# RESPONSE TO DIRECTIVE #13 - BOARD ORDER 73/15

**For the Quarter Ended March 31, 2016**

*13. Manitoba Hydro shall file detailed quarterly reports for all Major New Generation and Transmission projects, including the ones currently under development. These reports are to outline the proposed budget (at time of contract), budget changes and reasons for such changes, and the revised projected in-service costs. Where capital costs have increased materially, Manitoba Hydro is to explain how such increases will impact domestic revenue requirements and projected impacts on Manitoba Hydro's financial forecasts and targets.*

**Response:**

The following figure summarizes the total project costs for the Major New Generation & Transmission Projects in CEF15, actual project costs and status for each project to March 31, 2016. Appendices I, II, III, IV and V provide additional information on the budgets and current status for the Bipole III, Keeyask, Pointe du Bois Spillway Replacement, Manitoba-Minnesota Transmission Line and the Great Northern Transmission Line projects, respectively.

A summary of the forecast costs for each Major New Generation & Transmission projects can be found on pages 9-16 of CEF15, which was filed as Attachment 4 of Manitoba Hydro's 2016/17 Supplemental Filing.



*Available in accessible formats upon request*

**Figure 1. Total Project Costs for Major New Generation & Transmission Projects in CEF 15**
**March 2016 Quarterly Report**
(in millions of dollars)

| | Total Project CEF15 | Actual to Date | Project Status |
|---|---|---|---|
| Wuskwatim - Generation | 1,448.6 | 1,412.1 | The Wuskwatim Generating Station continues in full operation with all three turbine-generator units commissioned and in service. There is minor ongoing construction-related work on final resolution of minor plant deficiencies and related project close-out items. |
| Keeyask - Generation | 6,496.1 | 2,346.0 | Refer to Keeyask Quarterly Report Update (Appendix II) |
| Grand Rapids Hatchery Upgrade & Expansion | 23.5 | 1.4 | Detail design and commissioning authority contracts were awarded in January 2016. Completion of detail design is scheduled for fall of 2016. |
| Conawapa - Generation | 404.7 | 361.4 | Manitoba Hydro is winding down work on Conawapa and suspending activities related to the project development agreement negotiations, engineering and the environmental impact statement.<br><br>While the work is expected to be completed within the approved budget, progress on the wind-down work has been slower than planned due to resource constraints and longer than anticipated time to negotiate Aboriginal Traditional Knowledge (ATK) Agreements. All work is expected to be completed by December 31, 2016. |
| Kelsey Improvements & Upgrades | 338.8 | 316.9 | The project is on schedule and budget. Work continues on completing head cover repairs on units 1, 2, 6 and 7 and intake Gate Hoist frame modifications on Units 1, 2, 3 and 4. All work is expected to be completed in 2016. |

| | Total Project CEF15 | Actual to Date | Project Status |
|---|---|---|---|
| Kettle Improvements & Upgrades | 190.9 | 80.1 | Unit 3 was placed in service January 2016. Unit 1 stator frame components are on site with assembly scheduled to be completed July 2016. |
| Pointe du Bois Spillway Replacement | 594.8 | 558.3 | Refer to Pointe du Bois Spillway Quarterly Report Update (Appendix III) |
| Pointe du Bois - Transmission | 118.1 | 80.6 | The Slave Falls Switchyard Protection Upgrades and Transcona Station Transformer Banks 1 & 2 Salvage projects are underway and remain on schedule. |
| Gillam Redevelopment and Expansion Program (GREP) | 266.5 | 24.9 | The Gillam Redevelopment and Expansion Program (GREP) is underway. Work continues to progress with Fox Lake Cree Nation on direct negotiated contracts involving new housing, fencing, roofing and landscaping in Gillam. |
| Bipole III Transmission Reliability Project | 4,652.7 | 1,779.0 | Refer to Bipole III Quarterly Report Update Summary (Appendix I) |

| | Total Project CEF15 | Actual to Date | Project Status |
|---|---|---|---|
| Riel 230/500kV Station | 319.9 | 318.5 | Work continued on project deficiencies and outstanding contracts. Work related to the design and construction of the fire suppression system has proceeded and will continue into next fiscal year. |
| Manitoba-Minnesota Transmission Project | 353.6 | 15.5 | Refer to Manitoba-Minnesota Transmission Quarterly Report Update (Appendix IV) |
| Manitoba-Saskatchewan Transmission Project | 57.0 | 0.0 | Two Facility Study Agreements have been executed, one for 100 MW, and one for an additional 40 MW. An Expedited Service Agreement has also been executed. After the Facility Study Agreements are completed, a Facilities Construction Agreement (FCA) and Service Agreements will be prepared (the Expedited Service Agreement will then be superseded by the FCA). |
| **Sub-Total** | **15,265.2** | **7,294.6** | |

Bipole III, Keeyask, Pointe du Bois Spillway Replacement, MMTP and GNTL Project Reports

Given the size and importance of these projects, Manitoba Hydro is providing additional information on the current status of its largest active Major New Generation and Transmission Projects, namely Bipole III, Keeyask, the Pointe du Bois Spillway Replacement and the MMTP projects, in Appendices I, II, III and IV, respectively. Manitoba Hydro is also providing additional information on the current status of the GNTL project in Appendix V.

Manitoba Hydro is filing both public and confidential versions of the Bipole III, Keeyask and Pointe du Bois Spillway Replacement reports, due to the commercially sensitive nature of the information contained in the confidential reports. The contingency amounts contained within the control budget in Appendices I, II and III, and the information on contract values and capital expenditures by contract to date that is found in Appendices I and II, are highly confidential. This information is commercially sensitive, and Manitoba Hydro is concerned that public disclosure would harm Manitoba Hydro's ability to manage and execute the work according to the commercial terms agreed to by contract.

Manitoba Hydro's contingency budget is applied to the construction contracts in a manner that reflects the risks and probable occurrence of those risks. Should the risks materialize, the contingency is available to cover any additional costs; however, should the risks not materialize, the contingency would not be spent and the funds would be available for other potential risk events in subsequent stages of the project.

It is imperative that the contingency amounts, and information on contract value and capital expenditures by contract, remain confidential. If this information was publicly disclosed, there is significant potential that it could negatively affect the outcome of the contract execution, and would certainly affect future negotiations. As such, Manitoba Hydro has filed detailed information related to the allocation of contingency amounts and capital expenditures by contracts over $100 million in confidence with the PUB.

Appendix I

# Manitoba Hydro Update on Major Projects to the Public Utilities Board

# Bipole III Project Update

Q4 Update ending March 31, 2016

Transmission Line N3 - first towers raised



Manitoba Hydro

# EXECUTIVE SUMMARY

## Project Description

Once completed in 2018, Bipole III will strengthen reliability of Manitoba's electricity supply by reducing dependency on existing high voltage direct current transmission lines and the Dorsey Converter Station. These facilities are relied upon to deliver over 70 per cent of the electricity produced in the province.

The project includes:

- A 1,384-kilometre, 500,000-volt direct current transmission line;
- The Keewatinohk Converter Station in northern Manitoba, northeast of Gillam;
- The Riel Converter Station, east of Winnipeg;
- 230 kV collector lines (5)
- Two ground electrodes at each of the new converter stations.

The current Bipole III project budget is $4.65 billion based on an in-service date of July 2018.

## Background

The Bipole III Project Environment Act Licence was issued August 14, 2013 and construction has commenced with a planned in-service date of July 2018.

*Keewatinohk Converter Station*
The Keewatinohk Converter Station is to be located northeast of Gillam. Additionally, five new 230kV ac transmission lines are required to link the Keewatinohk Converter Station to the existing Henday Converter Station and the Long Spruce Switching Station. Each of those facilities require some modifications for these new "collector lines". Construction has started on Keewatinohk Converter Station civil works.

The Keewatinohk Construction Power Station and line went into service July 2014. Construction of a 600 person camp and associated infrastructure was completed at the Keewatinohk Converter Station site in September 2015 to house the required construction workforce for the converter station. The recreation centre was completed in March 2016.

*Riel Converter Station*
The Riel Converter Station, is east of Winnipeg, and will be constructed at the same site of the Riel Sectionalization Project.

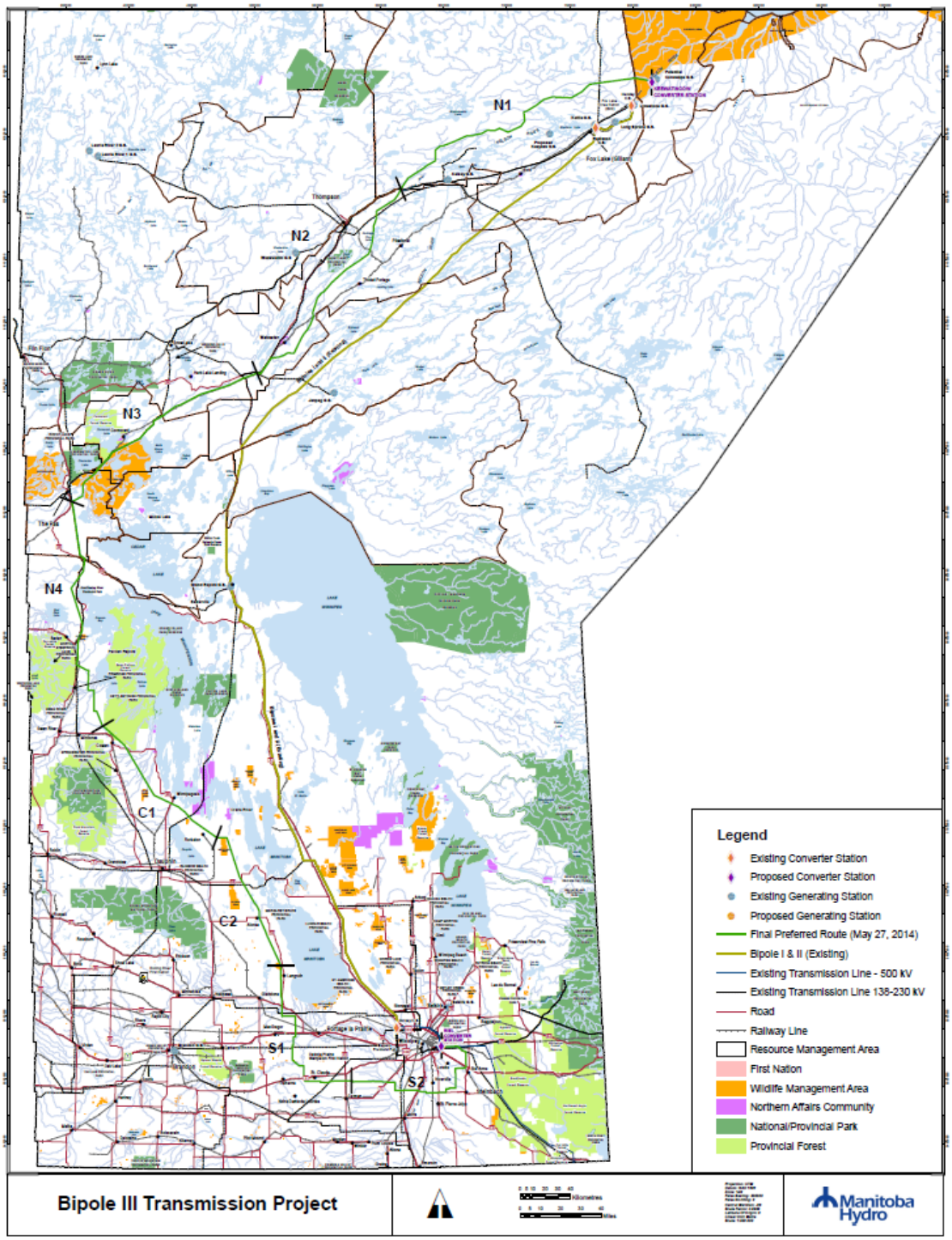
Due to the heavy reliance on one transmission corridor and a single converter station in the south (Dorsey), Manitoba Hydro's electricity system is vulnerable to extensive power outages from severe weather (major ice storm, extreme wind event, tornado), fires, or other events. The Riel Converter Station will establish a second converter station in southern Manitoba, to provide

another major point of power injection into the transmission and distribution system. Construction has started on Riel Converter Station civil works.

