor for Métis and Non-Status Indians
- Ontario Ministry of Aboriginal Affairs, Consultation Unit

Responses were received from the Specific Claims Branch, the Environment Unit and the Consultation and Accommodation Unit of INAC. No other First Nation, Métis or Aboriginal groups were identified for consultation.

4.2 Consultation with Taykwa Tagamou Nation

On November 10, 2007, members of the TTN voted to accept the Grievance Settlement Agreement from OPG that made reparations for past utilization of water resources within their Traditional Territory. The community members also voted to proceed with the New Post Creek Project in partnership with OPG. A detailed commercial Partnership Term Sheet was signed by OPG and TTN in November 2008.

Coral Rapids Power General Partner Inc., a company formed and wholly owned by the TTN to enter into the electricity generation business in Ontario, was incorporated by the Chief and Council in 2004 as a vehicle to carry out potential commercial activities related to electricity generation. TTN and its incorporated company subsequently created Coral Rapids Power Limited Partner Inc. to enter a limited partnership with OPG for the New Post Creek Project.

Within this context, OPG, CRP and TTN have been working with the MNR and Ontario Parks since 2006 regarding the proposed New Post Creek hydroelectric facility. In January 2011, the TTN also finalized a “Consultation and Accommodation Protocol” outlining how meaningful consultation on development projects and decisions can take place between TTN, the Crown and project proponents.

The proposed New Post Creek Project provides unique opportunities for economic and social development for TTN and has been endorsed by the membership and the Chief and Council, and generally has tremendous support within the community. A number of TTN members have been employed during the Concept and Definition Phases of the proposed Project either as employees of CRP or employees of contractors to engineering and environmental consultants retained for the Project. TTN's equity share in the proposed Project will provide a steady revenue flow for future development within TTN Traditional Territory. There will also be opportunities for TTN employment during the Construction Phase of the proposed Project.

As a partner in the proposed Project through CRP, TTN is involved in every aspect of project development. CRP has been permanently staffed by a President (Mr. Wayne Ross) from TTN from 2011 to present. As the main conduit for TTN participation, Mr. Ross has made extensive efforts to keep the community informed of the proposed Project.

In May 2008, a newsletter series "New Post Creek Project News" was commenced by CRP for the purpose of providing information on the Project. The newsletters are distributed within the TTN Community and are posted on the CRP website: www.coralrapidspower.com which was set up in October 2008 to provide information and updates to the Community.

TTN leadership is kept informed of the proposed Project through CRP Board Meetings and specifically by Mr. Peter Archibald Sr., CRP's ex officio who also sits on the TTN Council. OPG supplies a quarterly report that is reviewed and approved by CRP before being submitted to Chief and Council. In addition, presentations by CRP, OPG and their consultants are delivered to TTN leadership at the TTN Annual General Meetings, typically held every August. The President of CRP has an open door policy for TTN members, who can seek information or voice concerns pertaining to issues such as environment, employment, contracting or business opportunities, and equity issues.

Community Meetings on the environmental aspects of the proposed Project were held in November/December 2011 and November/December 2012 at the Reserve outside of Cochrane and in Moosonee where many members reside. Smaller group meetings have also

been held with key TTN members such as local trappers and individuals interested in contracting or employment opportunities. Consultation has been undertaken formally and informally with the two local TTN trappers directly affected by the proposed Project, with one being directly affected by the transmission line.

In addition, a Joint Working Group including TTN, MCFN and OPG/CRP was created as a collaborative forum for open dialogue regarding all environmental matters pertaining to the proposed Project.

4.3 Consultation with Moose Cree First Nation

MCFN is a First Nation with a population of approximately 4,124 individuals of which about 40% are located on a Reserve at Moose Factory Island just south of James Bay on the Moose River. The other approximately 60% of MCFN citizens live throughout Ontario and Canada, with substantial numbers in northeastern Ontario communities such as Timmins, Cochrane and Kapuskasing.

The MCFN has made a Homeland Declaration as far as the western shore of the Abitibi River, which includes the route for the Proposed Line. As noted above, the MCFN agreed that the proposed Project could proceed as an exception to the Co-Planning Commitment. Subsequently, MCFN has had substantial involvement in the proposed Project and a MCFN Co-ordinator has been hired to act as a community liaison and to identify MCFN issues and interests, address environmental aspects, liaise with the MCFN Community on potential effects on aboriginal and treaty rights, and coordinate/facilitate MCFN input to the proposed Project. As indicated above, a Joint Working Group including TTN, MCFN and OPG/CRP was also established to address environmental matters pertaining to the Project. In addition to the communications through the Joint Working Group, formal consultation notices were sent to the MCFN Chief. MCFN requested that OPG/CRP present the final environmental reports to the Community, and this was done at a meeting held on November 26, 2013 in Moose Factory, where the reports were well received with no material issues being raised.

Two community information sessions, one in November 2011 and another in December 2012, were held in Moose Factory. Approximately 10 to 15 people attended each of these sessions. The participants raised questions and concerns relating to business and employment opportunities, social and economic issues, and cumulative environmental effects relating to all of the hydroelectric projects in northeastern Ontario and their effects on treaty rights and their children's future. Most of the questions were addressed directly at the meetings, while others requiring more information were later followed-up in writing.

A MCFN citizen residing in Cochrane who attended one of the public Open Houses indicated that he hunts, traps and fishes in the area, and has a trapline on the west side of the Abitibi River along the western end of the proposed transmission line corridor. OPG/CRP and the MCFN Coordinator are working closely with him to mitigate any effects on his activities. For example, the Trapper indicated that he was concerned about the potential use of herbicides for transmission line right-of-way maintenance, and the OPG/CRP team has indicated to him and to the MNO that herbicides would not be used for such maintenance.

4.4 Consultation with Other First Nations

The Wahgoshig Community is located close to the Québec border west of Iroquois Falls, and has a registered population of about 285 members, of which just under half reside on the Reserve. Based on OPG/CRP knowledge of Wahgoshig interests, there is no indication that the Project would impact their Traditional Territory. Notwithstanding, a letter was sent to Wahgoshig informing them of the proposed New Post Creek Project, followed by a telephone call from CRP President Wayne Ross to Chief Babin of Wahgoshig (Mr. Ross is personally acquainted with Chief Babin). Chief Babin has indicated that Wahgoshig has no concerns about the proposed Project.

The MoCreebec community is an association of Cree peoples originally from Québec who have been living in the Moose Factory-Moosonee area for generations. The MoCreebec were consulted based on the Moose River Basin policy, and it was determined that there are no interests in or near the proposed Project. The MoCreebec have provided a letter of

support to TTN for the proposed Project. Nevertheless, consultation letters are sent to MoCreebec to keep them informed about the Project.

4.5 Consultation with Métis Nation of Ontario

The Métis Nation of Ontario was formed in 1993 and represents the collective aspirations, rights and interests of Métis people and communities throughout Ontario. The Northern Lights Métis Council based in Cochrane is the closest Métis Nation of Ontario Council to the proposed Project, and OPG/CRP have corresponded directly with this Council.

Letters informing them about the proposed Project were sent as part of the environmental assessment process, although based on OPG/CRP knowledge of the area and discussions with the Métis, Métis interests are not likely to be affected by the proposed Project.

A formal meeting was held among OPG/CRP, Métis Nation of Ontario, MOE and MNR in February 2012 to present the proposed Project, provide background on the proponents, allow the Métis to describe their organization and people, and discuss issues of interest and concern. The meeting was very positive and issues of importance to the MNO were discussed including concerns around the possible use of herbicides and potential loss of native plants in the area. Subsequent to the meeting periodic communications were maintained with the Métis Nation of Ontario, and based on those discussions no further meetings were considered warranted.

5.0 SUMMARY OF CONSULTATIONS

OPG/CRP are of the opinion that the consultations to date with the general public, government agencies and First Nations, Métis and other Aboriginal Communities have been thorough, open, inclusive and meaningful. OPG/CRP also believes that to date it has met the requirements of the provincial Class environmental assessment process and in assisting the Crown to discharge its “duty to consult” with Aboriginal Peoples. OPG/CRP undertook a comprehensive process to determine the breadth of interest in the project, and several meetings and open houses with representatives of various groups and agencies have been held. OPG/CRP believes that all parties with an interest in the project have been fully

consulted to date, and that structures are in place to ensure that they will continue to be consulted as the project progresses.

Based on the consultations undertaken to date, the New Post Creek Project including the Proposed Line will have no significant adverse impacts on the general public, on the current use of lands and resources for traditional purposes by Aboriginal Peoples, or the interests of government agencies. Furthermore, the project has the support of these groups. OPG/CRP plans to continue to work closely with all stakeholders and to maintain an open door policy beyond the environmental assessment phase to deal with any issues or concerns as they may arise, and to ensure that any concerns are addressed during construction and operation of the generating station, including the Proposed Line.

ENVIRONMENTAL ASSESSMENT

Under the Ontario *Environmental Assessment Act*, the New Post Creek Project is subject to the Ontario Waterpower Association ("OWA") Class Environmental Assessment for Waterpower Projects ("Class EA" or "EA") as a new project on a managed waterway. The project did not trigger a federal environmental assessment. An Environmental Report prepared as part of the Class EA process provides a description of the proposed Project, summarizes the baseline environmental setting and anticipated environmental effects, recommends appropriate mitigation measures to minimize or obviate these effects, and describes the consultation process. The Class EA planning process requires an evaluation of the positive and negative environmental effects of the proposed Project, and a report on both the construction and operation phases of the project. The Proposed Line is specifically addressed as part of the Class EA.

The Class EA examines effects of the project on the aquatic environment (fish and other aquatic life), the terrestrial environment (habitat and flora and fauna), the socio-economic environment (local economy and social uses), the First Nations, Métis and Aboriginal communities (rights, values, uses and interests) and archaeological resources. A number of Technical Support Documents addressing these issues and that accompany the Environmental Report have been prepared. Preliminary field work was initiated in 2009, with more comprehensive work being carried out since then. EA-related fieldwork and studies are now complete. The later stages of the assessment focused on the specific effects of the construction and operation of the proposed facilities and measures to avoid, prevent, eliminate, reduce, mitigate and compensate for any negative effects. Measures to enhance positive effects were also identified.

The Environmental Report and Technical Support Documents were circulated for Agency Review in June 2013 with the comment period closing at the end of July 2013. Agency Comments were subsequently addressed in a Disposition Report. A Notice of Completion was issued in November 2013 and subsequently the Environmental Report and Technical Support Documents were issued for Aboriginal and public review, with the comment period closing in early January 2014. No comments were received from these reviews.

The provincial EA process was completed on May 12, 2014 with the issuance of the Statement of Completion. This is the final step in the EA process, although regulators will be further consulted regarding the various permits required for construction.

A Joint Working Group including TTN, MCFN and OPG/CRP was established to address environmental matters pertaining to the Project and will continue to operate as the Project proceeds. The role of the Working Group is to:

- Act as a collaborative forum for open dialogue among members of Joint Working Group regarding all environmental matters pertaining to proposed Project.
- Engage and coordinate with government authorities with respect to any environmental approval under the *CEAA* or the *EA Act* (Ontario) or any other permits.
- Act as a collaborative forum for the parties to review and consider applications for the permits and prepare any future information reasonably required with respect to the permits.
- Act as a collaborative forum for coordinating relevant research and data collection required for the proposed Project.

The impact assessment of the Proposed Line is included as part of the Environmental Report. Based on the assessment and proposed mitigation, the construction and operation of the proposed generating station including the Proposed Line will have no significant adverse environmental effects. The proposed transmission line corridor is situated mainly in areas that were previously logged and are now regenerating both naturally and artificially, being dominated by black spruce and trembling aspen. None of the flora species identified during the field surveys are designated as species at risk. As discussed in Ex. G-T1-S1, two traplines utilized by TTN and MCFN members will be affected by the Proposed Line, and discussions with the Trappers are ongoing with respect to mitigation.

A potential adverse effect on fish habitat and fisheries could be the maintenance of riparian vegetation in a more open state due to vegetation management in the proposed transmission line right-of-way. These effects would be negligible for those watercourses where the riparian habitat is currently dominated by open wetlands such as bog and swamp. Some of the

watercourses in the proposed right-of-way are dominated by these low plant communities, which are expected to remain similar even with vegetation management. The loss of riparian trees could result in less shading, potentially increased water temperatures, reduced woody debris and litter fall into the stream, and reduced inputs of terrestrial invertebrate prey from overhanging vegetation. However, overall adverse effects on any watercourse due to riparian tree removal are expected to be minor given that the proposed right-of-way is only approximately 30 meters wide and will represent a very small proportion of the total length of the watercourses to be traversed. The intention is to not fully clear the required areas at stream crossings, but rather to manually clear only the non-compatible trees and retain the residual shrubby and ground level vegetation. In addition, the majority of the construction of the proposed transmission line is planned to be carried out during the winter months to minimize the impact on the natural environment, particularly wet areas. As the proposed transmission line will span the Abitibi River with access obtained from both sides, with no structures being placed in the river, fish habitat in the river will not be affected.

The requirements provided in the Department of Fisheries and Oceans operational guidelines regarding maintenance of riparian vegetation in existing rights-of-way, as follows, will be adhered to,:

- Combined maintenance activities (e.g., mowing, brushing, topping, slashing, etc.) will affect no more than one-third of the total woody vegetation, such as trees and shrubs, in the right-of-way within 30 meters of the ordinary high water mark in any given year.
- When practicable, riparian vegetation in the right-of-way will be altered by hand. If machinery must be used, it should be operated on land and in a manner that minimizes disturbance to the banks of the water body:
  - machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks;
  - washing, refuelling and servicing of machinery and storage of fuel and other materials for the machinery, including hand tools, should be undertaken at locations away from the water to prevent any deleterious substance from entering the water body;
  - an emergency spill kit should be kept on site in case of fluid leaks or spills from machinery, and;
  - banks should be restored to original condition if any disturbance occurs.

- Machinery fording the watercourse to bring equipment required for maintenance to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use:
  - if minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage;
  - grading of the stream banks for the approaches should not occur;
  - if the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, a temporary crossing structure or other practice should be used to protect these areas;
  - the one-time fording should prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows, and
  - fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- When altering a tree that is located on the bank of a water body, the root structure and stability should be maintained.
- Any waste materials removed from the work site should be stabilized to prevent them from entering the water body, including covering spoil piles with biodegradable mats or tarps.
- All long-term storage of waste materials should be kept outside of the riparian area.
- To prevent erosion and to help seeds germinate, any disturbed areas should be vegetated by planting and seeding preferably with native trees, shrubs or grasses and covered with mulch.
- If there is insufficient time remaining in the season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
- Effective sediment and erosion control measures should be maintained until re-vegetation of disturbed areas is achieved.

As discussed in Ex. C-T1-S2, environmental protection during construction and operation will be ensured by adherence to the site-specific Environmental Management Plan to be

developed by the contractor, as well as compliance with regulatory standards and guidelines. The Environmental Management Plan ensures that environmental protection will be achieved during construction by describing government agency requirements, proposed Project commitments and recommended mitigation measures. The Environmental Management Plan will include the Erosion and Sediment Control Plan, Spills Emergency Preparedness and Response Plan, Hazardous Materials Management Plan and Waste Management Plan.

The New Post Creek Project will require the deregulation of an approximately 200 hectare portion of land within the existing Little Abitibi Provincial Park and its replacement with an approximately 400 hectare park addition, to comply with the *Provincial Parks and Conservation Reserves Act, 2006*. To facilitate this, the Class EA process is coordinated with the MNR Class Environmental Assessment for Provincial Parks and Conservation Reserves, and the Crown Land Use Policy Atlas amendment process. The Proposed Line, however, is located outside of the existing and proposed replacement lands of Little Abitibi Provincial Park.

IESO SYSTEM IMPACT ASSESSMENT

Under the IESO Market Rules, any party planning to construct a new or modified connection to the IESO-controlled grid must have an IESO assessment of the proposed connection and related facilities. A System Impact Assessment ("SIA") to examine the effect of the proposed New Post Creek generation facility on the reliability of the IESO-controlled grid was issued by the IESO on October 28, 2010 (Connection Assessment, Final Report, CAA ID 2007-294) and is provided as Attachment 1 to this exhibit. That assessment concluded that the proposed project would not have a material adverse effect on the reliability of the IESO-controlled grid.