*Transmission Line Construction*
The Keewatinohk Converter Station and the Riel Converter Station will be linked by a new +/- 500 kV HVDC transmission line, approximately 1,384 km in length, centered on a 66m wide right-of-way which will follow a westerly route, which is to the west of lakes Winnipegosis and Manitoba. This new transmission line has been routed, as far as practical, sufficiently far from the existing Bipoles I and II lines so as to significantly decrease the probability that a single catastrophic weather event or natural disaster would damage both the new transmission line and Bipoles I and II.

Below please find a map of the transmission line segments.

*Map of the Bipole III Project*



## PROJECT UPDATE

**Riel:**

- HVDC contract:
  - Construction of cast-in-place piles and pile caps in Filter Bank 1 & 2 Areas occurred during the quarter.
  - Construction work on the HVDC converter station included piling, installation of solid wall panels, structural steel, stairs and roof sheeting.
- 230 kV AC Yard contract - As part of the overall expansion of the yard to accommodate Bipole III, work over the quarter included bus pipe installation in Bays 12 and 13.
- Synchronous condensers contract – As part of the Contractor's start up activities for site work on the contract, they continued the installation of communications, power and other required resources.

**Keewatinohk:**

- Keewatinohk Lodge - Construction of the recreation center was completed in March, and the facility is now open for use.
- HVDC contract:
  - Piling work for the HVDC Converter Building occurred over the quarter, however a piling subcontractor became insolvent on March 21, delaying the completion of the pile work. The impact to schedule is in the process of being assessed while a replacement subcontractor re-starts the work. The Contractor is anticipating to recover this time over the summer during the erection of the building.
- 230 kV Yard – Construction including the installation of steel piles and excavation for Switchgear Building and duct bank foundations occurred over the quarter.
- Auxiliary Buildings – Construction of the Emergency Response Building, Deluge Building I and Deluge Building II, as part of the buildings required to support operation of the new Converter Station, occurred over the quarter. Excavation for Fire Pumphouse 2 began.

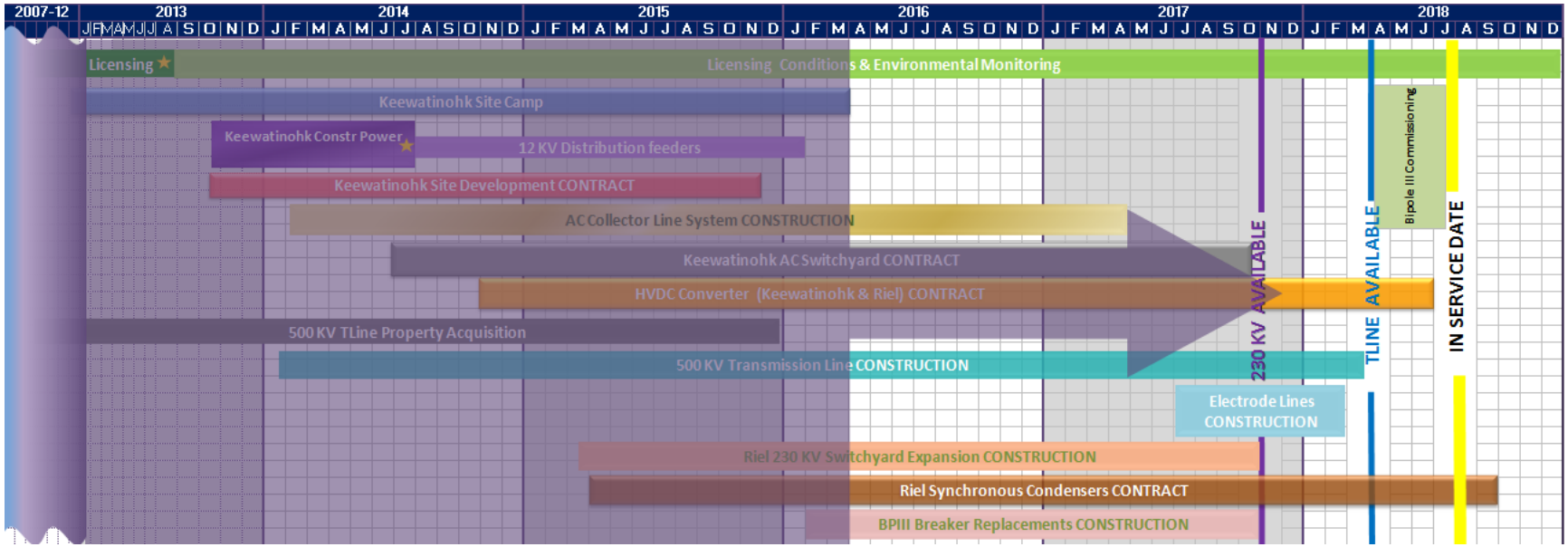
**Transmission Line:**

- As of March 31, 2016, approximately 93% of clearing of the line was complete, approximately 60% of all tower site foundations are complete, and approximately 2% of tower installations are complete. Winter construction zones have mostly shut down for the season with the exception of N1, as favourable conditions have allowed work to continue.
- Work will resume after spring road restrictions are lifted in the southern segments of the line. Material deliveries continue daily to the Manitoba Hydro storage yard.
- The RFP development is underway for packages 3-5 for remaining construction (primarily tower installation and stringing), with an anticipated issue date in May.

**Collector Lines:**

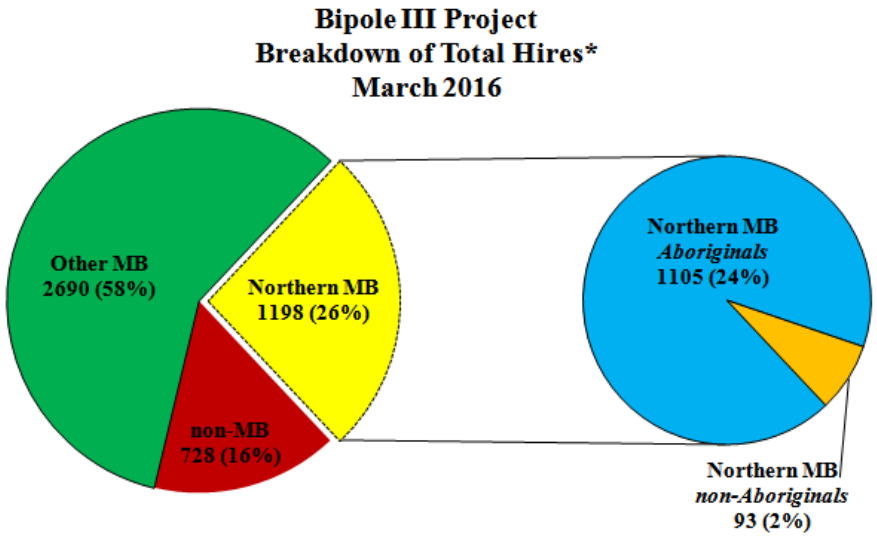
- AC Collector Lines - Clearing is complete, tower site foundations are approximately 85% complete, towers installations are approximately 74% complete, and stringing is approximately 8% complete; expect to demobilize in mid-April for the winter season.
- Henday station upgrades - Engineering and materials are substantially complete, all HVDC materials have been delivered to site, panel assembly work is expected to start along with the continued installation of the breakers in June 2016.
- Long Spruce update - Installation has begun for new fibre connections to the site. Preliminary construction drawings have been issued with final drawings expected in May 2016.

**Bipole III Schedule Overview –** March 31, 2016




| Construction Schedule | |
|---|---|
| HVDC Converter Stations | On Target<br>▪ The KCS Switchyard completion date has shifted from April to October 2017 as a result of changes to the work, however as a result of schedule float (or buffer) this change has no impact on the overall completion date of the HVDC Converter Stations. |
| 500 kV HVDC Line | On Target |
| 230 kV Collector Lines | On Target |

**Total Hires** – as of March 31, 2016




*Total Hires = **4616** (based on data received from contractors to March 31, 2016)
Total Aboriginal Hires = **1970** (**43%** of Total Hires)

- Since September 2012, there have been a total of 4,616 hires for the Bipole III project. Of the total hires, 84% are Manitobans, including 26% northern Manitobans.

## FINANCIAL SUMMARY

- Construction is progressing to be on budget of $4.65 billion.
- Expenditures to the end of March 31, 2016 were $1.78 billion.

**Table A - Bipole III Budget Summary (in Billions $)**

| Item # | Item | Current Approved Budget (2014$) | Actuals to Mar 31, 2016 |
|---|---|---|---|
| 1.1 | Transmission Line | 1.191 | 0.564 |
| 1.2 | Converter Stations | 2.138 | 0.917 |
| 1.3 | Collector Lines | 0.198 | 0.123 |
| 1.4 | Community Development Initiative | 0.062 | 0.049 |
| 1.5 | Escalation @ CPI | 0.148 | 0.000 |
| 1.6 | Interest (Capitalized) | 0.568 | 0.126 |
| 1.7 | Contingency | 0.248 | 0.000 |
| 1.8 | Management Reserve | 0.100 | 0.000 |
| 1.9 | Total | 4.653 | 1.779 |

***Table A Notes:***

*1. The Escalation, Contingency and Management Reserve Components (1.5, 1.7, and 1.8) will have no actual costs incurred against them; these costs will form part of the actual costs in the Transmission Line, Converter Stations, Collector Lines, Community Development Initiative and Interest Components (1.1, 1.2, 1.3, 1.4 and 1.6).*

## RECENT PHOTOS

**Photo 1: Keeawatinohk Converter Station – Auxiliary Building**

**Photo 2: Transmission Line C1 – ROW accommodation, building of beaver lodge**

**Photo 3: Transmission Line C1 – rock anchor load test**

**Photo 4: Riel Converter Station – HVDC building construction**

Appendix II

# Manitoba Hydro Update on Major Projects to the Public Utilities Board

# Keeyask Project Update

Q4 Update ending March 31, 2016

## EXECUTIVE SUMMARY

### Project Description

- The Keeyask Generating Station is a 7 unit, 695-megawatt hydroelectric generating station under construction at Gull Rapids on the lower Nelson River in northern Manitoba.
- Project budget and schedule is $6.5 billion with a first unit in service date of November 2019. Construction of the generating station is progressing with the current forecast for schedule and cost being in line with the control plan. However, a potential cost overrun for the General Civil Works contract places pressure on the overall project budget and therefore Manitoba Hydro is working with the contractor to improve management and productivity of future work. As Manitoba Hydro enters the first peak of construction, concerted efforts by all are essential for project success. The project budget status will be updated after completion of the 2016 construction season with information anticipated to be available in early 2017.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the infrastructure was constructed in advance of the generating station under the Keeyask Infrastructure Project (KIP). The Keeyask Project is a collaborative effort between Manitoba Hydro and four Manitoba First Nations, working together as the Keeyask Hydropower Limited Partnership.
- Keeyask will be Manitoba's fourth largest generating station and the sixth on the Nelson River.

### Background

- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The General Civil Works contract, the largest contract on the project was awarded to BBE Hydro Constructors Limited Partnership consisting of Bechtel Canada Co., Barnard Construction of Canada Ltd. and EllisDon Civil Ltd. The General Civil Works contract is responsible for rock excavation, concrete for the powerhouse and spillway, earth structures, electrical and mechanical work, and the construction and removal of temporary cofferdams needed to manage the river flow during construction.

## PROJECT UPDATE

### Generating Station

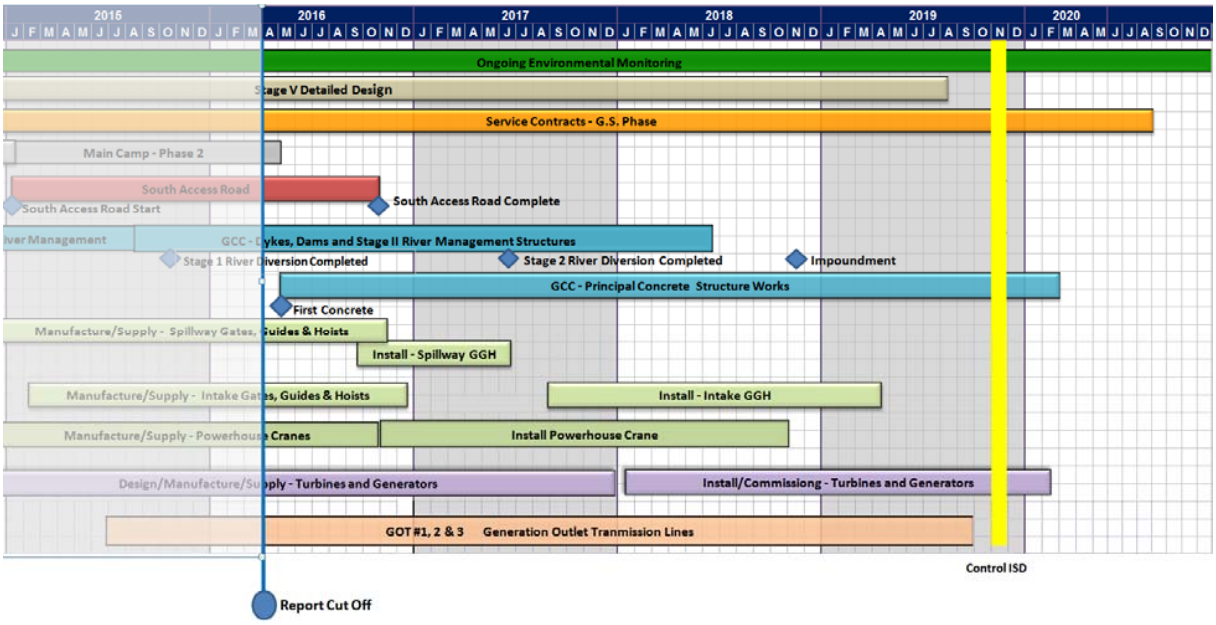
- Excavation for the Spillway was completed this quarter. In total, approximately 300,000 $m^3$ of rock was excavated from the Spillway.
- Powerhouse excavation is approximately 97% complete. To date over 1.16 million $m^3$ of rock has been excavated from the Powerhouse area.

- Two of five tower cranes have been erected.
- Foundation preparation and leveling slab concrete placement for the Spillway, Powerhouse and Intake began in March. There is approximately 330,000 $m^3$ of concrete required for the Keeyask Generating Station and approximately 1% has been placed so far.
- The project activities have been focused on completing readiness assessments for all critical parts of the general civil works and ramping up for peak construction this summer, led by the contractor and supported by Manitoba Hydro. Summer 2016 and 2017 will be the two peak construction seasons on the Keeyask Project.
- The first permanent earthworks for the project were placed on the North Dyke in January, a few months ahead of schedule.
- Forebay clearing on the north side of the river was completed this quarter and the south side is planned for next winter.
- Approximately 1,900 hectares was cleared of trees on the north side of the river. This will prevent trees from being flooded when the Forebay is impounded in fall 2018.

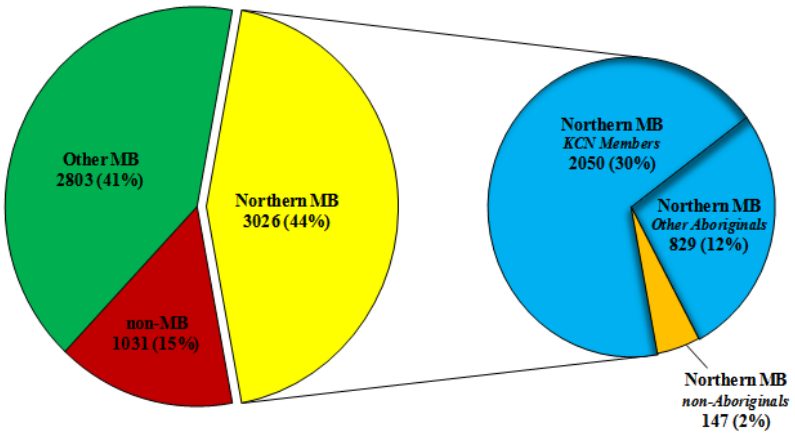
**Infrastructure**

- The Keeyask Main Camp expansion to 2,100 rooms was completed this quarter and the contractor has demobilized from site.
- Construction of the South Access Road between Gillam and the south side of the Nelson River is 83% complete and is planned to be completed in July 2016.
- The Keeyask Construction Power project, which consists of two transmission lines and a construction power station, provides the Keeyask construction site with a permanent, reliable power source during construction. Over the last six months, efforts have been focused on finishing the second transmission line (KR1) to site. The first line was brought into service in the summer of 2015. Line clearing, foundations and tower assembly are complete, with stringing efforts expected to be complete by the end of April 2016. It is expected the second line will be in-service in summer 2016.

**Project Schedule Overview** – March 31, 2016



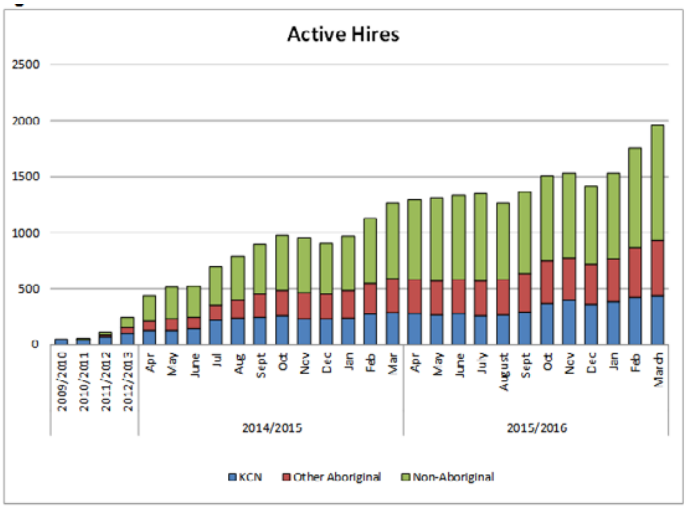
**Total Project Hires** – as of March 31, 2016




*Total Hires = **6860** (based on contractor data received from June 1, 2009 to March 31, 2016)
Total Aboriginal Hires = **3702** (**54%** of Total Hires)

- As of March 31, 2016 there have been a total of 6,860 hires on the Keeyask Project. Of these total hires, 85% (5,829) are Manitobans, 54% (3,702) have self-declared being Aboriginal persons and 30% (2,051) of the total hires are Keeyask Cree Nation (KCN) members.

**Active Hires** – as of March 31, 2016




- As of March 31, 2016 there were 1,958 active hires on the Keeyask Project. Of these active hires, 74% (1,455) are Manitobans, 47% (929) have self-declared being Aboriginal persons and 22% (435) are KCN members.
- The percentage of Non-Manitobans is increasing as the project activities change from earthworks to structures which requires more skilled trades. This has been expected and will continue for the remainder of the project.

## FINANCIAL SUMMARY

- As indicated in the Executive Summary, construction is progressing, however, a cost overrun predicted for the General Civil Works contract is placing pressure on the current $6.5 billion control budget. Manitoba Hydro is working with the General Civil Works contractor (BBE Hydro Constructors Limited Partnership) to improve management and productivity of remaining work.
- As Manitoba Hydro enters the first peak of construction, concerted efforts by all are essential for project success.
- Manitoba Hydro plans to update the project's budget status after completion of the 2016 construction season using updated information from the 2016 construction season which is anticipated to be available in early 2017.
- Expenditures to the end of March 31, 2016 were $2.35 billion.

**Table A - Keeyask Budget Summary (in Billions $)**

| Item # | Item | Current Approved Budget (2014$) | Actuals to Mar. 31, 2016 |
|---|---|---|---|
| 1.1 | Generating Station | 4.046 | 1.946 |
| 1.2 | Generation Outlet Transmission (GOT) | 0.164 | 0.042 |
| 1.3 | Escalation @ CPI | 0.244 | 0.000 |
| 1.4 | Interest (including Interest on Equity) | 1.343 | 0.357 |
| 1.5 | Contingency | 0.307 | 0.000 |
| 1.6 | Labour Mgmt Reserve | 0.304 | 0.000 |
| 1.7 | Escalation Mgmt Reserve | 0.088 | 0.000 |
| **1.8** | **Total** | **6.496** | **2.346** |

***Table A Notes:***

*1. The Escalation, Contingency and Management Reserve Components (1.3, 1.5, 1.6 and 1.7) will have no actual costs incurred against them; these costs will form part of the actual costs in the Generating Station, Generation Outlet Transmission and Interest Components (1.1, 1.2 and 1.4).*

## RECENT PHOTOS

**Photo 1: Keeyask Satellite Photo**


**Photo 2: Aerial of Powerhouse Area and hording**

**Photo 3: Installation of the Second (of 5) Tower Cranes**

**Photo 4: North Dyke Material Placement – First Permanent Earthworks**

**Photo 5: Completed Keeyask Main Camp (approximately 2,100 rooms)**

Appendix III

# Manitoba Hydro Update on Major Projects to the Public Utilities Board

# Pointe du Bois Spillway Replacement Project Update

Q4 Update ending March 31, 2016

## EXECUTIVE SUMMARY

### Project Description

- The Pointe du Bois Spillway Replacement Project is required to upgrade existing facilities to meet Canadian Dam Association guidelines and to improve operational safety and reliability.
- The Pointe du Bois Spillway Replacement Project includes construction of a 7 bay spillway and approximately 1 km of earth fill dam. Decommissioning of existing structures and re-vegetation of the site is also in scope.
- The current approved budget is $595 million. The spillway was placed in service in August of 2014 and the dam structures were placed in service in October of 2015.