There have been no significant changes since the SIA was issued to warrant an updated SIA to be issued by the IESO. However, now that a design-build contractor has been selected and the detailed design is progressing, OPG is maintaining a dialogue with the IESO regarding any potential changes in the design of the generating station, to enable them to determine if and when any updated studies are required.

OPG/CRP will satisfy the requirements, recommendations and any other conditions imposed by the IESO as described in the SIA.

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EB-2014-0194
Exhibit H-1-1
Attachment 1

REPORT

Power to Ontario.
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CONNECTION ASSESSMENT

IMO

FINAL REPORT

Project: Newpost Creek Hydraulic Generation
Applicant: Ontario Power Generation Inc.

CAA ID 2007-294

Market Facilitation Department

October 28, 2010

Document ID	
Document Name	CONNECTION ASSESSMENT
Issue	
Reason for Issue	First issue.
Effective Date	October 28, 2010

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Exhibit H-1-1
Attachment 1

System Impact Assessment Report

Newpost Creek Hydraulic Generation Development Project

Acknowledgement

The IESO wishes to acknowledge the assistance of Hydro One in completing this assessment.

Disclaimers

IESO

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of conditional approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Conditional approval of the proposed connection is based on information provided to the IESO by the connection applicant and Hydro One at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by Hydro One at the request of the IESO. Furthermore, the conditional approval is subject to further consideration due to changes to this information, or to additional information that may become available after the conditional approval has been granted.

If the connection applicant has engaged a consultant to perform connection assessment studies, the connection applicant acknowledges that the IESO will be relying on such studies in conducting its assessment and that the IESO assumes no responsibility for the accuracy or completeness of such studies including, without limitation, any changes to IESO base case models made by the consultant. The IESO reserves the right to repeat any or all connection studies performed by the consultant if necessary to meet IESO requirements.

Conditional approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed facility to the IESO-controlled grid. However, the conditional approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IESO in accordance with Chapter 4, section 6 of the Market Rules. The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IESO provides a draft of this report to the connection applicant, the connection applicant must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to the connection applicant. Although the IESO will use its best efforts to advise you of any such

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

changes, it is the responsibility of the connection applicant to ensure that the most recent version of this report is being used.

Hydro One

The results reported in this report are based on the information available to Hydro One, at the time of the study, suitable for a preliminary assessment of this transmission system reinforcement proposal.

The short circuit and thermal loading levels have been computed based on the information available at the time of the study. These levels may be higher or lower if the connection information changes as a result of, but not limited to, subsequent design modifications or when more accurate test measurement data is available.

This study does not assess the short circuit or thermal loading impact of the proposed facilities on load and generation customers.

In this system impact assessment, short circuit adequacy is assessed only for Hydro One circuit breakers. The short circuit results are only for the purpose of assessing the capabilities of existing Hydro One circuit breakers and identifying upgrades required to incorporate the proposed facilities. These results should not be used in the design and engineering of any new or existing facilities. The necessary data will be provided by Hydro One and discussed with any connection proponent upon request.
The ampacity ratings of Hydro One facilities are established based on assumptions used in Hydro One for power system planning studies. The actual ampacity ratings during operations may be determined in real-time and are based on actual system conditions, including ambient temperature, wind speed and facility loading, and may be higher or lower than those stated in this study.

The additional facilities or upgrades which are required to incorporate the proposed facilities have been identified to the extent permitted by a preliminary assessment under the current IESO Connection Assessment and Approval process. Additional facility studies may be necessary to confirm constructability and the time required for construction. Further studies at more advanced stages of the project development may identify additional facilities that need to be provided or that require upgrading.

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

Table of Contents

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

System Impact Assessment Report

Conclusions

This System Impact Assessment has been conducted to examine the effect of the Newpost Creek 2×12.5 MW generation facility on the reliability of the IESO-controlled grid. The conclusions from the assessment are summarized as follows:

1. The proposed project will not have a material adverse effect on the reliability of the IESO-controlled grid.

2. The increases in fault level, due to the proposed Newpost Creek GS, will not exceed the interrupting capabilities of the existing breakers on the IESO-controlled grid.

3. There are no thermal overloads of the 115 kV area transmission identified as a result of connecting the proposed Newpost Creek generation and operated up to full power.

4. For all contingency cases tested with the proposed Newpost Creek generators, all voltage declines are within the 10% pre and post-ULTC action limit. Thus, the voltage performance would meet the voltage decline criteria.

5. The dynamic simulation results show that, with Newpost Creek generators on-line, all of the simulated contingencies exhibit a stable and acceptably damped response.

Notification of Approval for Connection Proposal

It is recommended that Notification of Conditional Approval for connection be issued to Ontario Power Generation Inc., subject to IESO's Requirements for Connection listed below, and any further requirements that may be identified by Hydro One Networks Inc. in the Customer Impact Assessment.

IESO's Requirements for Connection

The IESO requirements that have been identified during this Connection Assessment for the proposed addition of the Newpost Creek generation facility are given below. The IESO approval to place the new generator in-service depends on compliance with Market Rules including the implementation of the following requirements.

Transmitter Requirements

The following requirements are applicable for Hydro One for the incorporation of Newpost Creek:

(1) The transmitter is required to change the relay settings of the 115 kV circuit C6T to ac for the effect of the generation facility.

Modifications to protection relays after this SIA is finalized must be submitted to IESO as soon as possible or at least six (6) months before any modifications are to be implemented. If those modifications result in adverse impacts, the connection applicant and the transmitter must develop mitigation solutions.

Applicant Requirements

Specific Requirements: The following *specific* requirements are applicable to the applicant for the incorporation of Newpost Creek. Specific requirements pertain to the level of reactive compensation needed, operation restrictions, Special Protection Systems, upgrading of equipment and any project specific items not covered in the *general* requirements:

(1) OPG must install a motorized disconnect switch at the point of connection to the existing IESO controlled grid.

(2) The connection applicant is required to ensure that the impedance of the step-up transformer is less than 12.2% on the rating of the generator facility (28 MVA).

(3) The proposed Newpost Creek GS has to participate in the North East Special Protection Scheme to address post-contingency thermal overloading as well as to respect existing Northeast operating limits. As a minimum, the facility should be able to be selected for G/R for the loss of D501P, P502X, P91G, C2H, C3H, A4H, A5H, A4H/A5H, H6T, H7T, and H6T/H7T.

General Requirements: The proposed connection must comply with all the applicable requirements from the Transmission System Code (TSC), IESO Market Rules, and standards and criteria. The most relevant requirements are summarized below and presented in more detail in Section 2 of this report.

(1) The proposed facility must satisfy the Generator Facility Requirements in Appendix 4.2 of the Market Rules.

(2) As this facility is in northern Ontario, all new 115 kV equipment must have a maximum continuous voltage rating and the ability to interrupt fault current at a voltage of at least 132 kV.

(3) If revenue metering equipment is being installed as part of this project, it must comply with Chapter 6 of the IESO Market Rules.

(4) The new equipment must sustain the fault levels in the area where the equipment is installed. Should future system enhancements result in fault levels exceeding equipment capability, the applicant is required to replace equipment at its own expense with higher rated equipment, up to 50 kA as per the Transmission System Code for 115 kV systems.

(5) The 115 kV breakers must meet the required interrupting time of less than or equal to 5 cycles as per the Transmission System Code.

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

(6) The connection equipment must be designed such that adverse effects due to failure are mitigated on the IESO-controlled grid.

(7) The connection equipment must be designed for full operability in all reasonably foreseeable ambient temperature conditions.

(8) The facility must satisfy telemetry requirements as per Appendices 4.15 and 4.19 of the Market Rules. The determination of telemetry quantities and telemetry testing will be conducted during the IESO Facility Registration/Market entry process.

(9) Protection systems must satisfy requirements of the Transmission system code and specific requirements from the transmitter. New protection systems must be coordinated with existing protection systems.

(10) Protective relaying must be configured to ensure transmission equipment remains in service for voltages between 94% of minimum continuous and 105% of maximum continuous values as per Market Rules, Appendix 4.1.

(11) Protection systems within the generation facility must only trip appropriate equipment required to isolate the fault. After the facility begins commercial operation, if an improper trip of the transmission facilities occurs due to events within the generation facility, the new facility may be required to be disconnected from the IESO-controlled grid until the problem is resolved.

(12) The autoreclosure of the new 115 kV breaker at the connection point must be blocked. Upon its opening for a contingency, it must be closed only after the IESO approval is granted. The IESO will require reduction of power generation prior to the closure of the breaker followed by gradual increase of power to avoid a power surge.

(13) The generator must operate in voltage control mode and shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal based within ±0.5% of any set point within ±5% of rated voltage. If the AVR target voltage is a function of reactive output, the slope $\Delta V / \Delta Q_{max}$ shall be adjustable to 0.5%.

(14) Models and data, including any controls that would be operational, must be provided to the IESO through the IESO Facility Registration/Market Entry process at least seven months before energization to the IESO-controlled grid.

(15) During the commissioning period, a set of IESO specified tests must be performed. The commissioning report must be submitted to the IESO within 30 days of the conclusion of commissioning. Field test results should be verifiable using the PSS/E models used for this SIA.

(16) The registration of the new facilities will need to be completed through the IESO's Market Entry process before any part of the facility can be placed in-service. If the data or assumptions supplied for the registration of the facilities materially differ from those that were used for the assessment, then some of the analysis might need to be repeated.

(17) As part of the IESO Facility Registration/Market Entry process, the connection applicant must provide evidence to the IESO confirming that the equipment installed meets the Market Rules requirements and matches or exceeds the performance predicted in this assessment. Until this evidence is provided and found acceptable to the IESO, the Facility Registration/Market Entry process will not be considered complete and the connection applicant must accept any restrictions the IESO may impose upon this project's participation in the IESO administered market or connection to the IESO-controlled grid. Failure to provide evidence may result in disconnection from the IESO-controlled grid.

(18) The proposed facility must be compliant with applicable reliability standards set by the North American Electric Reliability Corporation (NERC) and the North East Power Coordinating Council (NPCC) prior to energization to the IESO-controlled grid.

(19) The applicant may meet the restoration participant criteria as per the NERC standard EOP-005. Further details can be found in section 3 of Market Manual 7.8 (Ontario Power System Restoration Plan).

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

System Impact Assessment Report
Newpost Creek Hydraulic Generation

1. INTRODUCTION

Ontario Power Generation is proposing to develop a new hydraulic generation facility, Newpost Creek GS, near Cochrane, Ontario. The proposed two generators will be connected at 13.8 kV and have a nameplate rating of 14 MVA at 0.9 pf. The Maximum Continuous Rating (MCR) is expected to be 12.5 MW. The generators will be connected to the grid via a new three phase 13.8/121 kV step-up transformer rated 28 MVA and a 7 km 115 kV transmission line. This transmission line is to be connected to the existing 115 kV Hydro One circuit C6T between Otter Rapids SS and Abitibi Canyon GS.

The scheduled in-service date for the project is December 31, 2012.

This System Impact Assessment has been conducted to examine the impact on the reliability of the IESO-controlled grid by the addition of two new 12.5 MW generators at Newpost Creek.

The connection applicant provided generation facility information including connection arrangement, models and parameters for generator, governor, exciter and power system stabilizer. Based on the application materials provided by OPG the IESO performed studies and prepared a detailed report containing equipment performance test results, thermal analysis, voltage analysis and transient analysis.

– End of Section –

2. GENERAL REQUIREMENTS

Generators

The proposed facility must satisfy the generator facility requirements in Appendix 4.2 of Market Rules.

The generation facility requirements for a hydro-electric facility primarily include:

- the generation facility shall have the capability to operate continuously between 59.4Hz and 60.6Hz and for a limited period of time in the region above straight lines on a log-linear scale defined by the points (0.0s, 57.0Hz), (3.3s, 57.0Hz), and (300s, 59.0Hz);
- the generation facility shall respond to frequency increase by reducing the active power with an average droop based on maximum active power adjustable between 3% and 7% and set at 4% . Regulation deadband shall not be wider than ± 0.06%. A sustained 10% change of rated active power after 10 s in response to a constant rate of change of frequency of 0.1%/s during interconnected operation shall be achievable;
- Speed shall be controlled in a stable fashion in both interconnected and island operation. Certain types of generation, such as hydro-electric generation will require different governor control settings to achieve both a rapid response during interconnected operation and a stable response during island operation. The switch between these two settings must be automatically triggered by conditions that are subject to IESO approval. Normally either frequency alone or a combination of frequency and rate of change of frequency would be acceptable.
- the generation facility shall be able to ride through routine switching events and design criteria contingencies assuming standard fault detection, auxiliary relaying, communication, and rated breaker interrupting times unless disconnected by configuration;
- the generation facility directly connecting to the IESO-controlled grid shall have the minimum capability to supply continuously all levels of active power output for 5% deviations in terminal voltage. Rated active power is the smaller output at either rated ambient conditions (e.g. temperature, head, wind speed, solar radiation) or 90% of rated apparent power. To satisfy steady-state reactive power requirements, active power reductions to rated active power are permitted;
- the generation facility must have the capability to inject or withdraw reactive power continuously (i.e. dynamically) at a connection point up to 33% of its rated active power at all levels of active power output except where a lesser continually available capability is permitted by the IESO. If necessary, shunt capacitors must be installed to offset the reactive power losses within the facility in excess of the maximum allowable losses. If generators do not have dynamic reactive power capabilities as described above, dynamic reactive compensation devices must be installed to make up the deficient reactive power;
- the generation facility shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest

voltage terminal based within ±0.5% of any set point within ±5% of rated voltage. If the AVR target voltage is a function of reactive output, the slope $\Delta V / \Delta Q_{max}$ shall be adjustable to 0.5%. The equivalent time constants shall not be longer than 20 ms for voltage sensing and 10 ms for the forward path to the regulator output.

Connection Equipment (Breakers, Disconnects, Transformers, Buses)

Appendix 4.1, reference 2 of the Market Rules states that under normal conditions voltages in northern Ontario are maintained within the range of 113 kV to 132 kV.

The 115 kV equipment in the facility must have a maximum continuous voltage rating of at least 132 kV. Fault interrupting devices must be able to interrupt fault current at the maximum continuous voltage of 132 kV.

If revenue metering equipment is being installed as part of this project, please be aware that revenue metering installations must comply with Chapter 6 of the IESO Market Rules for the Ontario electricity market. For more details the connection applicant is encouraged to seek advice from their Metering Service Provider (MSP) or from the IESO metering group.

The Transmission System Code (TSC), Appendix 2 establishes maximum fault levels for the transmission system. For the 115 kV system, the maximum 3 phase symmetrical fault level is 50 kA and the single line to ground (SLG) symmetrical fault level is 50 kA.

The TSC requires that new equipment be designed to sustain the fault levels in the area where the equipment is installed. If any future system enhancement results in an increased fault level higher than the equipment's capability, the connection applicant is required to replace the equipment at their own expense with higher rated equipment capable of sustaining the increased fault level, up to the TSC's maximum fault level of 50 kA for the 115 kV system.

The Transmission System Code (TSC), Appendix 2 states that the maximum rated interrupting time for 115 kV breakers must be ≤ 5 cycles. The connection applicant shall ensure that the new breakers meet the required interrupting time as specified in the TSC.

The connection equipment must be designed so that the adverse effects of failure on the IESO-controlled grid are mitigated. This includes ensuring that all circuit breakers fail in the open position.

The connection equipment must be designed so that it will be fully operational in all reasonably foreseeable ambient temperature conditions.

IESO Monitoring and Telemetry Data

In accordance with the telemetry requirements for a generation facility (see Appendices 4.15 and

4.19 of the Market Rules) the connection applicant must install equipment at this project with specific performance standards to provide telemetry data to the IESO. The data is to consist of certain equipment status and operating quantities which will be identified during the IESO Market Entry Process.

As part of the IESO Facility Registration/Market Entry process, the connection applicant must also complete end to end testing of all necessary telemetry points with the IESO to ensure that standards are met and that sign conventions are understood. All found anomalies must be corrected before IESO final approval to connect any phase of the project is granted.

Protection Systems

Protection systems must be designed to satisfy all the requirements of the Transmission System Code as specified in Schedules E, F and G of Appendix 1 (version B) and any additional requirements identified by the transmitter. New protection systems must be coordinated with existing protection systems.