### Background

- Pointe du Bois is Manitoba's oldest generating station and is the first station on the Winnipeg River.
- Construction of the project commenced in December 2012.
- The General Civil Contract (GCC), the largest contract on the project, was awarded to Peter Kiewit Infrastructure (PKI) who is responsible for rock excavation, concrete for the spillway, earth structures, installation of the spillway gates and all electrical and mechanical work.
- Gates and hoisting equipment were designed and supplied by Alstom.
- The new spillway was placed in service in August of 2014.
- Construction of the earth fill dam was deferred from 2014 to 2015.
- Delays to construction in 2014 were primarily a result of severe weather events at the construction site, record flows on the Winnipeg River, and quality issues with the supply of gate equipment.

## PROJECT UPDATE

**Main and South Dams:**

- Impoundment of the main and south dams was completed in October, 2015. The secondary power feed from the powerhouse to the new spillway was completed and tested in February, 2016.

**Signage and Fencing**

- Signage and retro-reflective tape have been installed along the north side of the old spillway structure to ensure compliance with Transport Canada requirements.
- Remainder of site signage and fencing are being planned for installation by Fall 2016.

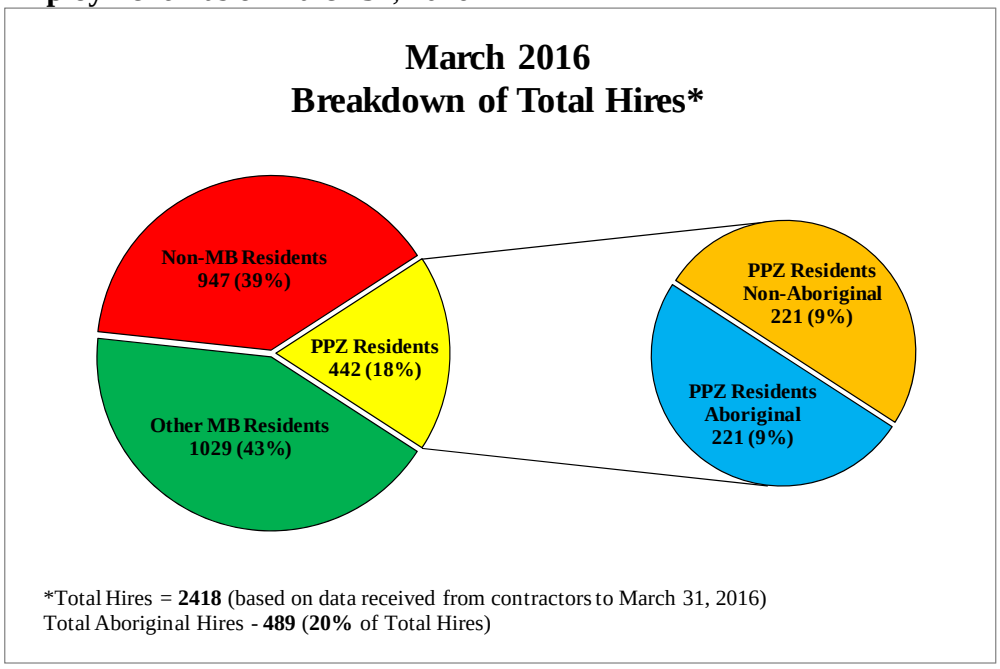
**Site Rehabilitation and Revegetation**

- Import of topsoil was completed before spring road restrictions were imposed.
- Site grading and sub-soil placement is underway at the east side work area.
- Manitoba Hydro is working with the RM of Alexander to finalize an agreement to turn over a portion of the CL-3 borrow site to the RM for the development of a wastewater treatment lagoon.

**Project Schedule Overview** – as of March 31, 2016

| Activity | Start | Finish |
|---|---|---|
| Spillway Commissioning Secondary Power Feed – Unit Substation 2 (6.9kV) | 22-Jan-16 | 10-Feb-16 |
| Signage and Fencing On-Site Work | | |
| Signage and Retroreflective Tape on Old Spillway | 21-Mar-16 | 4-Apr-16 |
| General Site Signage and Fencing | 1-Dec-15 | 14-Oct-16 |
| Site Rehabilitation and Revegetation On-Site Work | 12-Feb-16 | 31-Oct-19 |

**Employment –** as of March 31, 2016




*Total Hires = **2418** (based on data received from contractors to March 31, 2016)
Total Aboriginal Hires - **489** (**20%** of Total Hires)

**Employment Summary**
Between January 2012 and March 31, 2016, there have been a total of 2,418 hires to the Pointe du Bois Spillway Replacement Project. Of the total hires –

- 61% are Manitobans (18% are within the Project Preference Zone);
- 20% have declared being aboriginal persons; and,
- Aboriginal PPZ residents account for 9% of the total hires (45% of the aboriginal hires).

## FINANCIAL SUMMARY

- Expenditures to the end of March 31, 2016 were $558.3 million.

| Pointe du Bois Budget Summary (in Millions $) | | | |
|---|---|---|---|
| Item # | Item | Current Approved Budget CEF15 | Actuals to Mar. 31, 2016 |
| 1.1 | Spillway Replacement Project | 490.800 | 460.000 |
| 1.2 | Pre-Construction | 47.500 | 47.500 |
| 1.3 | GS Modernization | 1.400 | 1.400 |
| 1.4 | Interest | 50.200 | 49.400 |
| 1.5 | Contingency | 4.900 | 0.000 |
| **1.6** | **Total** | **594.800** | **558.300** |

## RECENT PHOTOS

**Photo 1: Sub-soil placement at east side work area** (March 2016)


**Photo 2: East side work area (looking north-east) grading and soil placement** (March 2016)

# MANITOBA – MINNESOTA TRANSMISSION PROJECT

**Q4 Update ending March 31, 2016**

## MMTP Project Description

Manitoba Hydro' capital expenditure forecast includes the construction of a new 500kV Transmission Line between Winnipeg and Duluth, Minnesota ("MMTP").

The MMTP transmission line will originate at Dorsey Converter station located near Rosser, northwest of Winnipeg and extend 213 km south around Winnipeg to the Manitoba-Minnesota border, near Piney, Manitoba. The MMTP project also includes associated upgrades at Dorsey, Riel and Glenboro stations.

The U.S. portion of the 500 kV line will initiate at the border and terminate at Blackberry Station northwest of Duluth, Minnesota. This project is known as the Great Northern Transmission Line (GNTL), and will be constructed by Minnesota Power.

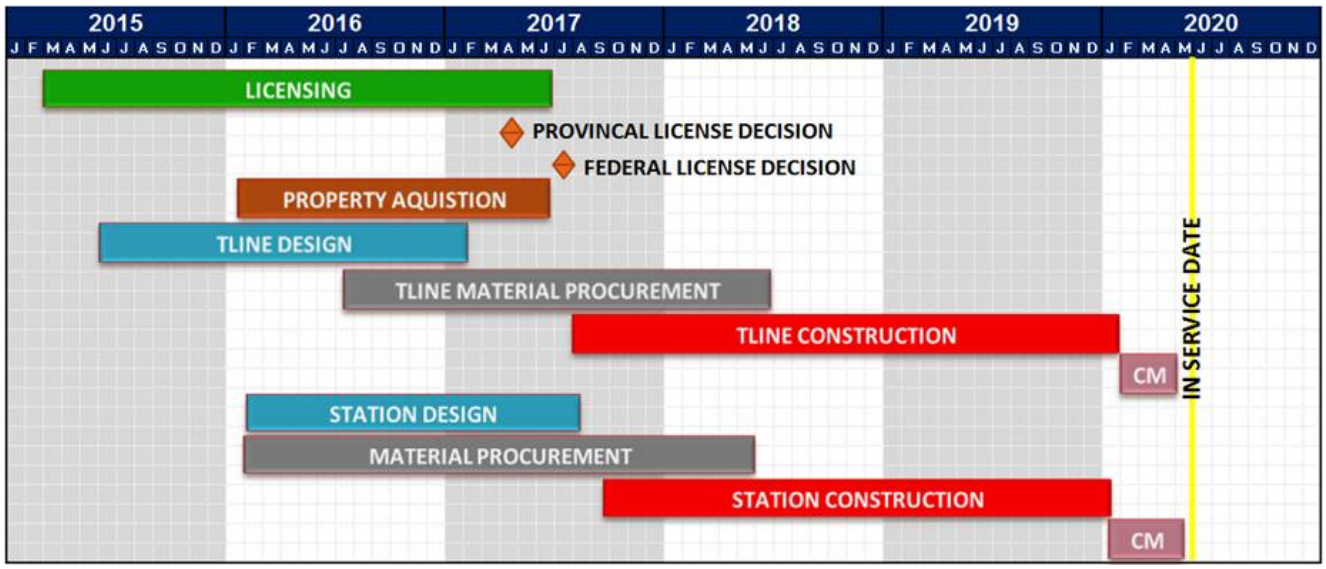
## MMTP Budget

| Item # | Item | Control Budget | Actuals to Mar 31, 2016 |
|---|---|---|---|
| 1.1 | Licensing & Environmental | $ 28.0M | $ 12.1M |
| 1.2 | 500 kV Transmission Line * | $ 173.1M | $ 2.7M |
| 1.3 | Station Upgrades* | $ 116.4M | $ 0.7M |
| 1.4 | Contingency | $ 36.1M | $ 0 |
| **1.5** | **Total** | **$ 353.6M** | **$ 15.5M** |

*No construction contracts are currently in place.

## MMTP Project Schedule

In Service Date: June, 2020



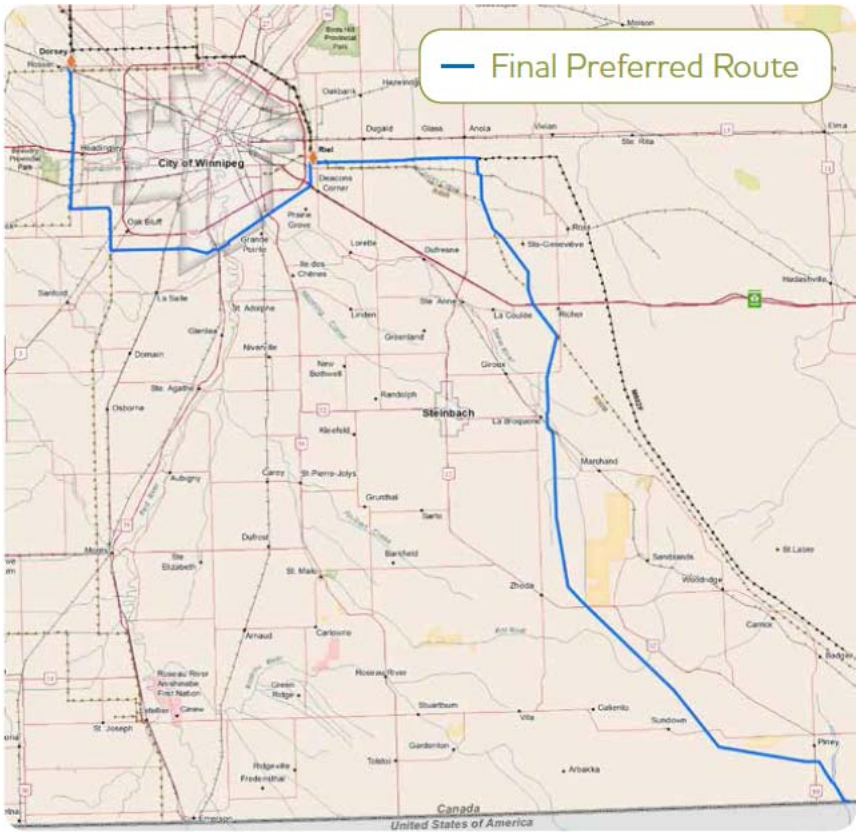
# MANITOBA – MINNESOTA TRANSMISSION PROJECT

**Q4 Update ending March 31, 2016**

## MMTP Project Update

- Information Requests are continuing to be responded to by Manitoba Hydro on the Environmental Impact Statement which was submitted to Manitoba Conservation and Water Stewardship in September 2015. Responses are expected to be submitted in April.
- Transmission line tower design activities are continuing.
- The pre-qualification process for vendors on the Transmission line tower material hardware and conductor has begun.
- Substation equipment procurement plans are continuing to be developed and reviewed.
- Transmission Line construction contracting plans are being reviewed.
- Cost estimates will be reviewed shortly for the project in preparation for upcoming financial forecasting.