Protective relaying must be set to ensure that transmission equipment remains in-service for voltages between 94% of the minimum continuous and 105% of the maximum continuous values in the Market Rules, Appendix 4.1.

The Applicant is required to have adequate provision in the design of protections and controls at the facility to allow for future installation of Special Protection Scheme (SPS) equipment. Should a future SPS be installed to improve the transfer capability in the area or to accommodate transmission reinforcement projects, the project will be required to participate in the SPS system and to install the necessary protection and control facilities to affect the required actions.

Any modifications made to protection relays by the transmitter after this SIA is finalized must be submitted to the IESO as soon as possible or at least six (6) months before any modifications are to be implemented on the existing protection systems. If those modifications result in adverse impacts, the connection applicant and the transmitter must develop mitigation solutions.

Send documentation for protection modifications triggered by new or modified primary equipment (i.e. new or replacement relays) to connection.assessments@ieso.ca.

For protection modifications that are not associated with new or modified equipment (i.e. protection setting modifications) please send documentation to protection.settings@ieso.ca.

Protection systems within the generation facility must only trip the appropriate equipment required to isolate the fault. After the facility begins commercial operation, if an improper trip of the 115 kV circuit E1C occurs due to events within the facility, the facility may be required to be disconnected from the IESO-controlled grid until the problem is resolved.

The autoreclosure of the new 115 kV breaker at the connection point must be blocked. Upon its opening for a contingency, it must be closed only after the IESO approval is granted. The IESO will require reduction of power generation prior to the closure of the breaker followed by gradual increase of power to avoid a power surge.

Miscellaneous

Connection Applicant is required to install at the facility a disturbance recording device with clock synchronization that meets the technical specifications provided by Hydro One. The device will be used to monitor and record the response of the facility to disturbances on the 115 kV system in order to verify the dynamic response of generators. The quantities to be recorded, the sampling rate and the trigger settings will be provided by Hydro One.

Facility Registration/Market Entry Requirements

Models and data, including any controls that would be operational, must be provided to the IESO through the IESO Facility Registration/Market Entry process at least seven months before energization to the IESO-controlled grid.

The registration of the new facilities will need to be completed through the IESO's Market Entry process before IESO final approval for connection is granted and any part of the facility can be placed in-service. If the data or assumptions supplied for the registration of the facilities materially differ from those that were used for the assessment, then some of the analysis might need to be repeated.

As part of the IESO Facility Registration/Market Entry process, the connection applicant must provide evidence to the IESO confirming that the equipment installed meets the Market Rules requirements and matches or exceeds the performance predicted in this assessment. Until this evidence is provided and found acceptable to the IESO, the Facility Registration/Market Entry process will not be considered complete and the connection applicant must accept any restrictions the IESO may impose upon this project's participation in the IESO administered market or connection to the IESO-controlled grid. Failure to provide evidence may result in disconnection from the IESO-controlled grid.

During the commissioning period, a set of IESO specified tests must be performed. The commissioning report must be submitted to the IESO within 30 days of the conclusion of commissioning. Field test results should be verifiable using the PSS/E models used for this SIA.

Reliability Standards

Prior to connecting to the IESO controlled grid, the proposed facility must be compliant with the applicable reliability standards set by the North American Electric Reliability Corporation (NERC) and the North East Power Coordinating Council (NPCC).

A list of applicable standards, based on the connection applicant's market role/OEB licence can be found here:

http://www.ieso.ca/imoweb/ircp/reliabilityStandards.asp

In support of the NERC standard EOP-005, the connection applicant may need to meet the restoration participant criteria. Please refer to section 3 of Market Manual 7.8 (Ontario Power System Restoration Plan) to determine its applicability to the proposed facility.

The IESO monitors and assesses market participant compliance with these standards as part of the IESO Reliability Compliance Program. To find out more about this program, visit the webpage referenced above or write to ircp@ieso.ca.

Also, to obtain a better understanding of the applicable reliability obligations and find out how to engage in the standards development process, we recommend that the connection applicant join the IESO's Reliability Standards Standing Committee (RSSC) or at least subscribe to their mailing list at rssc@ieso.ca. The RSSC webpage is located at: http://www.ieso.ca/imoweb/consult/consult_rssc.asp.

– **End of Section –**

3. PROPOSED CONNECTION

The proposed Newpost Creek GS is to have two generators of maximum capacity of 14 MVA each. This facility is to be connected to the existing 115 kV Hydro One circuit C6T between Otter Rapids SS and Abitibi Canyon GS via a new 7 km 115 kV circuit. The connection point is approximately 17 km south of Otter Rapids SS. The proposed generators with Maximum Continuous Rating (MCR) of 12.5 MW each will be connected to 115 kV through a new three phase 13.8/115 kV step-up transformer rated 28 MVA.

The proposed connection arrangement of Newpost Creek GS is shown in Figure 1.

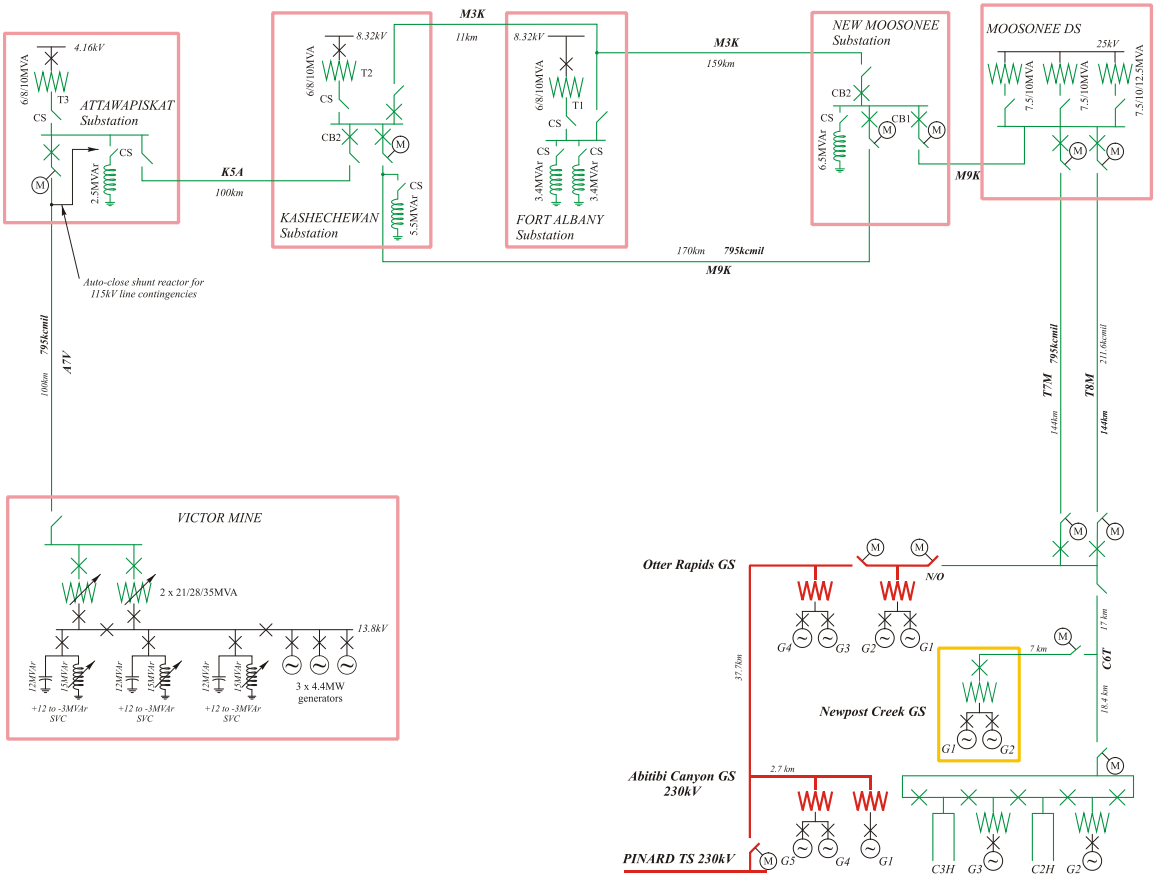

Figure 1: Connection Arrangement for Newpost Creek GS

OPG must install a motorized disconnect switch at the point of connection to the existing IESO controlled grid.

– End of Section –

4. GENERATION STATION ASSESSMENTS

4.1 MODEL AND DATA VERIFICATION

The proposed two generators at Newpost Creek GS will be identical. The parameters and the block diagrams of the PSS/E models of the generator, excitation system and speed governor used for the simulations are given in the sections below. The applicant provided these models to IESO with corresponding parameters.

4.1.1 GENERATOR MODEL

The proposed generator has a Maximum Continuous Rating of 12.5 MW at a power factor of 0.9. It will be driven by a 133.3 RPM turbine with digital governor control. The data for the generator model GENSAL are given in Table 1.

Table 1: Generator Parameters

Description	Value	Description	Value
X_d	1.0	T''_{do}	0.029
X_q	0.62	T''_{qo}	0.044
X'_d	0.36	X_l	0.165
X''_d	0.29	X_2	0.31
X''_q	0.25	X_0	0.12
R_a	0.1105	S(1.0)	0.11
T'_{do}	2.35	S(1.2)	0.55
H	1.03		

Appendix 4.2 of Market Rules requires that every synchronous generator connecting to IESO-controlled grid must have the capability to supply/absorb reactive power in the range of 0.9 lagging to 0.95 leading power factor.

> The connection applicant is required to confirm that the generator will have the capability of supplying/absorbing reactive power in the range of 0.9 lagging to 0.95 leading at rated real power and voltage. The generator will be capable to supply full active power continuously while operating at a generator terminal voltage ranging from 0.95 pu to 1.05 pu of the generator's rated terminal voltage.

It should be noted that the data provided by connection applicant includes some parameters supplied by the Manufacturer along with estimates used for the remaining parameters.

The applicant is required to provide type test data that validates parameters and reactive capabilities of the generators. During the Market Entry process and prior to the connection of the new generator to the IESO-controlled grid OPG shall submit a detailed test plan to validate the parameters of generator, exciter and speed governor.

4.1.2 AUTOMATIC EXCITATION SYSTEM

The Model for the exciter is IEEE Type ST4B potential or compounded source-controlled rectifier excitation system model.

The block diagram of the excitation system provided by the connection applicant is shown in Figure 2. The parameters of the exciter are shown in Table 2.

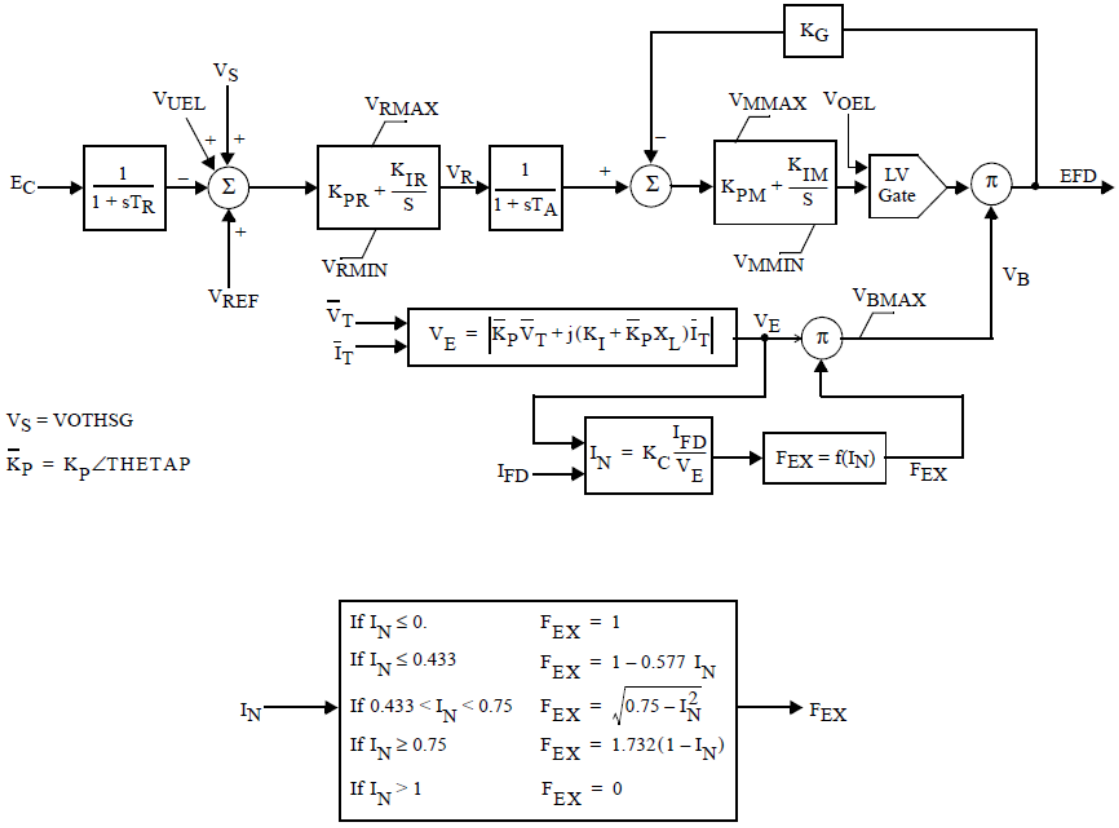

Figure 2: Block Diagram of Excitation System

Table 2: Excitation (ST4B) Parameters

Description	CONs	Parameter	Value	Units
Voltage transducer time constant	J	T_R	0.02	sec
AVR proportional gain	J+1	KPN	30	pu Efd / pu Etref
KIR, AVR integral gain	J+2	KIN	5	
Maximum voltage regulator output	J+3	V_{RMAX}	0.97	pu Ceiling

Minimum voltage regulator output (pu)	J+4	V_{RMIN}	-0.87	pu Ceiling
Voltage regulator time constant	J+5	T_A	0.01	sec
FVR (inner loop) proportional gain	J+6	K_{PM}	1	pu Efd
FVR (inner loop) integral gain	J+7	K_{IM}	0	
Maximum field regulator output	J+8	V_{MMAX}	0.97	pu Efd
Minimum field regulator output	J+9	V_{MMIN}	-0.87	pu Efd
Inner loop feedback gain	J+10	K_G	0	
Compound source potential multiplier	J+11	K_P	5	
Compound source current multiplier	J+12	K_I	0	
Maximum bridge output	J+13	V_{BMAX}	6	pu Efd
Commutating reactance drop	J+14	K_C	0.11	pu
Compound source reactance	J+15	X_L	0	
Compound source potential angle	J+16	THETAP	0	(degrees)

As per appendix 4.2 of Market Rules, each generation facility directly connected to the IESO-controlled grid shall have an Automatic Voltage Regulator with the capability to:

- Regulate automatically voltage within ±0.5% of any set point within ± 5% of rated voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal.
- The equivalent time constants shall not be longer than 20 ms for voltage sensing and 10 ms for the forward path to the exciter output.

EXCITATION SYSTEM RESPONSE RATIO TEST

As per appendix 4.2 of Market Rules, each generation facility directly connected to the IESO-controlled grid shall have an Excitation System with the capability to:

- Provide positive and negative ceilings not less than 200% and 140% of rated field voltage at rated terminal voltage and rated field current

To evaluate the positive and negative ceilings, response ratio tests were performed.

The positive ceiling test automatically raises the reference setting of the voltage regulator by a large amount at time equal zero, with the generator initialized to its rated output at rated power factor.

Figure 3 shows that for the positive ceiling response ratio test, the exciter field voltage increased from rated value of 2.29 p.u. to ceiling voltage of 4.78 p.u which is 209% of rated field voltage.

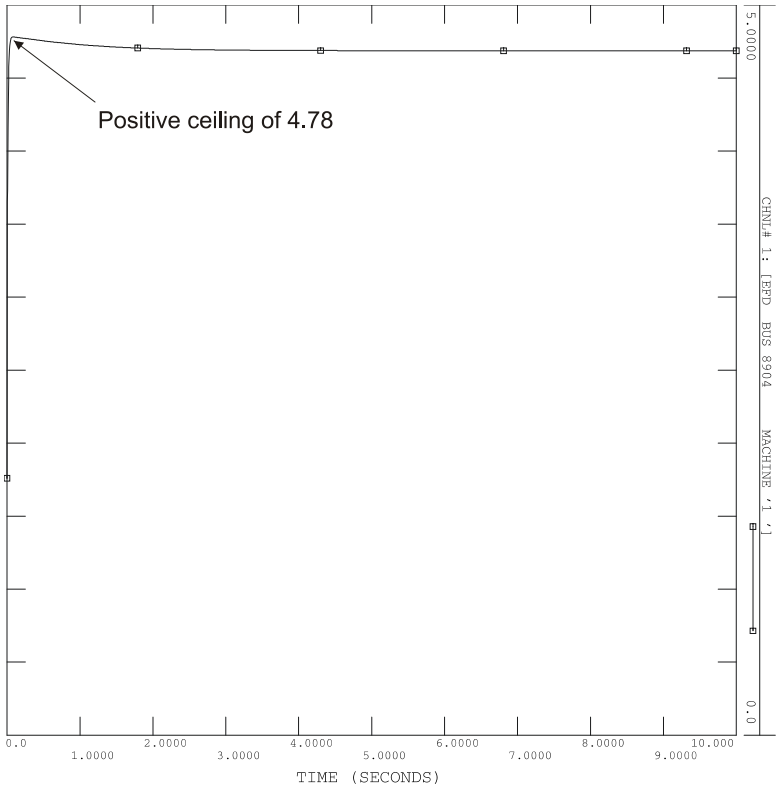

Figure 3: Response Ratio Test for Positive Ceiling

Hence the exciter at Newpost Creek meets the 200% positive ceiling requirement.

The negative ceiling test automatically lowers the reference setting of the voltage regulator by a large amount at time equal zero, with the generator initialized to its rated output at rated power factor.

Figure 4 shows that for the negative ceiling response ratio test, the exciter field voltage decreased from rated value of 2.29 p.u. to negative ceiling voltage of -4.36 p.u which is 190% of rated field voltage.

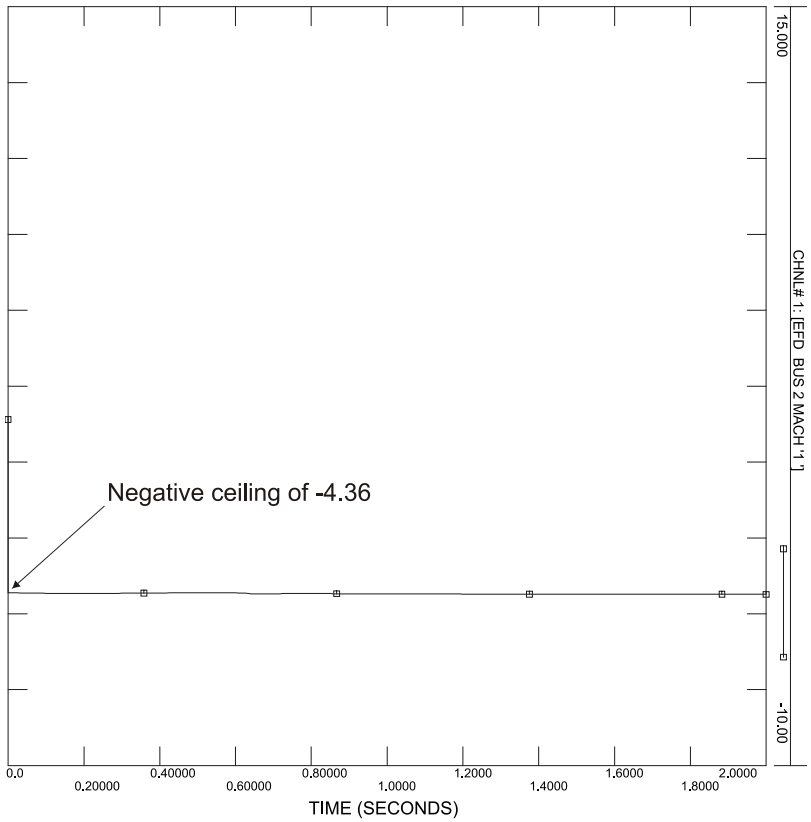

Figure 4: Response Ratio Test for Negative Ceiling

Hence the exciter at Newpost Creek meets the 140% negative ceiling requirement.

EXCITATION SYSTEM OPEN CIRCUIT RESPONSE TEST

As per appendix 4.2 of Market Rules, each generation facility directly connected to the IESO-controlled grid shall have an Excitation System with the capability to:

- Provide a voltage response time to either ceiling not more than 50 ms for a 5% step change from rated voltage under open-circuit conditions

Open circuit test for +5% step change in reference voltage was performed to verify if the exciter has the capability of reaching 1.95 * Efd_{rated} starting from Efd = Efd_{rated} within 50 ms.

Figure 5 shows the open circuit test results for a +5% step change in reference voltage

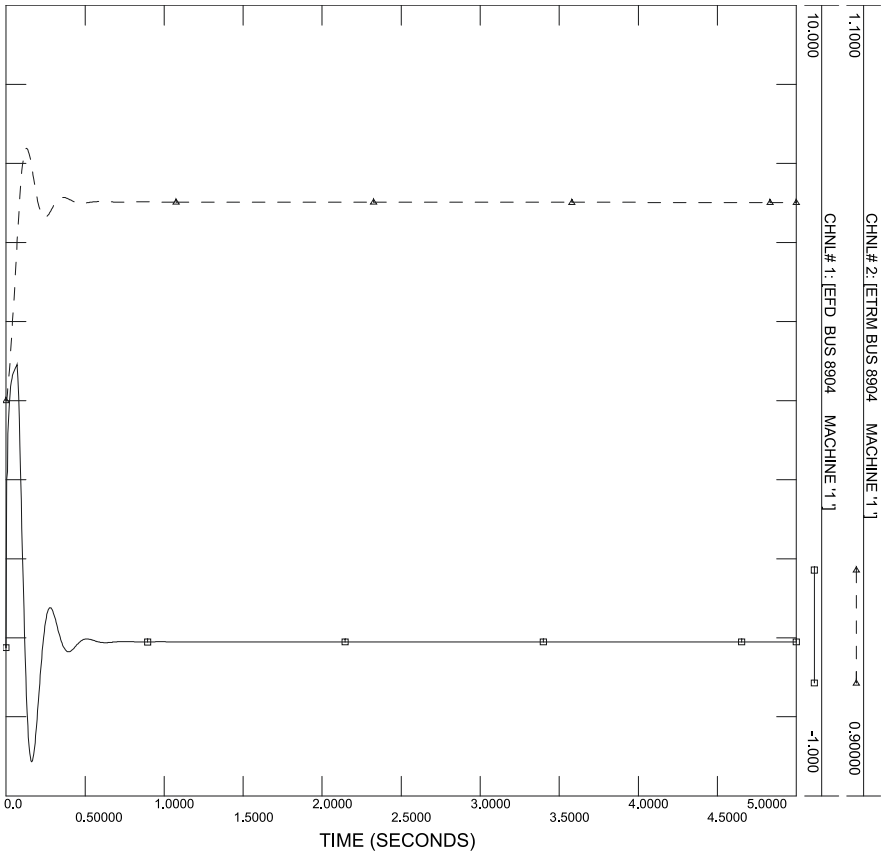

Figure 5: Open Circuit Test for +5% Reference Voltage Change

From the graph it was observed that $Efd_{initial}$ (t=0) = 1.1 = Efd_{oc}, Efd_{rated} =2.29 p.u

Therefore the required time to reach 1.95 * Efd_{rated} = 4.47 p.u is:

$$RT_{OC\_pos} = 50 * \frac{1.95\ Efd_{rated} - Efd_{oc}}{1.95\ Efd_{rated} - Efd_{rated}} = 77.4\ ms$$

From the graph it was observed that Efd reaches this value at approximately 21 ms, meeting requirements.

Open circuit test for -5% step change in reference voltage was performed to verify if the exciter has the capability of reaching -1.28 * Efd_{rated} starting from Efd = Efd_{rated} within 50 ms.

Figure 6 shows the open circuit test results for a -5% step change in reference voltage

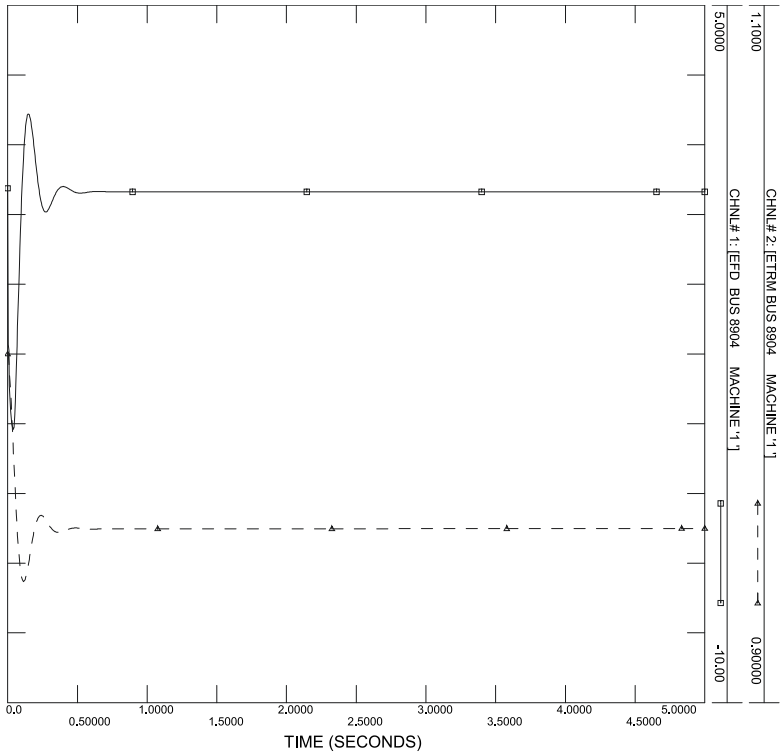

Figure 6: Open Circuit Test for -5% Reference Voltage Change

From the graph it was observed that $Efd_{initial}$ (t=0) = 1.1 = Efd_{oc}. Efd_{rated} = 2.29 p.u

Therefore the required time to reach -1.28 * Efd_{rated} = -2.93 p.u is:

$$RT_{OC\_neg} = 50 * \frac{1.28\ Efd_{rated} + Efd_{oc}}{1.28\ Efd_{rated} + Efd_{rated}} = 38.6\ ms$$

From the graph it was observed that Efd reaches this value at approximately 12 ms, meeting requirements.

As per appendix 4.2 of Market Rules, each generation facility directly connected to the IESO-controlled grid shall have an Excitation System with the capability to:

- Provide a positive ceiling not less than 170% of rated field voltage at rated terminal voltage and 160% of rated field current

The block diagram of the proposed excitation system (Figure 2) shows the impact of I_{FD} on the E_{FD}. Using the settings shown in Table 2, at rated terminal voltage, V_E will be 5. Assuming I_{FD} = 1.6, results in F_{EX} = 0.98. Then, $V_B = V_E \times F_{EX}$ = 4.9. Therefore, E_{FD} can be as high as 4.7 pu ($V_B \times V_{MMAX}$) which is 205% of rated field voltage which meets Market Rules requirements.

In conclusion, the excitation system at Newpost Creek meets market rule requirements.

It should be noted that the performance of the exciter is obtained based on the estimated data.

The connection applicant is required to ensure that the performance of the equipment that is eventually supplied and installed is similar to the predicted performance or exceeds the predicted performance observed in the simulation results obtained using the above models.

4.1.3 SPEED GOVERNOR

The Market Rules state that each synchronous generation unit that is greater than 10 MVA must be equipped with a speed governor with a permanent speed droop between 3% and 7% and an intentional deadband not wider than ± 36 mHz.

The governor model used for the new generating units proposed in this study is PTI's Woodward PID Hydro Governor model, WPIDHY. The block diagram of this model and the data for the governor model used in this study are shown in Figure 7 and Table 7, respectively.

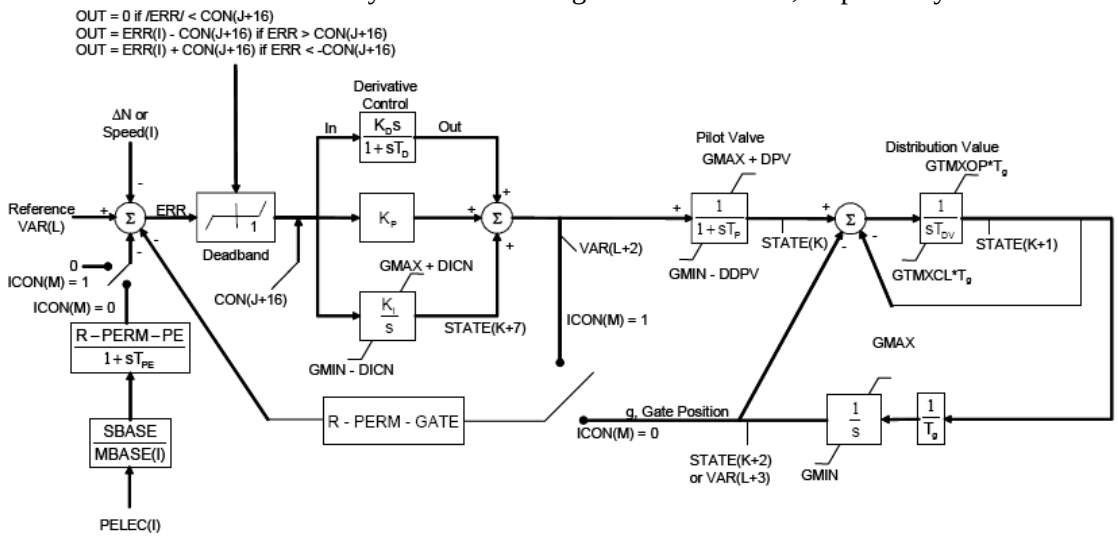

Figure 7: Block Diagram of Speed Governor

Table 7: PSS/E WPIDHY Woodward PID Hydro Governor Parameters

CONs	Description	Value	CONs	Description	Value
J	R-PERM-GATE	0	J+26	FLOW G3	1
J+1	R-PERM-PE	0.05	J+27	FLOW G4	1
J+2	Tpe (sec)	1	J+28	FLOW G5	1
J+3	Kp	0.45	J+29	FLOW P1	0
J+4	Ki	0.03	J+30	FLOW P2	0.15
J+5	Kd	0.1	J+31	FLOW P3	0.3
J+6	Td (sec)	0.05	J+32	FLOW P4	0.45
J+7	Tp (sec)	0.1	J+33	FLOW P5	0.6
J+8	Tdv (sec)	0.1	J+34	FLOW P6	0.7
J+9	Tg (sec)	0.3	J+35	FLOW P7	0.8
J+10	GTMXOP	0.1	J+36	FLOW P8	0.9
J+11	GTMXCL	-0.1	J+37	FLOW P9	0.95

J+12	GMAX	1	J+38	FLOW P10	1
J+13	GMIN	0	J+39	PMECH 1	-0.15
J+14	Dturb	0	J+40	PMECH 2	0
J+15	Tw (sec) 0	2	J+41	PMECH 3	0.15
J+16	Speed deadband	0 0	J+42	PMECH 4	0.30
J+17	DPV	0	J+43	PMECH 5	0.450
J+18	DICN	0.05	J+44	PMECH 6	0.600
J+19	GATE 1	0	J+45	PMECH 7	0.850
J+20	GATE 2	1	J+46	PMECH 8	0.900
J+21	GATE 3	1	J+47	PMECH 9	0.95
J+22	GATE 4	1	J+48	PMECH 10	1
J+23	GATE 5	1			
J+24	FLOW G1	0	**ICON**	**#**	**Value**
J+25	FLOW G2	1	M	0=power or gate	0

Simulations were performed to test the transient response for the given governor model. The results showed that the parameters were tuned to give reasonable damping and the governor has a droop of 6% thus meeting Market Rules' requirements.