## MMTP Project Route




MMTP Final Preferred Route

# GREAT NORTHERN TRANSMISSION PROJECT

**Q4 Update ending March 31, 2016**

## GNTL Project Description

The U.S. portion of the new 500 kV interconnection connecting at the Manitoba-U.S. border to northeastern Minnesota is known as the Great Northern Transmission Line (GNTL), and will be constructed by Minnesota Power. 6690271 Manitoba Ltd, (a Manitoba Hydro Subsidiary) and Minnesota Power are responsible for funding the costs of the GNTL.

The GNTL also includes a new Iron Range Station, a new Warroad Series Compensation Station and various minor system improvements to facilitate operation of the line.

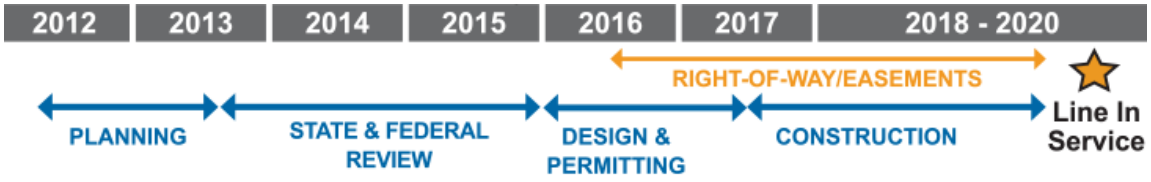
The plan is to increase the export and import transfer capability between Manitoba and the Midcontinent Independent System Operator (MISO), fulfill the transmission requirements of long term U.S. sale and purchase agreements, and improve the reliability of the system.

## GNTL Budget Common Use Upgrades Cost Summary

The current capital cost estimate for the GNTL is U.S. $677M (2013$). Minnesota Power will fund 46% (U.S. $311 M) of the capital cost of the project while 6600271 Manitoba Ltd will fund 54% (U.S. $366 M). Consent is required from Minnesota Power to publicly disclose actual project costs spent to date.

## GNTL Project Schedule

In Service Date: June, 2020



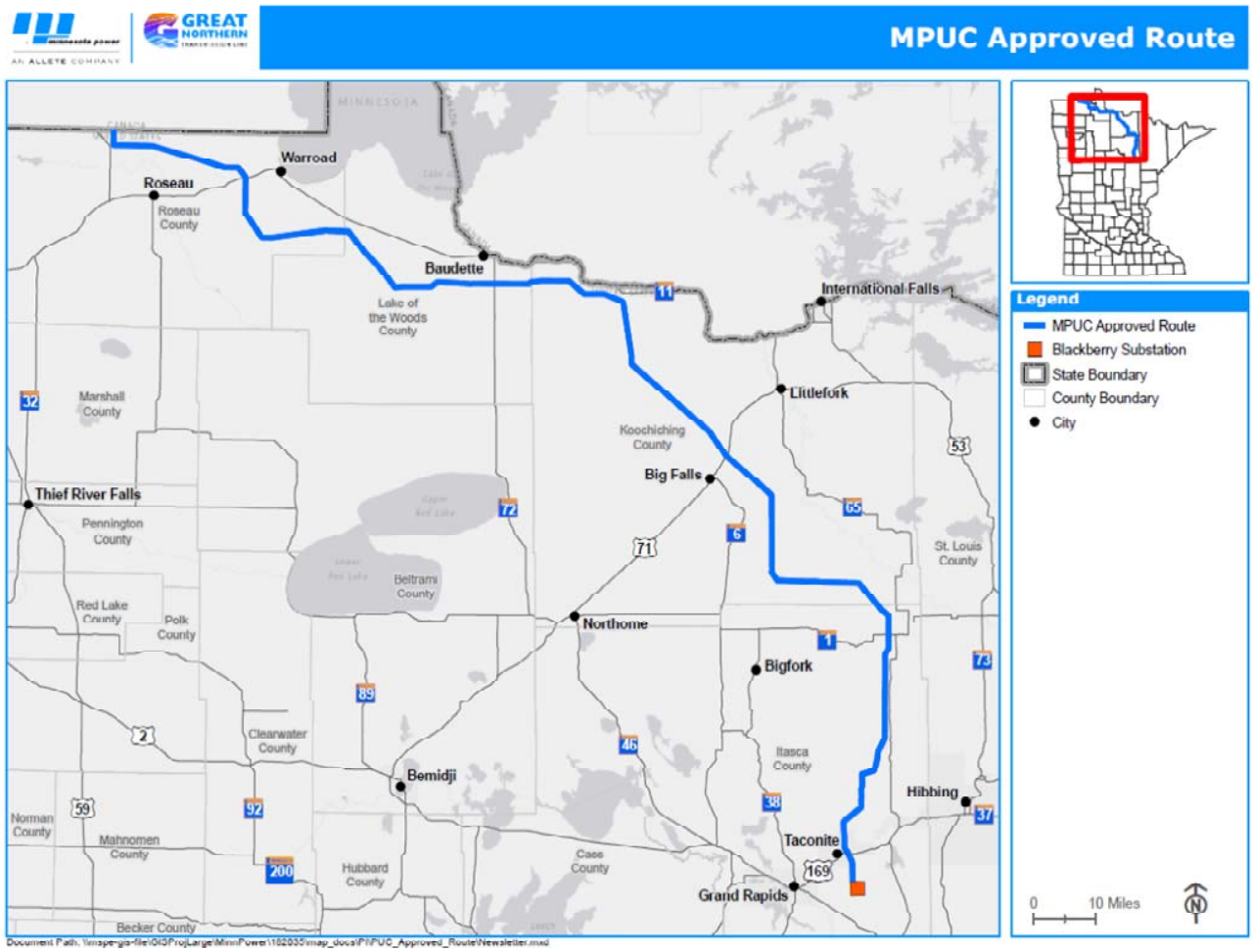

## GNTL Project Update

- On February 26, 2016, the Minnesota Public Utilities Commission unanimously approved the Route Permit for the GNTL and a written order is expected by early April, 2016. The approved route included Minnesota Power's proposed border crossing and most of Minnesota Power's recommended route.
- Pursuant to the Project Development Agreement signed by Minnesota Power and 6690271 Manitoba Ltd, in December 2015, the development manager (Minnesota Power) continues to pursue the two remaining major permits that are needed to construct the GNTL. These are a Presidential Permit from the U.S. Department of Energy, which is expected to be issued in May 2016, and a Section 404 Wetlands Permit from the U.S. Army Corps of Engineers, which is expected to be issued in the fall of 2016.
- Minnesota Power and 6690271 Manitoba Ltd were actively negotiating the terms for a Construction Management Agreement (CMA) that is expected to commence in early April 2016. The CMA is expected to formally appoint Minnesota Power as the Construction Manager for the Project and establish a governance structure that includes 6690271 Manitoba Ltd's influence and control over remaining design and permitting activities and construction activities for the GNTL project.

# GREAT NORTHERN TRANSMISSION PROJECT

**Q4 Update ending March 31, 2016**

## GNTL MPUC Approved Route




Source: http://www.greatnortherntransmissionline.com/files/8114/5712/5554/MPUC_Approved_Route.pdf

# RESPONSE TO DIRECTIVE #13 - BOARD ORDER 73/15

## For the Quarter Ended December 31, 2015

*13. Manitoba Hydro shall file detailed quarterly reports for all Major New Generation and Transmission projects, including the ones currently under development. These reports are to outline the proposed budget (at time of contract), budget changes and reasons for such changes, and the revised projected in-service costs. Where capital costs have increased materially, Manitoba Hydro is to explain how such increases will impact domestic revenue requirements and projected impacts on Manitoba Hydro's financial forecasts and targets.*

**Response:**

The following figure summarizes the total project costs for the Major New Generation & Transmission Projects in CEF15, actual project costs and status for each project to December 31, 2015. Appendices I, II, III, IV and V provide additional information on the budgets and current status for the Bipole III, Keeyask, Pointe du Bois Spillway Replacement, Manitoba-Minnesota Transmission Line and the Great Northern Transmission Line projects, respectively.

A summary of the forecast costs for each Major New Generation & Transmission projects can be found on pages 9-16 of CEF15, which was filed as Attachment 4 of Manitoba Hydro's 2016/17 Supplemental Filing.

**Figure 1. Total Project Costs for Major New Generation & Transmission Projects in CEF 15**
**December 2015 Quarterly Report**
(in millions of dollars)

| | Total Project CEF15 | Actual to Date | Project Status |
|---|---|---|---|
| Wuskwatim - Generation | 1,448.6 | 1,412.1 | The Wuskwatim Generating Station continues in full operation with all three turbine-generator units commissioned and in service. There is minor ongoing construction-related work on final resolution of minor plant deficiencies and related project close-out items. |
| Keeyask - Generation | 6,496.1 | 2,165.2 | Refer to Keeyask Quarterly Report Update |
| Grand Rapids Hatchery Upgrade & Expansion | 23.5 | 1.2 | Request for proposals were issued for detailed design and another for a commissioning authority. Proposals are being evaluated and contracts are anticipated to be signed in late January 2016. |
| Conawapa - Generation | 404.7 | 355.3 | Manitoba Hydro is winding down work on Conawapa and suspending activities related to the project development agreement negotiations, engineering and the environmental impact statement.<br><br>While the work is expected to be completed within the approved budget, progress on the wind-down work has been slower than planned due to resource constraints and longer than anticipated time to negotiate Aboriginal Traditional Knowledge (ATK) Agreements. All work is expected to be completed by December 31, 2016. |
| Kelsey Improvements & Upgrades | 338.8 | 316.6 | The project is on schedule and budget. Construction to rectify deficiencies on units 3 & 4 was completed in the fall of 2015. Work on the remaining units will resume spring 2016. |

| | Total Project CEF15 | Actual to Date | Project Status |
|---|---|---|---|
| Kettle Improvements & Upgrades | 190.9 | 76.2 | The project is on schedule and under budget. Construction on Kettle Unit 3 progressing on schedule with an estimated January 2016 completion. Unit 1 stator frame to be delivered in the fourth quarter. |
| Pointe du Bois Spillway Replacement | 594.8 | 554.4 | Refer to Pointe du Bois Spillway Quarterly Report Update |
| Pointe du Bois - Transmission | 118.1 | 78.9 | The Slave Falls Switchyard Protection Upgrades and Transcona Station Transformer Banks 1 & 2 Salvage projects are underway and remain on schedule. |
| Gillam Redevelopment and Expansion Program (GREP) | 266.5 | 20.1 | The Gillam Redevelopment and Expansion Program (GREP) is underway. Work is progressing with Fox Lake Cree Nation on direct negotiated contracts involving new housing, fencing, roofing and landscaping in Gillam. |
| Bipole III - Transmission Line | 1,655.4 | 440.2 | Refer to Bipole III Quarterly Report Update Summary |
| Bipole III - Converter Stations | 2,675.1 | 906.2 | Refer to Bipole III Quarterly Report Update Summary |
| Bipole III - Collector Lines | 260.2 | 105.0 | Refer to Bipole III Quarterly Report Update Summary |
| Bipole III - Community Development Initiative | 62.0 | 57.4 | Refer to Bipole III Quarterly Report Update Summary |

| | Total Project CEF15 | Actual to Date | Project Status |
|---|---|---|---|
| Riel 230/500kV Station | 319.9 | 318.3 | The project was placed fully in-service in May 2015. There are $2.8 million of expenditures planned for 2015/16, to address outstanding contract work and project deficiencies. |
| Manitoba-Minnesota Transmission Project | 353.6 | 14.2 | Refer to Manitoba-Minnesota Transmission Quarterly Report Update |
| Manitoba-Saskatchewan Transmission Project | 57.0 | - | The system impact study has been completed. A Facility Study Agreement is being prepared. |
| **Sub-Total** | **15,265.2** | **6,821.5** | |