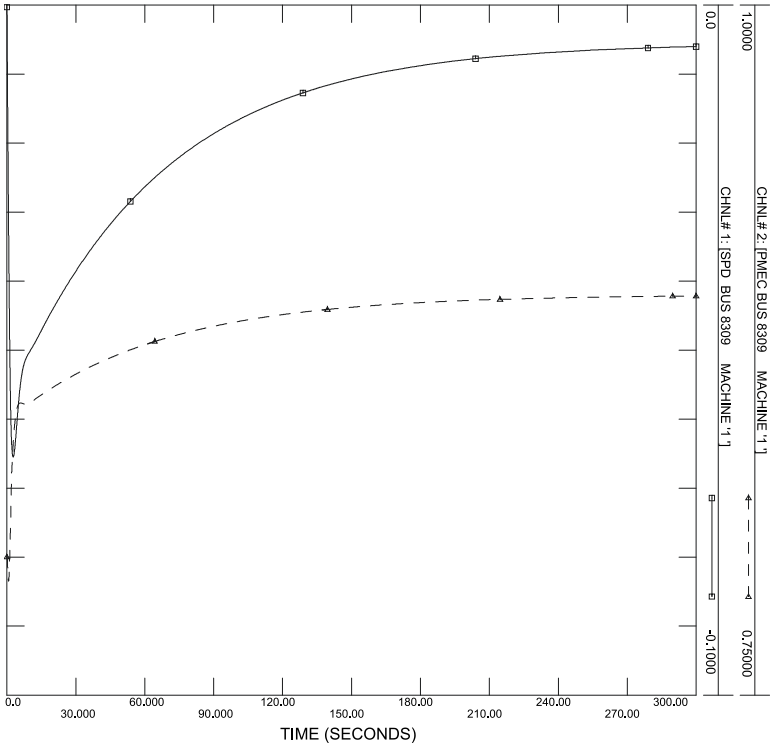

Figure 8: Response Test for Governor

4.1.4 POWER SYSTEM STABILIZER

The Market Rules, Reference 15 of Appendix 4.2 require that:

"Each synchronous generating unit that is equipped with an excitation system that meets the performance requirements stated in section 3.1.2 shall also be equipped with a power system stabilizer which shall, to the extent practicable, be tuned to increase damping torque without reducing synchronizing torque."

For Newpost Creek unit, OPG provided a digital-based PSS with dual inputs, commonly referred to as integral of accelerating power type PSS2A. The block diagram of this stabilizer is shown in Figure 9 and the parameters used are given in Table 4 below.

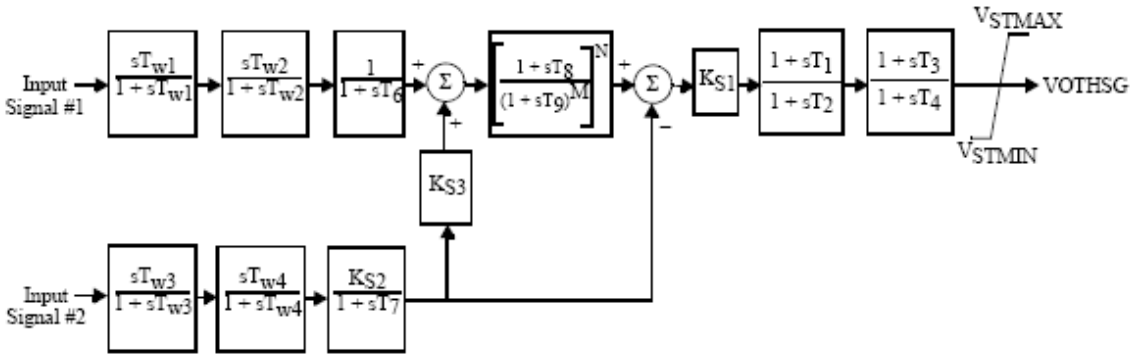

Figure 9: Block Diagram of PSS

Table 4: PSS/E PSS2A Parameters

Description	Value	Description	Value
ICS1	1	T_8	0.5
ICS2	3	T_9	0.1
M	5	K_{S1}	2.0
N	1	T_1	0.226
T_{W1}	10	T_2	0.03
T_{W2}	10	T_3	0.226
T_6	0	T_4	0.03
T_{W3}	10	V_{STMAX}	0.05
T_{W4}	0	V_{STMIN}	-0.05
T_7	5		
K_{S2}	2.27		
K_{S3}	1.0		

4.1.5 STEP-UP TRANSFORMER

Technical specifications of the step-up transformer provided by the connection applicant are listed as follows:

Transformation	125/13.8 kV
Continuous rating	28 MVA
Impedance	12.9% based on 28 MVA
Configuration	3 phase, High side: wye, Low voltage side: delta
Tapping	off-load tap changers at HV (-5% -2.5% 0% 2.5% 5.0%)

The Market Rules requirement to be able to produce rated power output at a set value for the voltage on the HV system by varying the terminal voltage by ± 5%, effectively limits the impedance of the connection to the IESO-controlled grid maximum of about 13%, based on the

MVA rating of the generating facility. OPG provided that the impedance of the 7 km tap circuit is 0.028 pu based on 100 MVA which is 0.008 pu based on 28 MVA. Therefore, the impedance of the step-up transformer should be less than 12.2% on the rating of the generator facility (28 MVA) in order to meet Market Rule requirements.

The connection applicant is required to ensure that the impedance of the step-up transformer is less than 12.2% on the rating of the generator facility (28 MVA).

4.1.6 CIRCUIT BREAKERS AND DISCONNECT SWITCHES

Technical specifications of the circuit breakers provided by the connection applicant are listed in Table 5.

Table 5: Circuit Breaker and Disconnect Switch Parameters

Breakers	**LV**	**HV**
Rated voltage	15 kV	138 kV
Interrupting time	83.3 ms	83.3 ms
Interrupting media	Vacuum	SF6
Rated continuous current	1200 A	600 A
Rated symm. short circuit capability	50 kA	50 kA
Disconnect Switch	**HV**	
Rated Voltage	138	
Type	Disconnect	
Rated continuous current	600 A	
Short circuit rating	50 kA	

The system performance standards listed in the Transmission System Code requires that the 13.8 kV and 115 kV system fault level not exceed 21 kA (Sym.) and 50 kA (Sym), respectively. This indicates that 13.8 kV and 115 kV equipments must be sized to interrupt 21 kA (Sym.) 50 kA (Sym), respectively. The breakers proposed for installation at Newpost Creek meet the interrupting capability recommended by the Transmission System Code.

4.2 ON-LINE MONITORING REQUIREMENTS

The Market rules (Appendix 4.15 and Appendix 4.19) list the IESO requirements with respect to the information on generator monitoring that must be made available to the IESO on a continual basis from all generators connected to the IESO-controlled grid. It is required that at minimum, the following quantities be monitored:

- terminal voltage of the proposed generators
- active and reactive power output of the proposed generators
- status of the proposed 115 kV breaker
- status of the proposed 115 kV disconnect switch
- status of 13.8 kV terminal breakers of the proposed generators

OPG is required to install all the equipment needed to continuously monitor the information that is required by the IESO. The IESO will finalize items to be monitored during the IESO Facility Registration Process.

4.3 IMPORTANT NOTE ON MODELS AND DATA

The four components used to model the new generation include a synchronous generator model (GENSAL), an excitation model (EXST1), a power system stabilizer model (PSS2A), and a governor model (WPIDHY). Typical data provided by OPG for these models are used in this assessment.

OPG is required to ensure that the performance of the equipment that is eventually installed meets or exceeds the predicted performance observed in the computer simulation results obtained using the models and available parameters. The applicant is required to provide type test data that validates parameters and reactive capabilities. If these data are not provided, during the Market Entry process, prior to the connection of the new generator to the IESO-controlled grid, OPG shall submit a detailed test plan to validate the parameters of generator, exciter and speed governor. The validation tests are expected to be performed during unit's commissioning testing.

– End of Section –

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

5. ANALYSIS OF SHORT CIRCUIT CURRENT

Fault level studies were completed by Hydro One to specifically examine the effect of the Newpost Creek generation project on fault levels at the existing facilities.

Table 6 summarizes the fault levels including both symmetric and asymmetric fault currents in kA near Newpost Creek GS. The short circuit analysis was based on the following assumptions:

- All existing generating facilities in the area are in-service
- The maximum pre-fault voltage is 132 kV

Table 6: Fault Levels Near Newpost Creek GS (NPC)

Bus	L-G/LLG (kA)				3-phase (kA)			
	No NPC		With NPC		No NPC		With NPC	
	Symm	Asym	Symm	Asym	Symm	Asym	Symm	Asym
Canyon	5.52/5.49	6.70	5.76/5.80	7.03	5.47	6.28	5.84	6.73
Otter Rapid	1.74/2.19	1.78	1.81/2.34	1.84	2.40	2.46	2.58	2.67
Mioosonee	0.58/1.01	0.59	0.59/1.04	0.60	1.14	1.16	1.18	1.20
Hunta SS	5.68/4.13	5.98	5.74/4.14	6.04	9.13	9.48	9.36	9.71

The results in Table 6 generally show that there is a slight increase in fault currents with the addition of the Newpost Creek GS. The interrupting capabilities of the existing breakers at the stations listed in Table 6 were checked and it was found that the fault levels with proposed Newpost Creek project are far below the interrupting capabilities of the existing breakers. Therefore, it can be concluded that the increases in fault level, due to the proposed Newpost Creek GS, will not exceed the interrupting capabilities of the existing breakers on the IESO-controlled grid.

– End of Section –

6. CONNECTION ASSESSMENT STUDIES

Based on the application materials provided by OPG the IESO performed studies to identify any concerns on equipment thermal loading, voltage decline and transient stability due to the addition of the proposed Newpost Creek generating unit.

6.1 STUDY ASSUMPTIONS

The proposed Newpost Creek generating units are connected to Hydro One's 115 kV transmission circuit C6T which is radially connected to OPG's Abitibi Canyon GS, as shown in Figure 10. Five Nations transmission system and Victor Mine are also radially connected to C6T. The continuous and 15-minute ratings for the C2H, C3H and C6T are also shown in the figure. The thermal capacity is calculated based on ambient temperature of 30 ^{o}C, a wind speed of 4 km/hr, daytime sheltered conditions and operating voltage of 127 kV. Pre-load dependant LTRs were calculated assuming circuit pre-contingency loading of 75%.

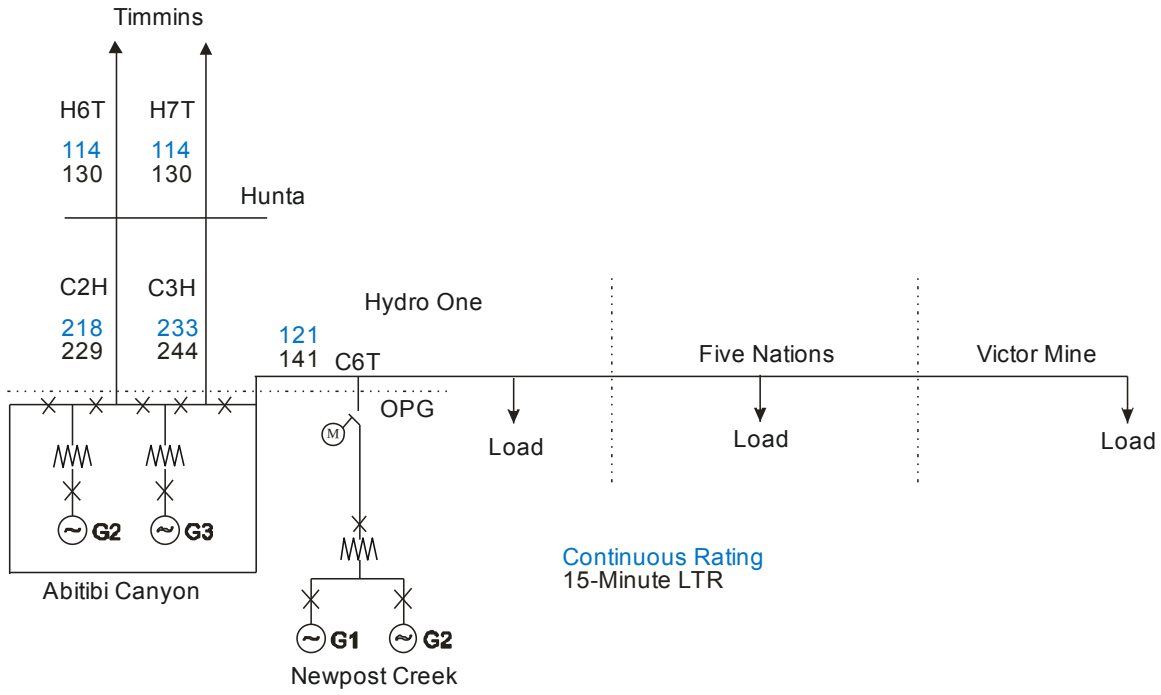

Figure 10: Simplified 115 kV connection for Newpost Creek GS

The following graphs in Figure 11 show the MW flow on C6T at Abitibi Canyon in one hour average samples during the period of January 1- Dec 31, 2008.

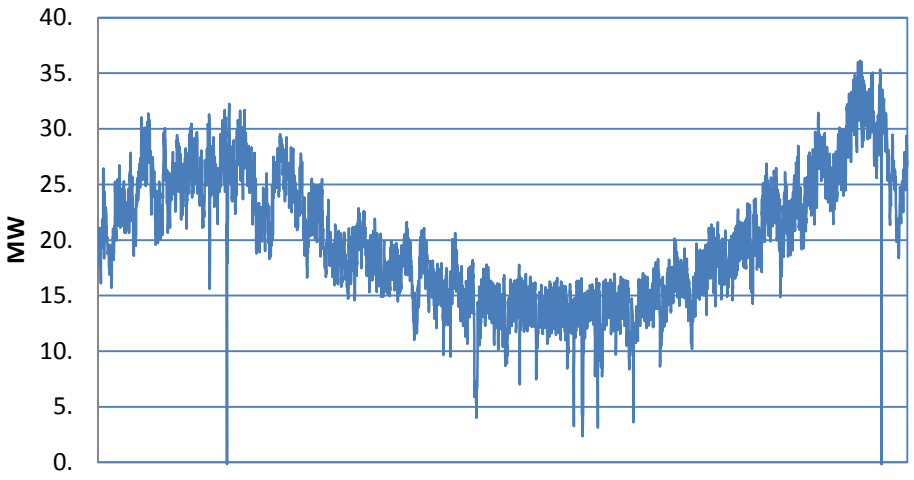

Figure 11: MW flow on C6T at Abitibi Canyon

It can be seen that generally the flow on C6T was above 10 MW during 2008. The following estimates for the future load at Moosonee DS, the Five Nations communities and Victor Mine in Table 7 were used in the SIA analysis for Victor Mine project. Power factor is 0.975 for all the loads. FNEI has confirmed that the following load forecast in Table 7 is still practical and valid.

Table 7: Forecast Loads (MW)

Location	2010	2015	2020
Moosonee	15.0	15.8	16.6
Fort Albany	2.3	2.8	3.5
Kashechewan	2.8	3.5	4.4
Attawapiskat	3.2	4.1	5.2
Victor Mine	29	29	29
Total	52.3	55.2	58.7

The following graphs in Figure11 show the 115 kV voltage at Abitibi Canyon in one hour average samples during the period of June 1- Dec 31, 2008.

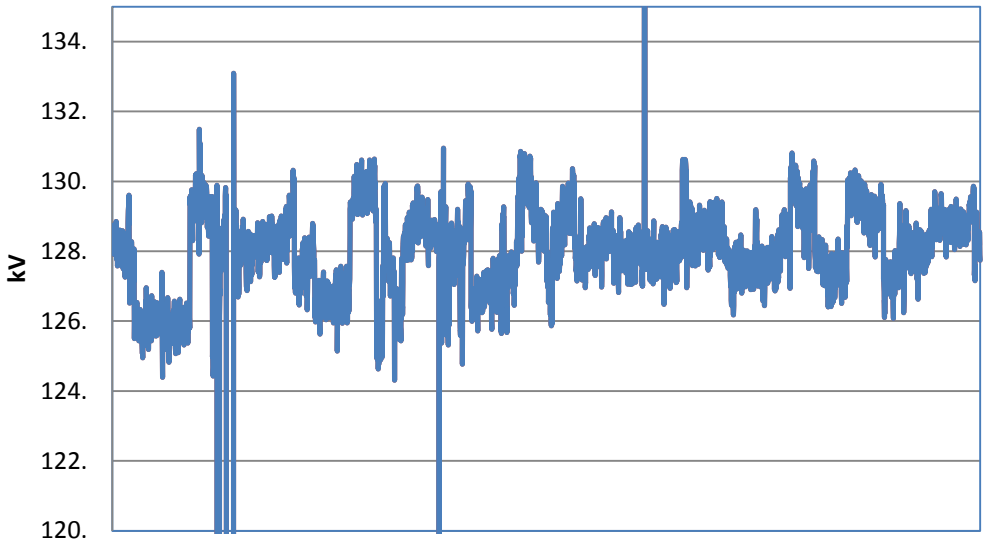

Figure 12: 115 kV Voltage at Abitibi Canyon

It can be observed that the average voltage at Abitibi Canyon is about 129 kV.

The 2010 summer base case was used as a starting point for the analysis. System generation dispatch pattern and the status of shunt elements were adjusted to achieve acceptable bus voltage level at Abitibi Canyon. The loads at Moosonee DS, the Five Nations communities and Victor Mine were adjusted for the purpose of different studies as described in the following sections. The study was performed for a system with all transmission elements in service.

The new units at Newpost Creek GS and the existing units at Abitibi Canyon were at full output unless otherwise specified.

6.2 THERMAL STUDY

This section covers an investigation of thermal capability of 115 kV circuits in NE with the addition of Newpost Creek generating units.

Load flow studies have been carried out to examine the thermal loading capability for transmission elements with the proposed Newpost Creek GS project. Since the Five Nations system and Victor Mine are radially connected to Moosonee SS the power flows on T7M, T8M and M9K are determined by the loads in Fiver Nations and Victor Mine and new proposed Newpost Creek GS will not have impact on the flows. Therefore, only the impacted circuits C6T, C2H and C3H are monitored in the thermal study.

To have maximum flow on the monitored circuits, two modifications were made for the base case:

1. Units 1 and 2 at Otter Rapids were connected to C6T with 30 MW output as indicated by OPG.
2. Loads at Moosonee DS, the Five Nations communities and Victor Mine were scale to minimum as shown in Figure 11, i.e., 10 MW in total.

The thermal ratings of the monitored circuits were shown in Figure 10. The results including pre-contingency and contingencies associated companion circuits are summarized in Table 8. The pre-contingency flow on each transmission element is expressed as a percentage of the continuous rating and the post-contingency flow on each transmission element is expressed as a percentage of the 15 min. LTR.

Table 8: Thermal Study Results

Circuit	Pre-Contingency		Post-Contingency	
	MVA	%	MVA	%
C6T	57.6	47.6	-	-
C2H	91.7	42.1	180.2	78.7
C3H	90.9	39.0	180.0	73.8

The results indicate that with all elements in-service the power flows on the monitored circuits are well within the circuit continuous rating. Under any one of the above contingencies all the monitored 115 kV circuits are well within the LTR ratings.

Therefore, it can be concluded that there is no thermal concern identified with the proposed Newpost Creek generation.

6.3 VOLTAGE ANALYSIS

Voltage studies were performed to investigate the voltage performance as the Newpost Creek GS was added to the NE system. The loads at Moosonee DS, the Five Nations communities and Victor Mine were scaled to 2010 levels as shown in Table 7. Units 1 and 2 at Otter Rapids were connected to R21D. The most critical contingency expected for voltage drop is the loss of two units at Newpost Creek when units 2 and 3 at Abitibi Canyon are out of service. The voltages at Abitibi Canyon, Moosonee DS, Fort Albany, Kashechewan, Attawapiskat and Victor Mine were monitored. In the simulations the Newpost Creek units mode of operation was set to regulate their terminal voltage at 1.0 pu. The pre- and post-contingency voltages are shown in Table 9.

Table 9: Voltage Study Results

Bus	Pre-contingency (kV)	Post-contingency			
		Pre-ULTC (kV)	Voltage Decline (%)	Post-ULTC (kV)	Voltage Decline (%)
Canyon 115	128.9	128.9	0.00	128.9	0.00
Moosonee 115	127.4	127.1	-0.24	127.2	-0.16
Moosonee 27.6	27.6	27.5	-0.36	27.6	0.00
Fort Albany 115	126.0	125.6	-0.32	125.9	-0.08
Kashechewan 115	126.0	125.6	-0.32	125.9	-0.08
Attawapiskat 115	118.7	118.2	-0.42	118.6	-0.08
Victor Mine 115	118.1	117.5	-0.51	118.1	0.00
Victor Mine 15	15.3	15.2	-0.65	15.3	0.00

Study results show that the post-contingency voltages at monitored 115 kV buses meet the minimum required operating voltage of 108 kV. The post-contingency voltage declines at monitored buses are within the 10% criteria.

Similar with thermal study, simulations were also performed for contingencies involving 115 kV circuits C2H and C3H. It was found that all the operating voltages and post-contingency voltage declines meet the voltage criteria.

Therefore, it can be concluded that there is no voltage concern identified with the proposed Newpost Creek generation.

6.4 TRANSIENT STATE ANALYSIS

Transient stability analyses were performed considering fault at Abitibi Canyon, Hunta, Porcupine, Pinard, and Hanmer. The same modified base case for thermal studies was used for transient state analysis. The contingencies shown in Table 10 were tested.

Table 10: Contingencies for Transient Study

Contingencies		Fault MVA Levels	Newpost Creek I/S	Newpost Creek O/S
SC1	Normally cleared LLG fault on C2H @ Abitibi	239-j2229	X	X
SC2	Normally cleared LLG fault on H6T @ Hunta	533-j2200	X	X
SC3	Normally cleared 3-Ph fault on D501P @ Pinard	-j2E9	X	
SC4	Normally cleared 3-Ph fault on P502X @ Porcupine	-j2E9	X	
SC5	Normally cleared 3-Ph fault on X503E @ Hanmer	-j2E9	X	

All the simulation results are shown in the Appendix. It can be concluded from the results that, with Newpost Creek new generator on-line, none of the simulated contingencies caused transient instability or undamped oscillations.

6.5 NE 115 kV LR & GR SCHEME

The North-East 115 kV Load and Generation Rejection Scheme was designed to address the problem of excess generation capacity being imposed on the underlying 115kV system under contingency conditions involving the 500 kV, 230 kV and 115 kV Systems north of Sudbury.

The proposed Newpost Creek GS is incorporated into the North-East system and it should be added in the NE 115 kV LR & GR Scheme to address post-contingency thermal overloading as well as to respect existing Northeast operating limits. The G/R for Newpost Creek GS should be initiated upon detection of any of contingencies involving D501P, P502X, P91G, C2H, C3H, A4H, A5H, A4H/A5H, H6T, H7T, and H6T/H7T.

Filed: 2014-06-18
EB-2014-0194
Exhibit H-1-1
Attachment 1

The proposed Newpost Creek GS has to participate in the North East Special Protection Scheme to address post-contingency thermal overloading as well as to respect existing Northeast operating limits. As a minimum, the facility should be able to be selected for G/R for the loss of D501P, P502X, P91G, C2H, C3H, A4H, A5H, A4H/A5H, H6T, H7T, and H6T/H7T.

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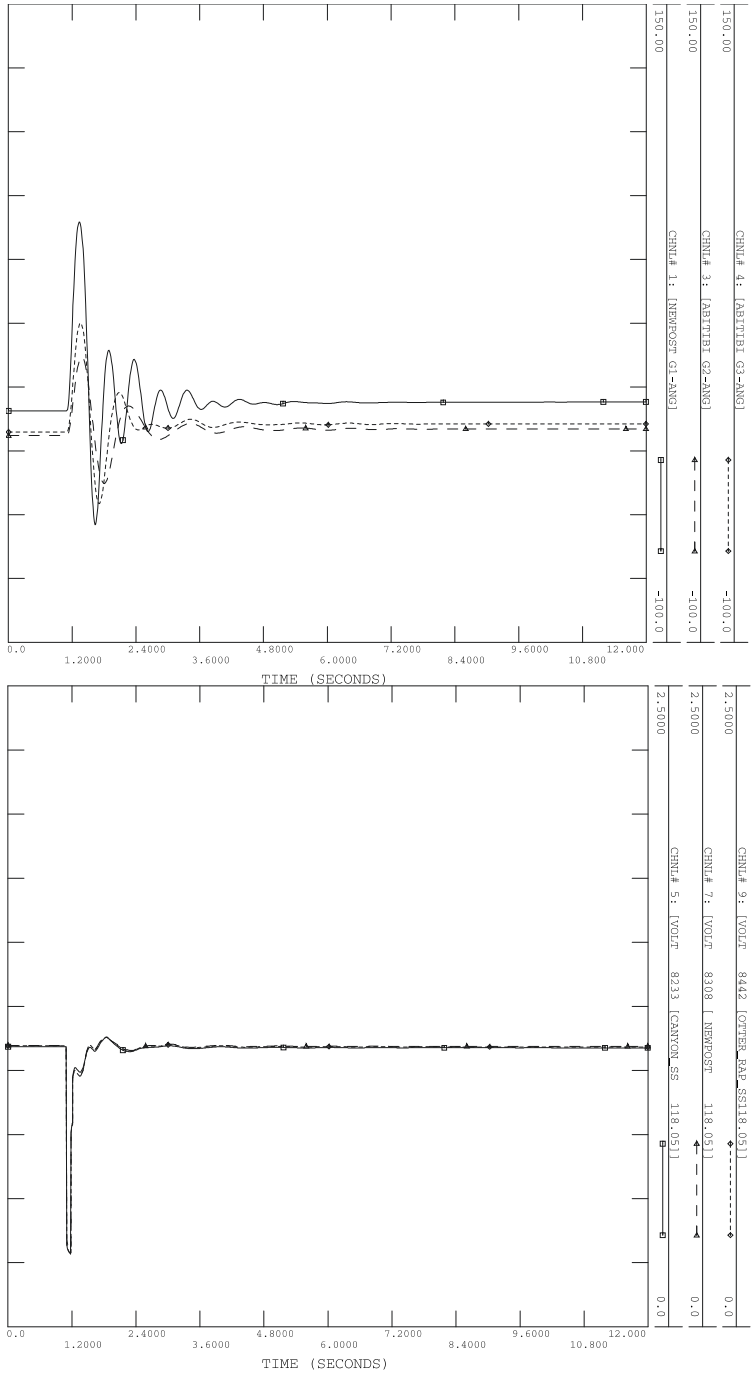
APPENDIX

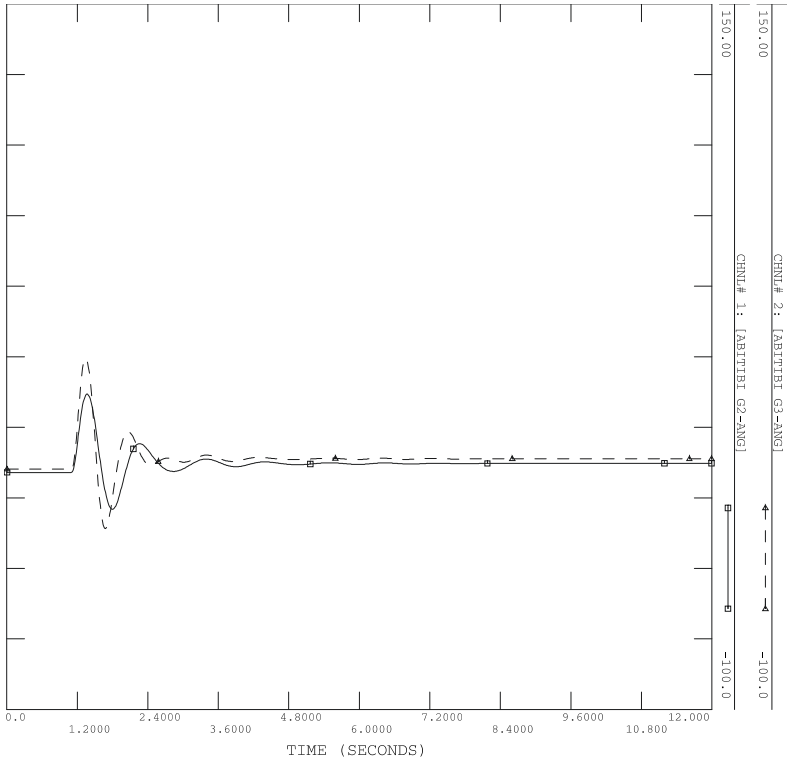
SC1 - LLG fault was applied on 115 kV circuit C2H at Abitibi. (cleared in 83 ms at Abitibi, 116 ms at Hunta)

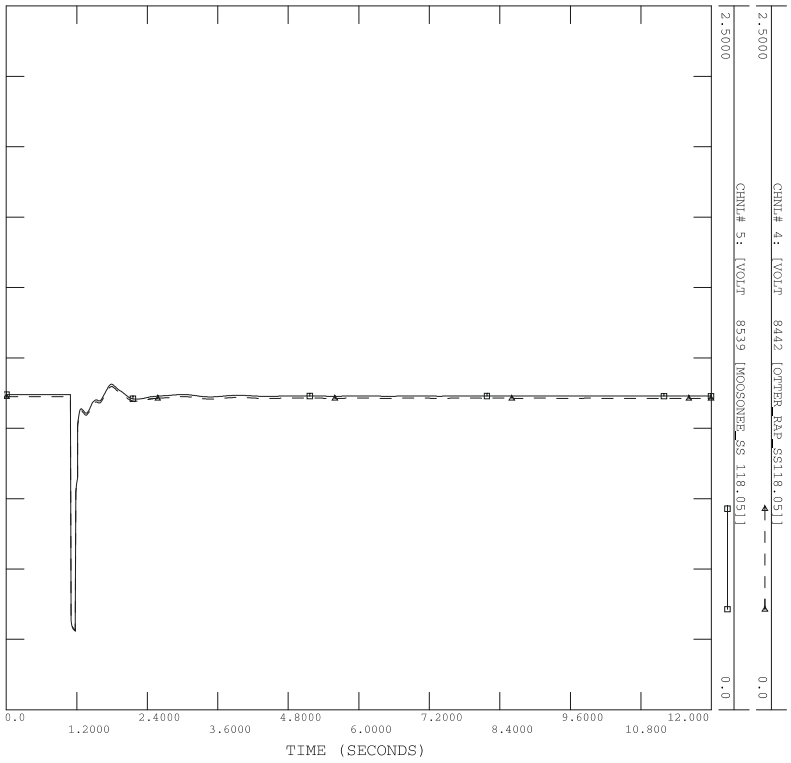
Newpost Creek I/S:



SC1 - LLG fault was applied on 115 kV circuit C2H at Abitibi. (cleared in 83 ms at Abitibi, 116 ms at Hunta)