There have been no changes to project costs for the above projects from those forecasted in CEF 15.

Bipole III, Keeyask, Pointe du Bois Spillway Replacement, MMTP and GNTL Project Reports

Given the size and importance of these projects, Manitoba Hydro is providing additional information on the current status of its largest active Major New Generation and Transmission Projects, namely Bipole III, Keeyask, the Pointe du Bois Spillway Replacement and the MMTP projects, in Appendices I, II, III and IV, respectively. Manitoba Hydro is also providing additional information on the current status of the GNTL project in Appendix V.

Manitoba Hydro is filing both public and confidential versions of the Bipole III, Keeyask and Pointe du Bois Spillway Replacement reports, due to the commercially sensitive nature of the information contained in the confidential reports. The contingency amounts contained within the control budget in Appendices I, II and III, and the information on contract values and capital expenditures by contract to date that is found in Appendices I and II, are highly confidential. This information is commercially sensitive, and Manitoba Hydro is concerned that public disclosure would harm Manitoba Hydro's ability to manage and execute the work according to the commercial terms agreed to by contract.

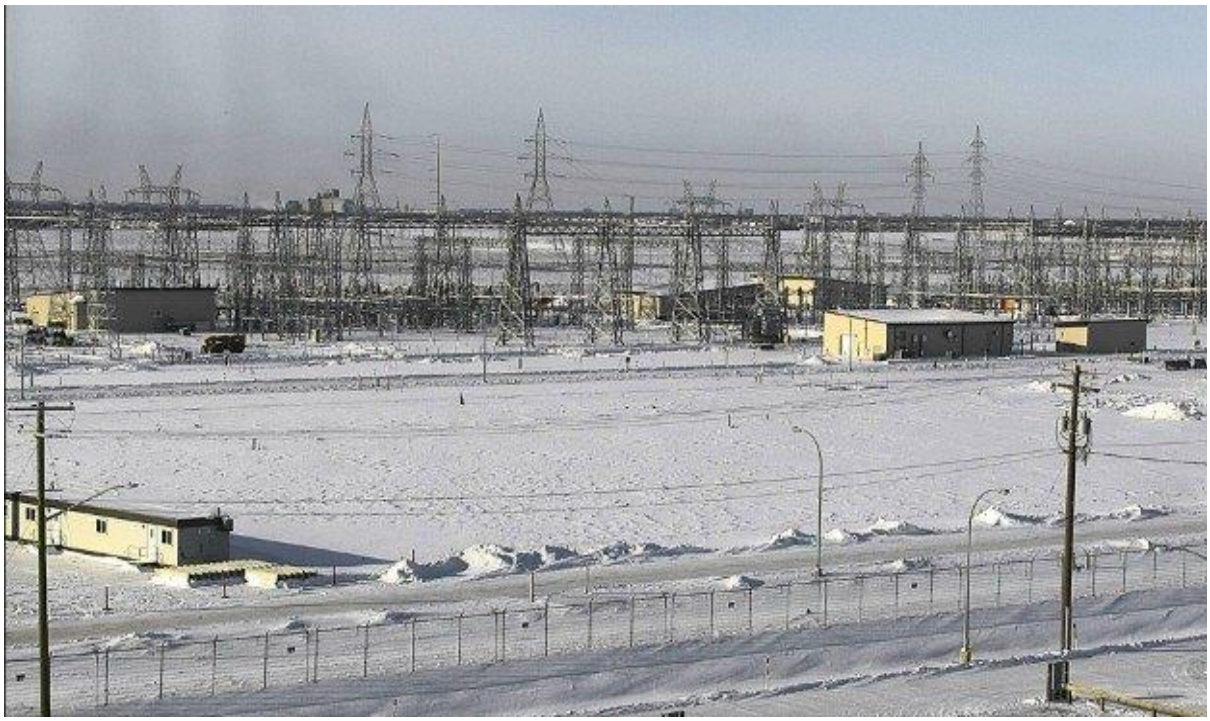
Manitoba Hydro's contingency budget is applied to the construction contracts in a manner that reflects the risks and probable occurrence of those risks. Should the risks materialize, the contingency is available to cover any additional costs; however, should the risks not materialize, the contingency would not be spent and the funds would be available for other potential risk events in subsequent stages of the project.

It is imperative that the contingency amounts, and information on contract value and capital expenditures by contract, remain confidential. If this information was publicly disclosed, there is significant potential that it could negatively affect the outcome of the contract execution, and would certainly affect future negotiations. As such, Manitoba Hydro has filed detailed information related to the allocation of contingency amounts and capital expenditures by contracts over $100 million in confidence with the PUB.

# Manitoba Hydro Update on Major Projects to the Public Utilities Board

# Bipole III Project Update

Q3 Update ending December 31, 2015



Riel Converter Station Site

# EXECUTIVE SUMMARY

## Project Description

Once completed in 2018, Bipole III will strengthen reliability of Manitoba's electricity supply by reducing dependency on existing high voltage direct current transmission lines and the Dorsey Converter Station. These facilities are relied upon to deliver over 70 per cent of the electricity produced in the province.

The project includes:

- A 1,384-kilometre, 500,000-volt direct current transmission line;
- The Keewatinohk Converter Station in northern Manitoba, northeast of Gillam;
- The Riel Converter Station, east of Winnipeg;
- 230 kV collector lines (5)
- Two ground electrodes at each of the new converter stations.

The current Bipole III project budget is $4.65 billion based on an in-service date of July 2018.

## Background

The Bipole III Project Environment Act Licence was issued August 14, 2013 and construction has commenced with a planned in-service date of July 2018.

*Keewatinohk Converter Station*

The Keewatinohk Converter Station is to be located northeast of Gillam. Additionally, five new 230 KV ac transmission lines are required to link the Keewatinohk Converter Station to the existing Henday Converter Station and the Long Spruce Switching Station. Each of those facilities require some modifications for these new "collector lines". Construction has started on Keewatinohk Converter Station civil works.

The Keewatinohk Construction Power Station and line went into service July 2014. A 600 person camp and associated infrastructure was constructed at the Keewatinohk Converter Station site to house the required construction workforce for the converter station. The Grand Opening of the Keewatinohk Lodge was held on September 16, 2015.

*Riel Converter Station*

The Riel Converter Station, is southeast of Winnipeg, and will be constructed at the same site of the Riel Sectionalization Project.

Due to the heavy reliance on one transmission corridor and a single converter station in the south (Dorsey), Manitoba Hydro's electricity system is vulnerable to extensive power outages from severe weather (major ice storm, extreme wind event, tornado), fires, or other events. The Riel

Converter Station will establish a second converter station in southern Manitoba, to provide another major point of power injection into the transmission and distribution system. Construction has started on Riel Converter Station civil works.

*Transmission Line Construction*

The Keewatinohk Converter Station and the Riel Converter Station will be linked by a new +/- 500 kV HVdc transmission line, approximately 1,384 km in length, centered on a 66m wide right-of-way which will follow a westerly route, which is to the west of lakes Winnipegosis and Manitoba. This new transmission line has been routed, as far as practical, sufficiently far from the existing Bipoles I and II lines so as to significantly decrease the probability that a single catastrophic weather event or natural disaster would damage both the new transmission line and Bipoles I and II.

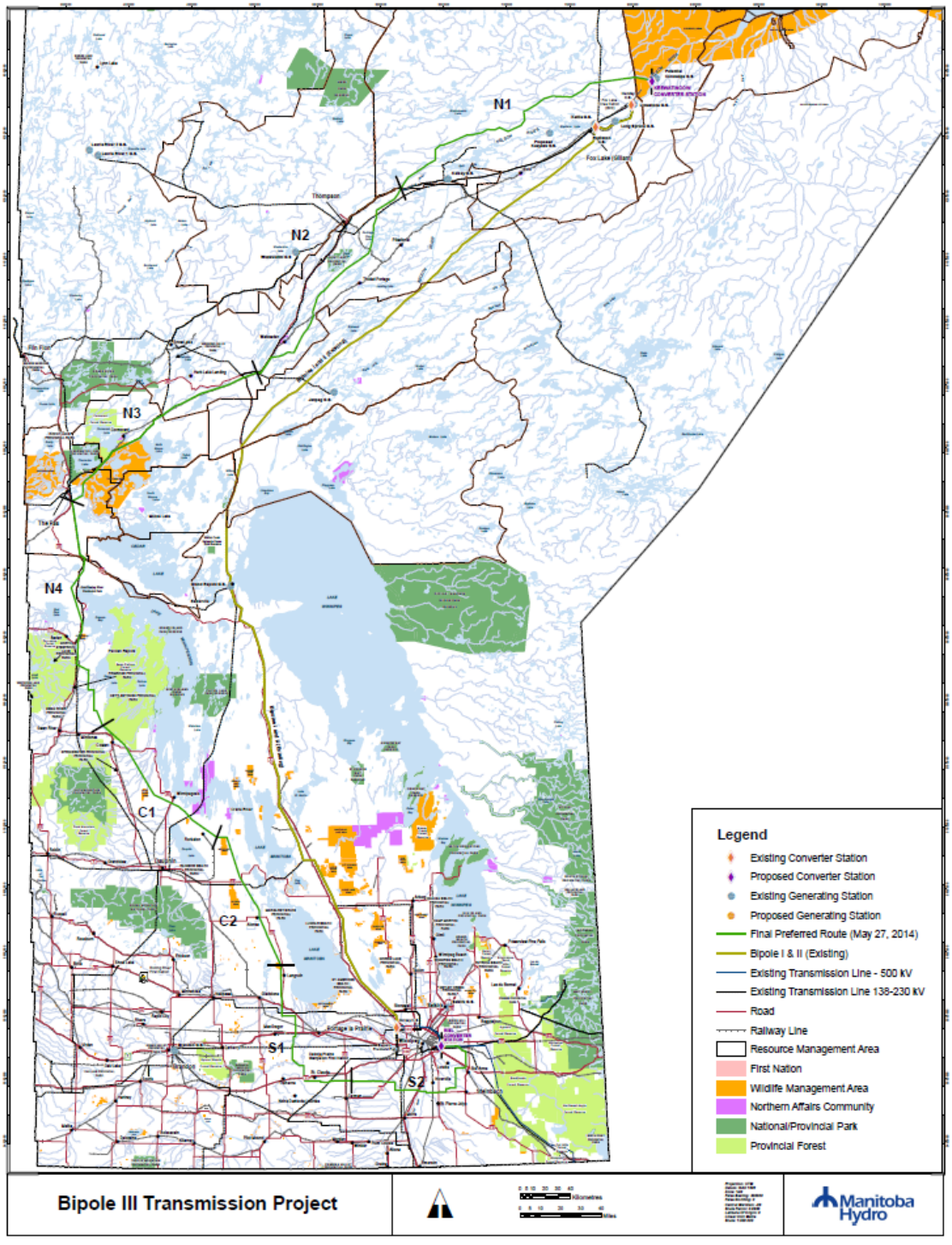
Clearing contracts for the 500 kV Transmission Line are largely direct negotiated with local first nation communities and to date nearly 100% of clearing contracts have been awarded and approximately 85% of the line has been cleared. Approximately 18% of all tower site foundations for the line have been installed to date.

The southern portion of the 500 kV HVDC transmission line route was finalized on May 27, 2014. Approximately 83% of the private property required for the line has been secured voluntarily through easements and access of the remaining 17% was obtained through expropriation. In addition, 99% of Crown Lands required are secured.

The procurement process for the construction of the 500 KV HVDC transmission line has been initiated; contractors have been pre-qualified to submit proposals for construction of one or more portions of the transmission line, with work broken into four work packages. Transmission line construction for the season commenced December 2015.

Below please find a map of the transmission line segments.

*Map of the Bipole III Project*



## PROJECT UPDATE

**Riel:**

- Piling for the HVDC converter building started on November 2nd and approximately 964 piles were completed to the end of December. Contractors continued excavation and extension activities, as well as pile cap pouring.
- Work was ongoing on the gravel pad for the HVDC Converter Building footprint. Construction started on building a temporary road on the west side of the site.

**Keewatinohk:**

- SNC Lavalin continued the installation of steel piles in the AC Switchyard. Approximately 420 of 1900 piles were installed.
- At the Keewatinohk Lodge site, work continued on the erection of the Recreation Center with an anticipated February completion date.
- At the converter station site, work continued on the erection of the pre-engineered Emergency Response Building and Deluge Building I and II.
- City Mix Northern Ltd. (the Contractor for the supply and operation of a concrete batch plant at Keewatinohk Converter Station) has completed readiness for winter concrete production.

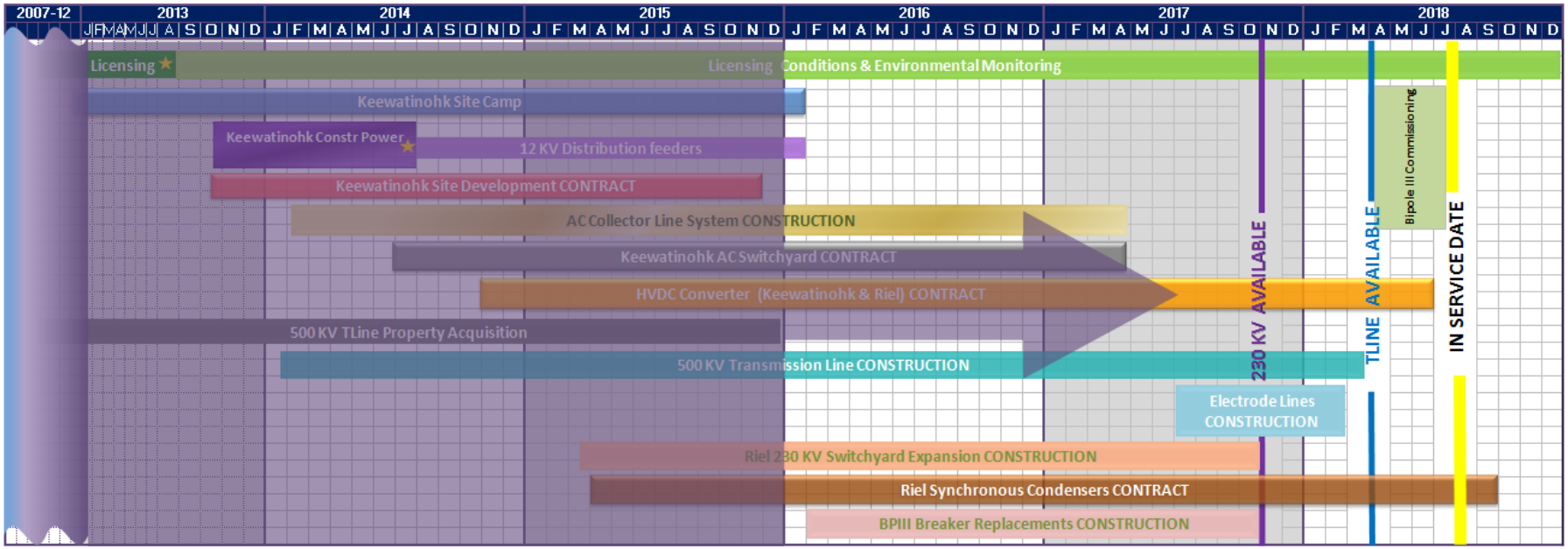
**Transmission Line:**

- A project milestone occurred in November with the first issuance of tower steel for construction from the transmission line material yard.
- The contracts for the installation of standard anchors and foundation for N4, C1 & C2 were signed November 27 (N4 with Muskeko/Sigfusson Northern JV; C1 with Metis N4/Interlake Power JV; and C2 with Tri-Core Projects Manitoba). The contract for Installation of specialty anchors and foundations for N1 was signed November 30 with Valard Construction.
- In N1, N4, C1 & C2 limited work occurred by December 31st due to unseasonably warm weather, with clearing contracts resumed and focused on attempting to mobilize and open up access. Foundation contracts in these zones were focused on camp set-up and winter access. Attempts to start drilling and foundations occurred in December with limited progress due to warm weather; first foundations were installed in C1 on December 10th and C2 on December 27th.

**Collector Lines:**

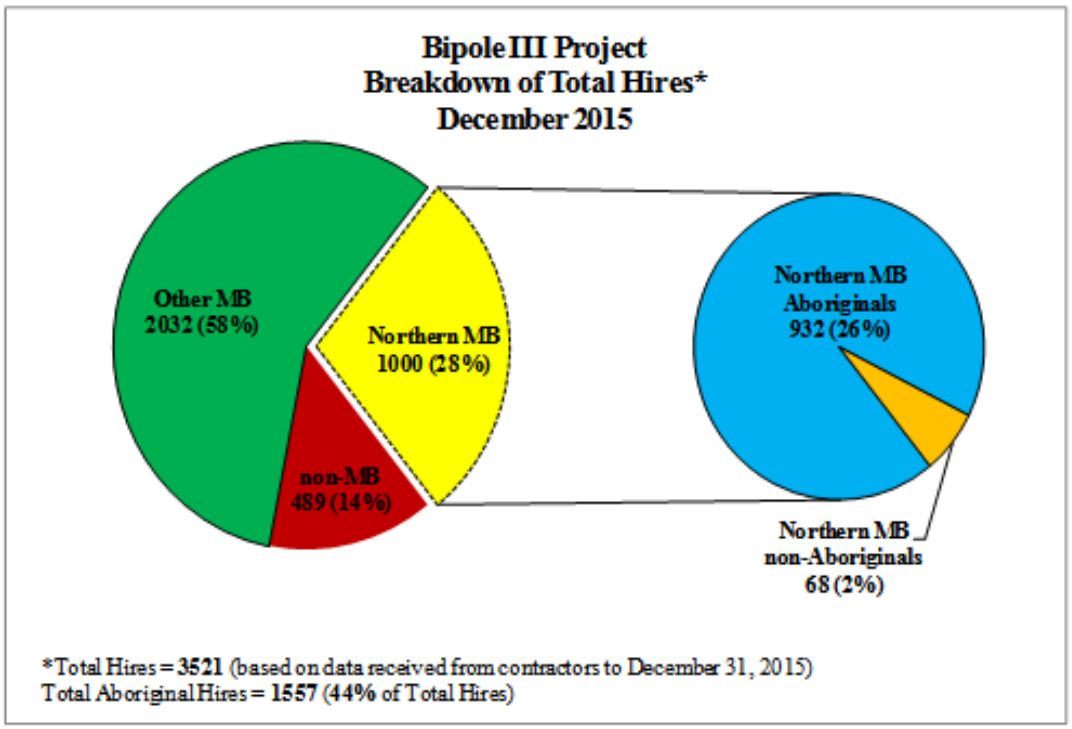
- SARA Energy continues to manufacture the AC Collector Line steel towers for delivery with all transmission line materials scheduled to arrive at site in January 2016.

**Project Schedule Overview –** December 31, 2015




| Construction Schedule | |
|---|---|
| HVDC Converter Stations | On Target |
| 500 kV HVDC Line | On Target |
| 230 kV Collector Lines | On Target |

**Total Hires** – as of December 31, 2015




- Since September 2012, there have been a total of 3,521 hires for the Bipole III project. Of the total hires, 86% are Manitobans, including 28% northern Manitobans; and 44% are declared aboriginal persons.

## FINANCIAL SUMMARY

- Construction is progressing to be on budget of $4.65 billion.
- Expenditures to the end of December 31, 2015 were $1.51 billion.

**Table A - Bipole III Budget Summary (in Billions $)**

| Item # | Item | Current Approved Budget (2014$) | Actuals to Dec 31, 2015 |
|---|---|---|---|
| 1.1 | Transmission Line | 1.191 | 0.398 |
| 1.2 | Converter Stations | 2.138 | 0.846 |
| 1.3 | Collector Lines | 0.198 | 0.099 |
| 1.4 | Community Development Initiative | 0.062 | 0.057 |
| 1.5 | Escalation @ CPI | 0.148 | 0.000 |
| 1.6 | Interest (Capitalized) | 0.568 | 0.109 |
| 1.7 | Contingency | 0.248 | 0.000 |
| 1.8 | Management Reserve | 0.100 | 0.000 |
| 1.9 | Total | 4.653 | 1.509 |

## RECENT PHOTOS

**Photo 1: Keewatinohk Converter Station – Concrete batch plant**

**Photo 2: Keewatinohk Converter Station - Insulating blankets cooling welds slowly**

**Photo 3: Riel Converter Station - Piling**


**Photo 4: Riel Converter Station - First quad pile cap being formed**

# Manitoba Hydro Update on Major Projects to the Public Utilities Board

# Keeyask Project Update

Q3 Update ending December 31, 2015

# EXECUTIVE SUMMARY

## Project Description

- The Keeyask Generating Station is a 7 unit, 695-megawatt hydroelectric generating station under construction at Gull Rapids on the lower Nelson River in northern Manitoba, Canada.
- Project budget and schedule is $6.5 billion with a first unit in service date of November 2019. Construction of the generating station is on schedule and on budget.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the infrastructure was constructed in advance of the generating station under the Keeyask Infrastructure Project (KIP). The Keeyask Project is a collaborative effort between Manitoba Hydro and four Manitoba First Nations, working together as the Keeyask Hydropower Limited Partnership.
- Keeyask will be Manitoba's fourth largest generating station and the sixth on the Nelson River.