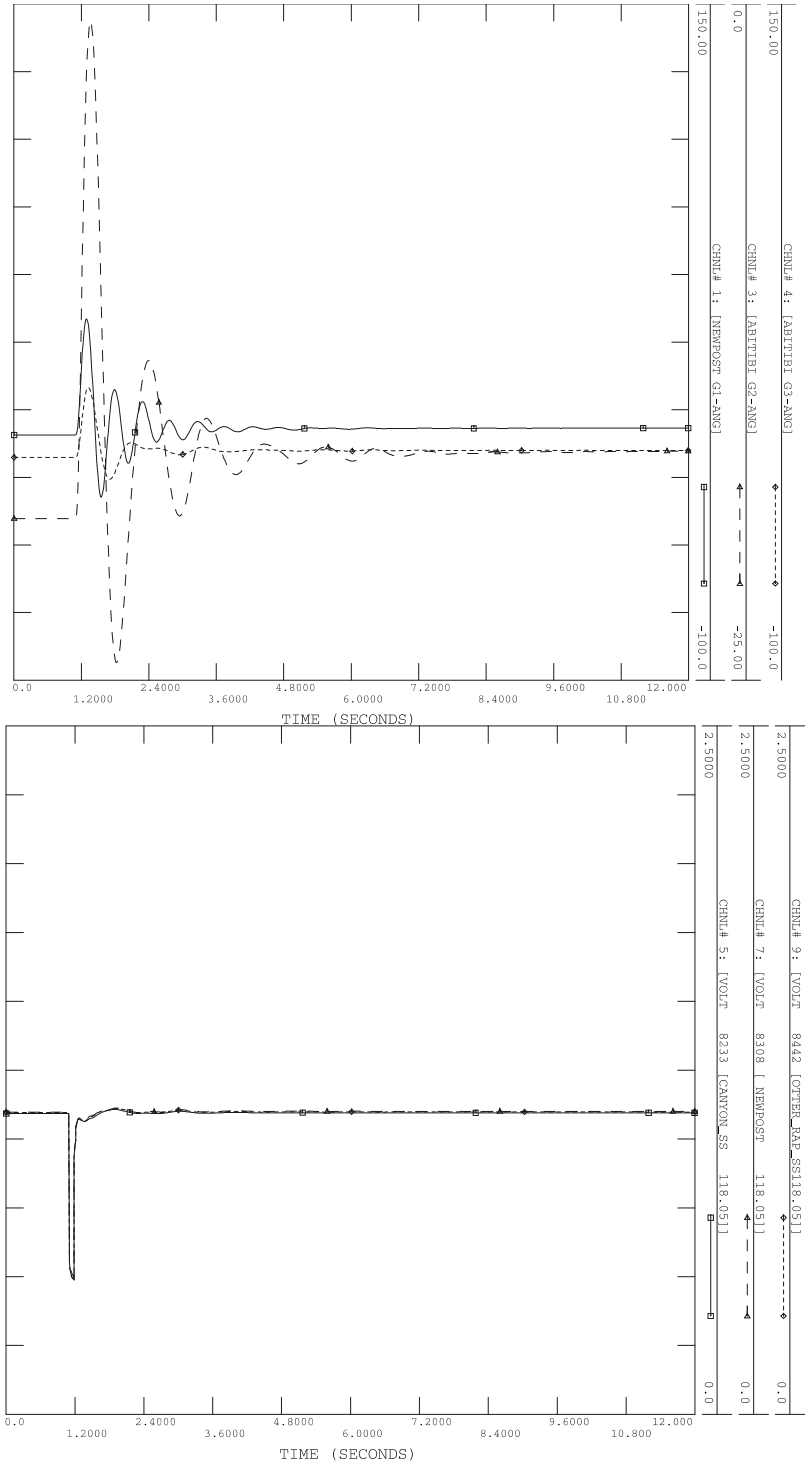
Newpost Creek O/S:





SC2 - Normally cleared LLG fault on H6T @ Hunta (cleared in 83 ms at Hunta, 116 ms at Timmins)

Newpost Creek I/S



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EB-2014-0194
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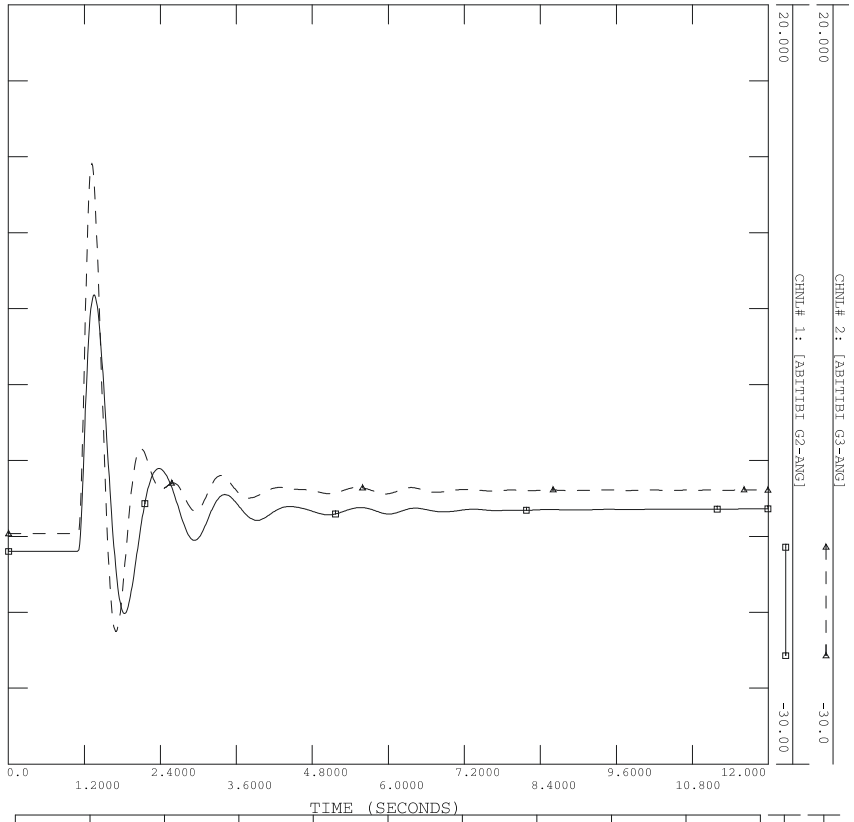
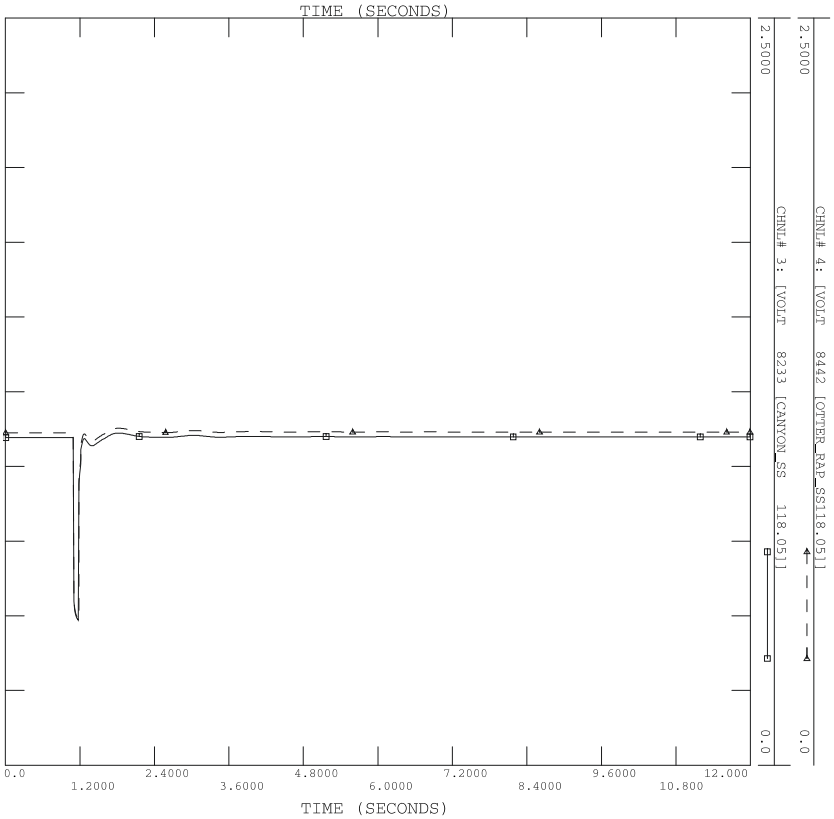
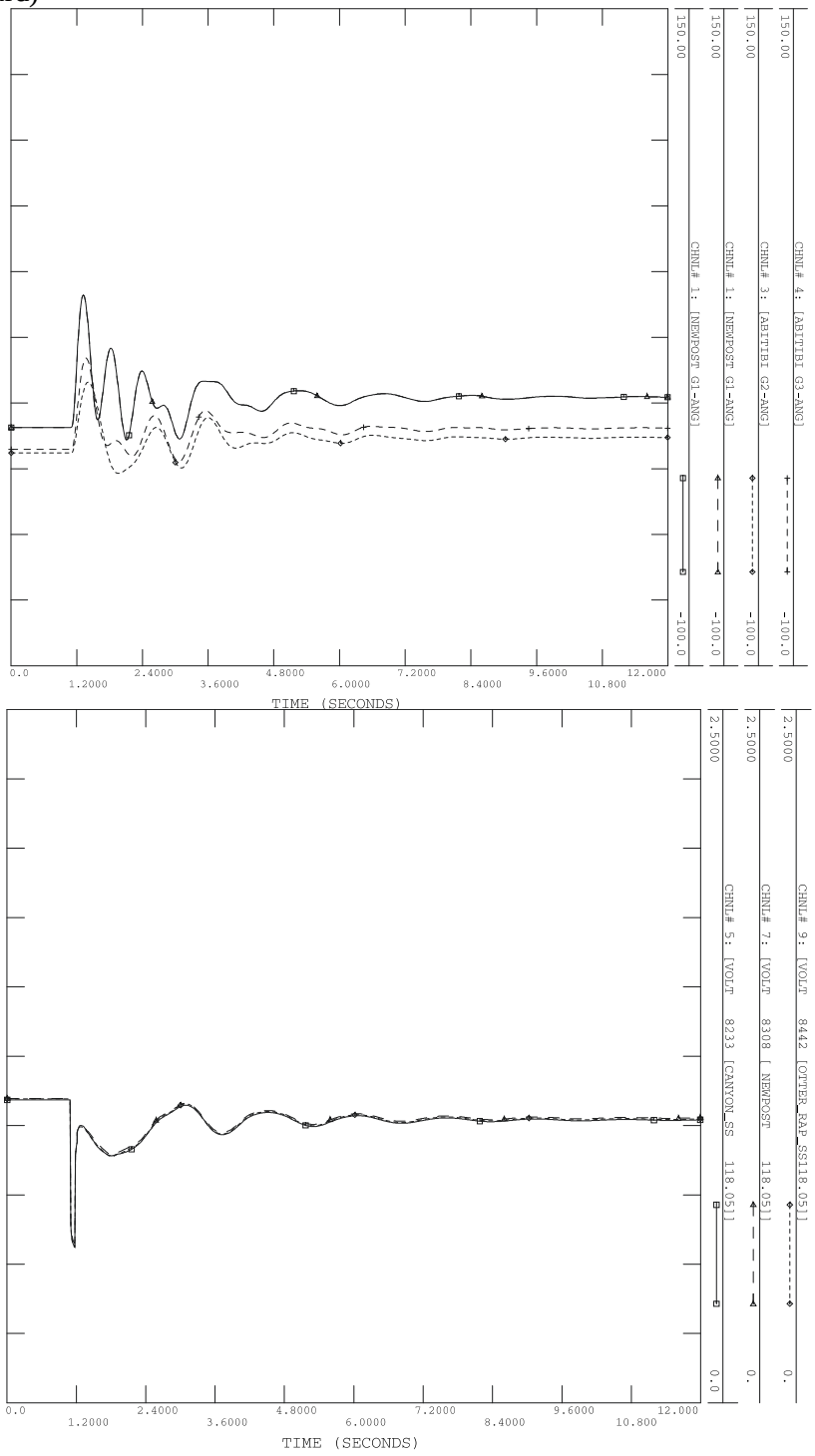
SC2 - Normally cleared LLG fault on H6T @ Hunta (cleared in 83 ms at Hunta, 116 ms at Timmins)

Newpost Creek O/S

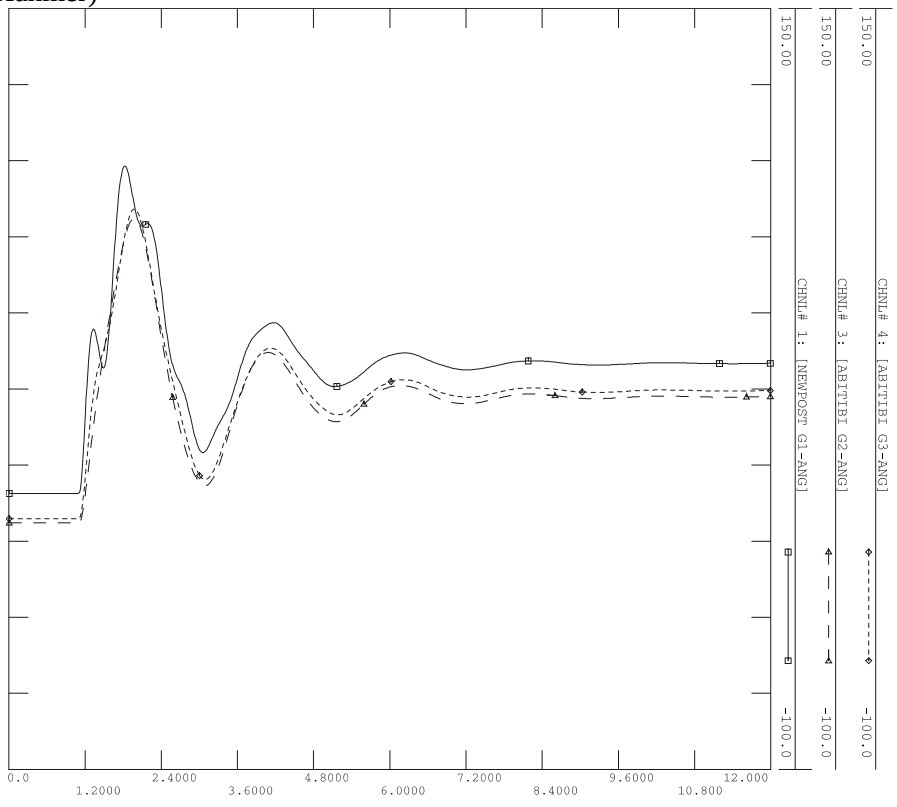


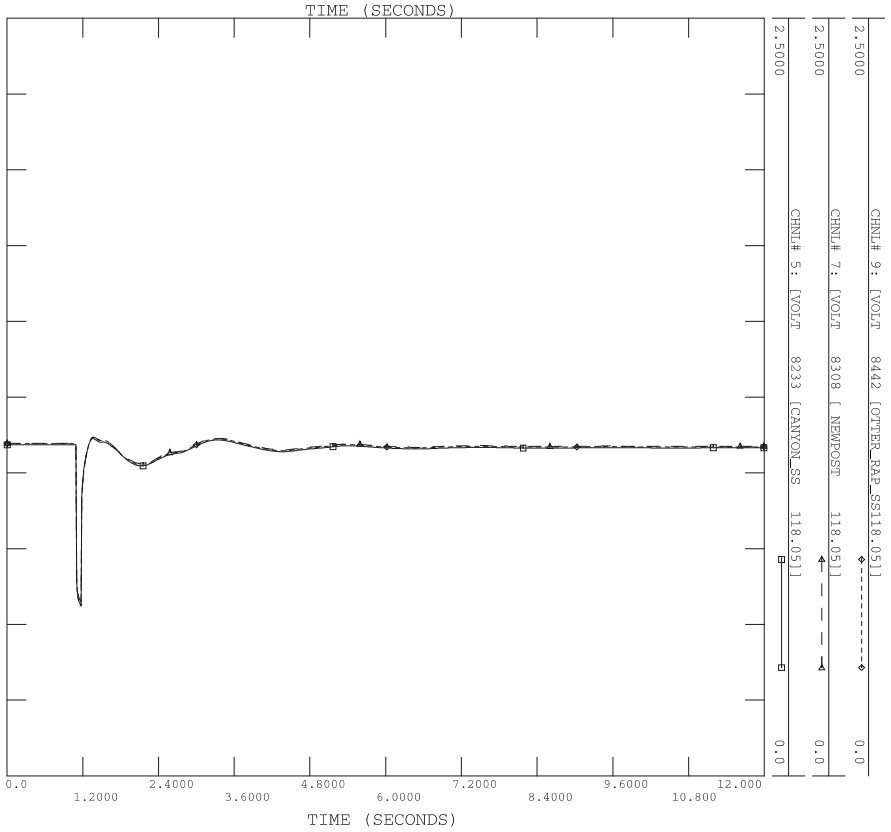


SC3 - Normally cleared three-phase fault onD501P @ Porcupine (cleared in 83 ms at Porcupine, 116 ms at Pinard)

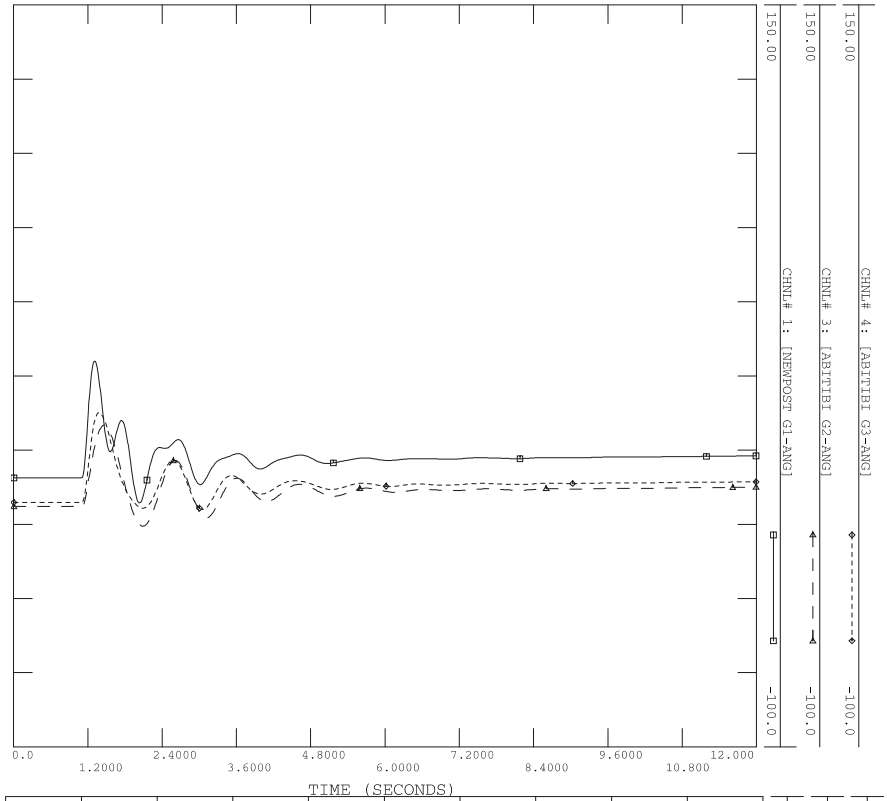


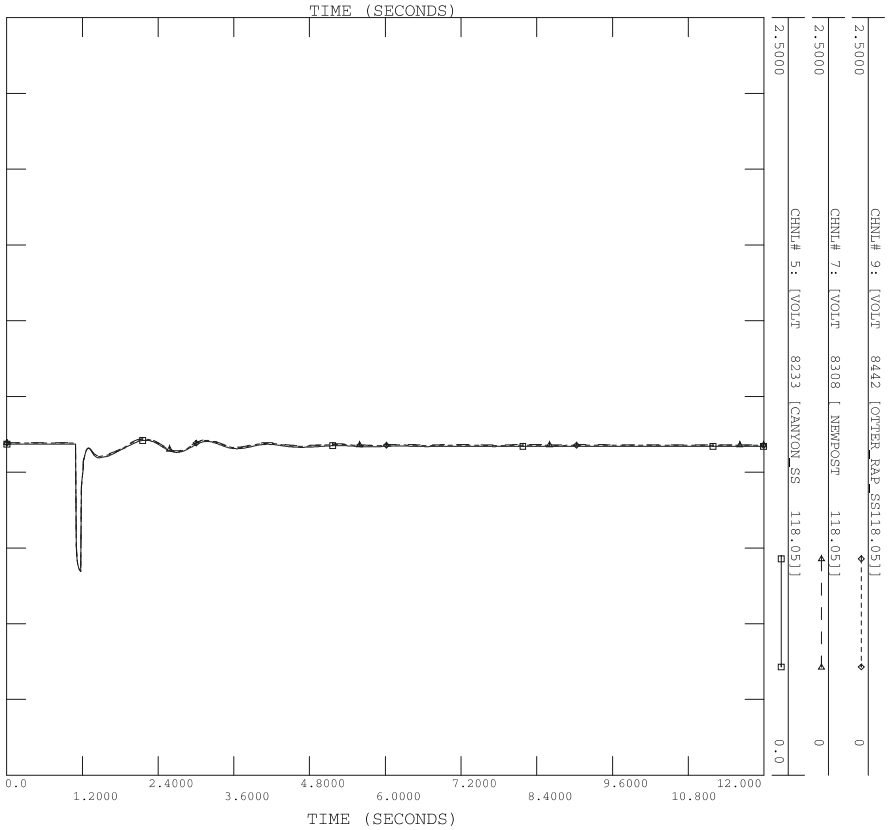
SC4 - Normally cleared three-phase fault onP502X @ Porcupine (cleared in 83 ms at Porcupine, 116 ms at Hanmer)





SC5 - Normally cleared three-phase fault onX503E @ Hanmer (cleared in 83 ms at Hanmer, 116 ms at Essa)





HYDRO ONE CUSTOMER IMPACT ASSESSMENT

A Customer Impact Assessment ("CIA") to assess the potential impacts of the proposed New Post Creek generation facility on the existing connected load and generation customers in the area was issued by Hydro One on February 25, 2010 (Final Customer Impact Assessment - New Post Creek GS 25 MW Hydroelectric Connection) and is provided as Attachment 1 to this exhibit. That assessment concluded that the proposed project could be incorporated with minor impact to Hydro One customers.

There have been no significant changes since the CIA was issued to warrant an updated CIA to be issued by Hydro One. However, now that a design-build contractor has been selected and the detailed design is progressing, OPG is maintaining a dialogue with Hydro One regarding any potential changes in the design of the generating station, to enable them to determine if and when any updated studies are required.

OPG/CRP will satisfy the requirements, recommendations and any other conditions imposed by Hydro One as described in the CIA.

hydro one

FINAL

CUSTOMER IMPACT ASSESSMENT

NEW POST CREEK GS

25 MW HYDROELECTRIC CONNECTION

Date: February 25, 2010

Prepared by:

K. Ip
Assistant Network Management Engineer/Officer
Transmission Planning
Hydro One Networks Inc.

Feb 26 '10

Approved by:

A. El-Nahas
Manager
Transmission Planning
Hydro One Networks Inc.

Feb 26 '10

TABLE OF CONTENTS

1.0 INTRODUCTION & BACKGROUND

Ontario Power Generation Inc. is proposing to install a new 25 MW hydroelectric facility. The facility known as New Post Creek consists of two hydroelectric generators and has a nameplate rating of 14 MVA at 0.9 pf. The facility is connected to the transmission system through a 13.8/121 kV step-up transformer and a 7 km 115 kV transmission line tapping onto circuit C6T between Otter Rapids SS and Abitibi Canyon GS.

The scheduled in-service date for the new facility is August 31, 2012.

2.0 CUSTOMER IMPACT ASSESSMENT (CIA) STUDY SCOPE

The purpose of this CIA is to assess the potential impacts of the proposed new generation facilities on the existing connected load as well as generation customers in the area. This is in accordance with the Market Rules (Chapter 4, Section 6) and the IESO's Connection Assessment and Approval (CAA) process.

A review of the following potential impacts on existing customers is conducted for this CIA:

- Short circuit impact at the connection point
- Voltage performance at the connection point
- Impact on customer power supply reliability

3.0 CUSTOMERS CONNECTED TO CIRCUITS IN THE AREA

- Ontario Power Generation Inc.
- Ontario Northland Communications
- Moosonee DS – Hydro One Distribution

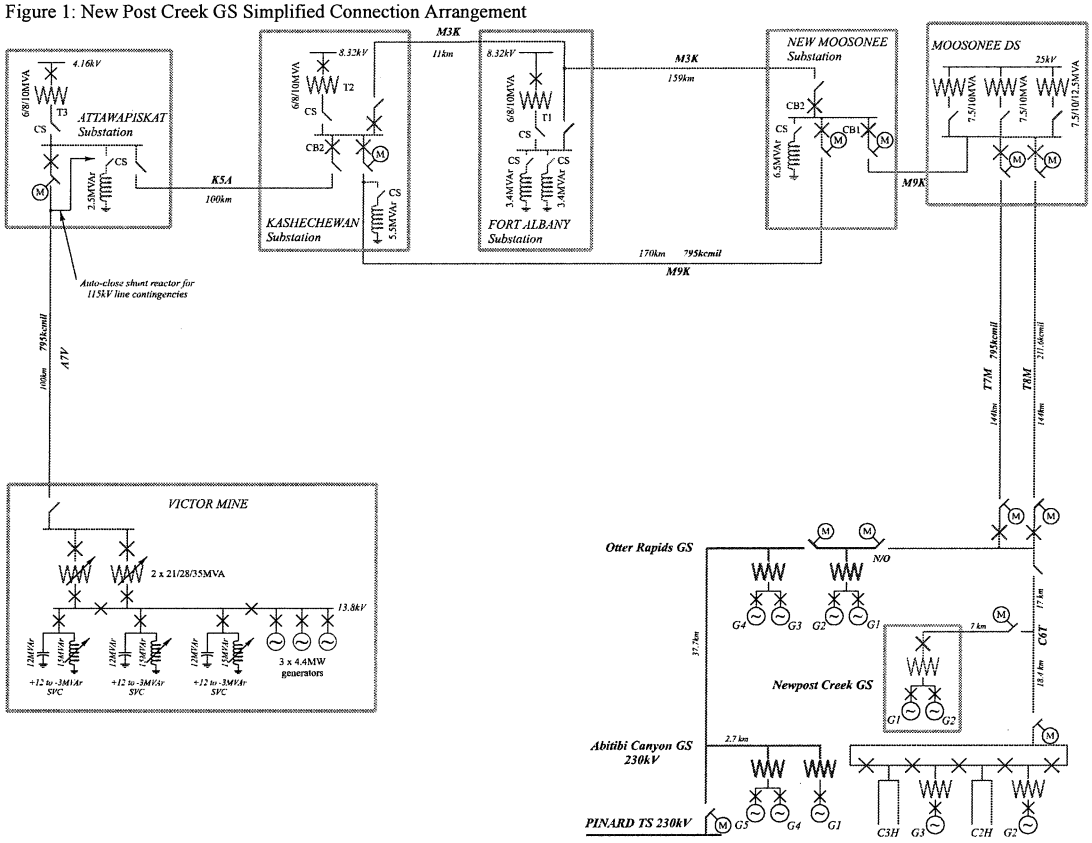
4.0 METHODOLOGY AND CRITERIA

4.1 Study Assumptions

Load flow and short-circuit studies assumed the following:

- Line Data – All transmission facilities in the Hydro One system are assumed to be in-service.
- Transformer/Phase Shifter Data – All existing transformers and phase shifters are assumed to be in-service.
- Generation Data – The short-circuit studies considered all existing generating stations in Ontario to be in-service including the following considerations:
- Machine & Other Data
    - Machine data exist in the short-circuit study database for existing generators. These are in the form of X"d (sub-transient reactance) in p.u. on machine rating.
    - Technical data for New Post Creek GS for short-circuit and load flow analysis was provided by Ontario Power Generation Inc.

Figure 1: New Post Creek GS Simplified Connection Arrangement



4.2 Planning Criteria

To establish the adequacy of the Hydro One transmission for incorporating the proposed New Post Creek GS, the following post-fault voltage decline criteria are applied:

- The loss of a single transmission circuit should not result in a voltage decline greater than 10% for pre-transformer tap-changer (including station loads) and 10% post-transformer tap-changer action (5% for station loads) ;
- The loss of a double transmission circuit should not result in a voltage decline greater than 10% for pre-transformer tap-changer (including station loads) and 10% post- transformer tap-changer action (5% for station loads).

4.3 Power System Analysis

Power system analysis is an integral part of the transmission and distribution planning process. It is used by Hydro One to evaluate the capability of the existing network to deliver power and energy from generating stations to provide a reliable supply to customers.

a) Load Flow Studies: PTI PSS/E AC program was used for the voltage performance portion of the CIA study.
b) Short-Circuit Studies: PTI PSS/E AC program was used for short circuit portion of the CIA study.

5.0 SHORT CIRCUIT ANALYSIS

Short-circuit studies were carried out to assess the fault contribution from New Post Creek GS. The fault level at Hydro One's 115 kV customer busses were analyzed.

The short circuit analysis is based on the following assumptions:

- All existing generating facilities in the area are in-service
- The maximum pre-fault voltage is 132 kV

Table 1: Short Circuit Study Results

Bus	L-G Fault (kA)				3-Phase Fault (kA)				L-L-G Fault (kA)	
	No NPC		With NPC		No NPC		With NPC		No NPC	With NPC
	Symm	Asymm	Symm	Asymm	Symm	Asymm	Symm	Asymm	Symm	Symm
Canyon	5.52	6.70	5.76	7.03	5.47	6.28	5.84	6.73	5.49	5.80
Otter Rapids	1.74	1.78	1.81	1.84	2.40	2.46	2.58	2.67	2.19	2.34
Moosonee SS	0.58	0.59	0.59	0.60	1.14	1.16	1.18	1.20	1.01	1.04
Hunta SS	5.68	5.98	5.74	6.04	9.13	9.48	9.36	9.71	4.13	4.14
Onakawana CTS	0.86	0.86	0.87	0.88	1.39	1.40	1.46	1.46	1.25	1.30
Renison CTS	0.65	0.65	0.66	0.66	1.16	1.16	1.20	1.20	1.03	1.07

5.4 Summary of Results for Short-Circuit Impact at Customer Connection Points:

The incorporation of New Post Creek GS has very little impact on short circuit levels in the area. In comparison to the existing maximum short circuit scenario, the incorporation of New Post Creek GS causes the three-phase short circuit level to increase 6.7% and the single line to ground short circuit level to increase 4.3% at Abitibi Canyon 115 kV bus.

The absolute short circuit values are well within the maximum limit defined in the Transmission System Code (50kA).

6.0 VOLTAGE ANALYSIS

Load flow studies were carried out to analyze the impact of the New Post Creek GS on the voltage performance of Hydro One customers in the affected area.

6.1 System Scenario

Voltage studies were performed using 2010 peak load conditions. The loads at Moosonee DS, Five Nations communities and Debeers Victor Mine were further scaled to the forecasted 2015 values supplied by the IESO. New Post Creek GS was added to the North East system. New Post Creek GS and Abitibi Canyon GS G2/G3 are both at full output.

Bus	Load (MW)
Moosonee DS	15.8
Kashechewan CTS	3.5
Fort Albany CTS	2.8
Attawapiskat CTS	4.1
Debeer Victor Mine CTS	29
Total	55.2

6.2 System Contingencies

To study the voltage profile of the system, the following contingencies were analyzed with all elements in service, as well as scenarios with one critical element out of service.

Pre-contingency Outage	Contingencies Considered			
	NPC G1/G2	Canyon G2/G3	T7M	C2H
None	X	X	X	X
T8M	X	X		X
Canyon G2/G3	X		X	X
C2H	X	X	X	

6.3 Summary of Voltage Performance

The most critical contingency expected for voltage variation is the loss of units 2 and 3 at Canyon GS when circuit C2H is out of service. Table below shows the results from this case. Under all cases and contingencies, both the pre-tap and post-tap voltage variation at customer delivery points remains within 5%. The results are acceptable as these numbers are well within the planning criteria.

Bus	**Pre-contingency (kV)**	**Post-contingency**			
		Pre-ULTC (kV)	**Voltage Change (%)**	**Post-ULTC (kV)**	**Voltage Change (%)**
CANYON_SS	127.6	131.3	2.9	131.3	2.9
OTTER_RAP_S	129.4	132.9	2.7	132.9	2.7
ONAKAWANA	130.4	133.7	2.5	133.7	2.5
RENISON	130.8	133.9	2.4	133.8	2.3
MOOSONEE_SS	130.6	133.5	2.2	133.5	2.2
MOOSONEE_DS	26.3	26.9	2.3	26.9	2.3
NPC TAP	128	131.6	2.8	131.6	2.8

7.0 CONCLUSIONS AND RECOMENDATIONS

This CIA presents results of integrating New Post Creek GS on the IESO Controlled Grid. In particular, the results of the short-circuit and voltage performance analysis have been presented.

The results of the short circuit analysis showed minor increases in fault level at customer busses in the area. These increases are well within the limits specified in the Transmission System Code. The results of the voltage analysis also showed minor voltage rise for major system contingencies in the area. These increases are also well within the limits specified in the IESO Market Rules.

The proposed project will be connected to circuit C6T via a 7 km 115 kV line tap. This project will introduce insignificant exposure and risk of interruption for customers connected North of Otter Rapids and at Moosonee TS.

In conclusion, the proposed New Post Creek GS can be incorporated with minor impact to Hydro One customers. No other requirements except those identified in the IESO SIA were identified by this study.