## Background

- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The General Civil Contract (GCC), the largest contract on the project was awarded to BBE Hydro Constructors Limited Partnership consisting of Bechtel Canada Co., Barnard Construction of Canada Ltd. and EllisDon Civil Ltd. The GCC is the largest contract on the project and is responsible for rock excavation, concrete for the powerhouse and spillway, earth structures, electrical and mechanical work, and the construction and removal of temporary cofferdams needed to manage the river flow during construction.

# PROJECT UPDATE

## Generating Station

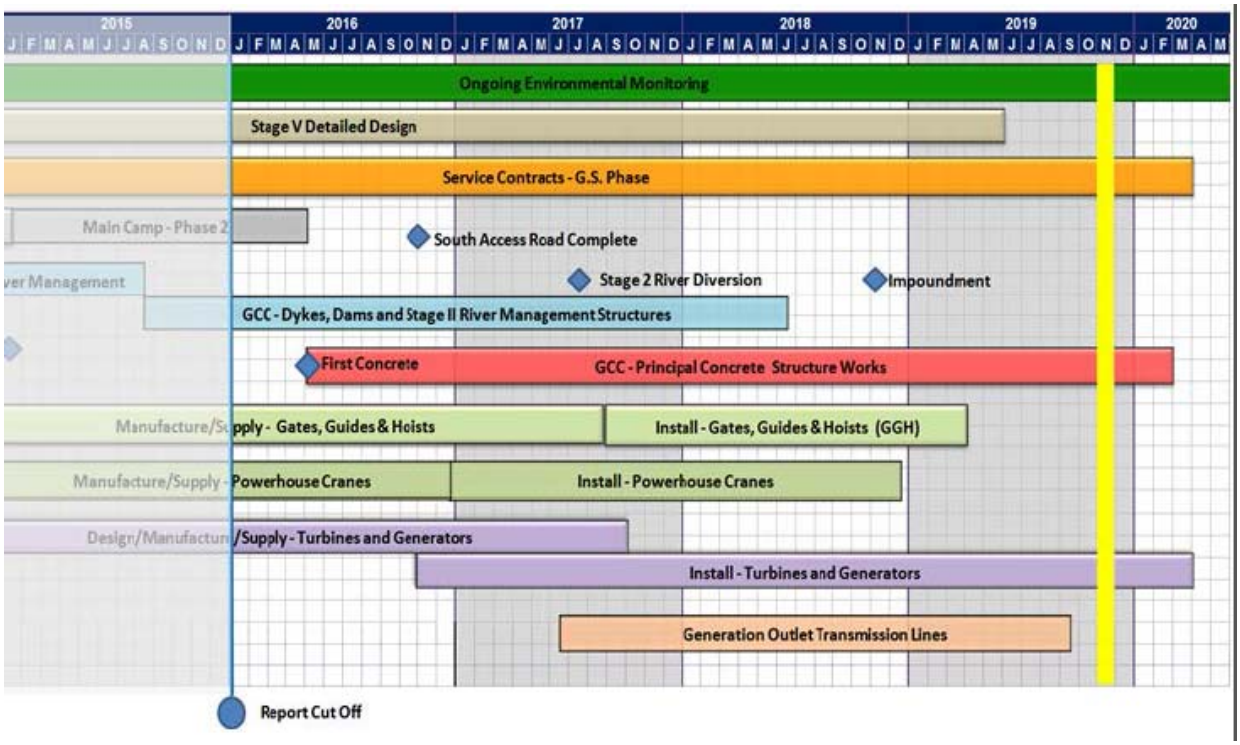
- The ice booms were successful and an ice bridge was established upstream of the work areas on November 21, 2015 (Photo 2). This ice bridge will contribute to the formation of a stable sheet of ice which will prevent ice damming thereby alleviating the need for further top up of the cofferdams.
- Excavation for the Powerhouse and Spillway continued throughout the fall and is expected to be completed by early 2016 (Photos 3-5).
- Manitoba Hydro and BBE Hydro Constructors Limited Partnership were successful in the placement of 3,275 $m^3$ of concrete in 2015 for the Service Bay and Intake structures (baseline first concrete is May 2016). This is approximately 1% of the total volume of concrete for the project.

- During Q3 of fiscal 2015/16, there was approximately 568,000 $m^3$ of rock excavation, 195,000 $m^3$ of unclassified excavation and 40,000 $m^3$ of cofferdam material placed.

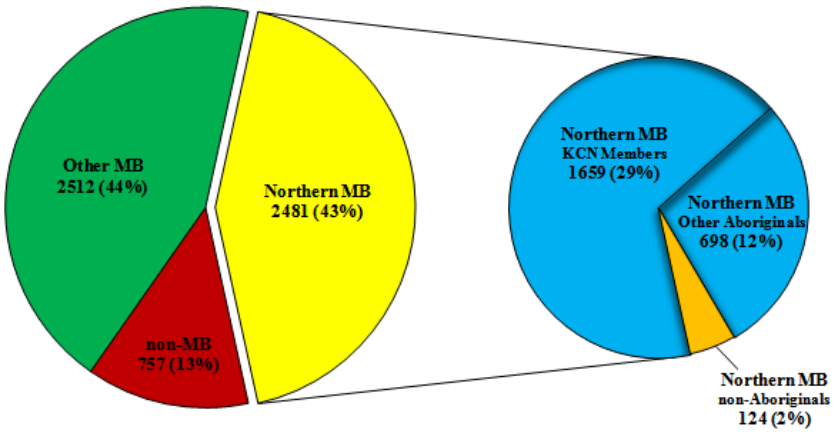
**Infrastructure**

- Phase II of the Main Camp Kitchen expansion was completed in October and will be able to service the peak workforce later in 2016/17. Britco, the Main Camp contractor is wrapping up minor outstanding items and has begun to demobilize from site.
- Construction of the South Access Road between Gillam and the south side of the Nelson River is ongoing and will continue over the next year.
- The seasonal work on the Keeyask Transmission Project has commenced including tower foundations.

**Project Schedule Overview** – December 31, 2015



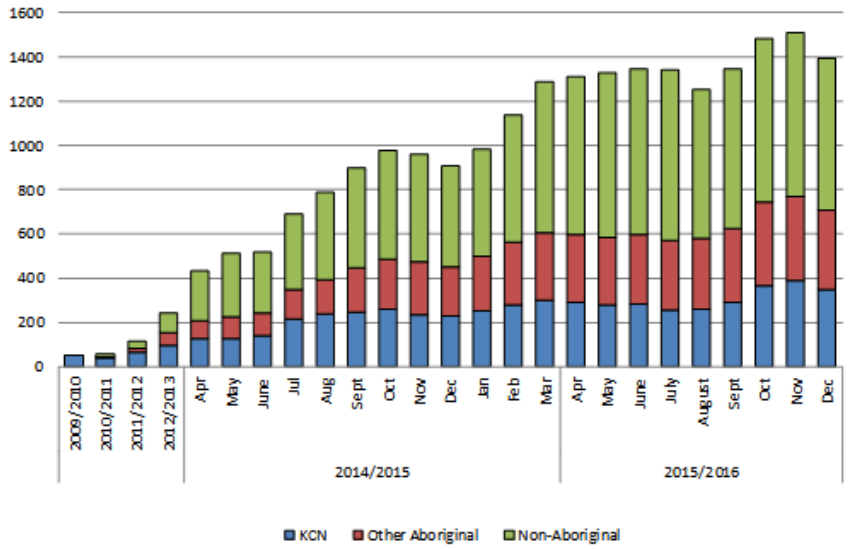
**Total Hires** – as of December 31, 2015




**Total Hires = **5750** (based on contractor data received from June 1, 2009 to December 31, 2015)*
*Total Aboriginal Hires = **4993** (**87%** of Total Hires)*

- As of December 31, 2015 there have been a total of 5,750 hires on the Keeyask Project. Of these total hires, 87% are Manitobans, 54% have self-declared being Aboriginal persons and 30% of the total hires are Keeyask Cree Nation (KCN) members.

**Active Hires** – as of December 31, 2015




- As of December 31, 2015 there were 1,392 active hires on the Keeyask Project. Of these active hires, 76% are Manitobans, 51% have self-declared being Aboriginal persons and 25% are KCN members.

## FINANCIAL SUMMARY

- As indicated in the Executive Summary, construction is progressing to be on budget of $6.5 billion
- Expenditures to the end of December 31, 2015 were $2.17 billion

**Table A - Keeyask Budget Summary (in Billions $)**

| Item # | Item | Current Approved Budget (2014$) | Actuals to Dec. 31, 2015 |
|---|---|---|---|
| 1.1 | Generating Station | 4.046 | 1.810 |
| 1.2 | Generation Outlet Transmission (GOT) | 0.164 | 0.018 |
| 1.3 | Escalation @ CPI | 0.244 | 0.000 |
| 1.4 | Interest (including Interest on Equity) | 1.343 | 0.337 |
| 1.5 | Contingency | 0.307 | 0.000 |
| 1.6 | Labour Mgmt Reserve | 0.304 | 0.000 |
| 1.7 | Escalation Mgmt Reserve | 0.088 | 0.000 |
| **1.8** | **Total** | **6.496** | **2.165** |

## RECENT PHOTOS

**Photo 1: Keeyask Satellite Photo**


**Photo 2: Ice Cover Forming at the Ice Booms**

**Photo 3: Aerial View of the Powerhouse Excavation and Hoarding of Concrete Placements**

**Photo 4: Rock Excavation on the South Powerhouse Wall**

**Photo 5: Production Drilling at the Spillway Approach Channel**

# Manitoba Hydro Update on Major Projects to the Public Utilities Board

# Pointe du Bois Spillway Replacement Project Update

Q3 Update ending December 31, 2015

## EXECUTIVE SUMMARY

### Project Description

- The Pointe du Bois Spillway Replacement Project is required to upgrade existing facilities to meet Canadian Dam Association guidelines and to improve operational safety and reliability.
- The Pointe du Bois Spillway Replacement Project includes construction of a 7 bay spillway and approximately 1 km of earth fill dam. Decommissioning of existing structures and re-vegetation of the site is also in scope.
- The current approved budget is $595 million. The spillway was placed in service in August of 2014 and the dam structures were placed in service in October of 2015.

### Background

- Pointe du Bois is Manitoba's oldest generating station and is the first station on the Winnipeg River.
- Construction of the project commenced in December 2012.
- The General Civil Contract (GCC), the largest contract on the project was awarded to Peter Kiewit Infrastructure (PKI) and is responsible for rock excavation, concrete for the spillway, earth structures, installation of the spillway gates and all electrical and mechanical work.
- Gates and hoisting equipment was designed and supplied by Alstom.
- The new spillway was placed in service in August of 2014.
- Construction of the earth fill dam was deferred from 2014 to 2015.
- Delays to construction in 2014 were primarily a result of severe weather events at the construction site, record flows on the Winnipeg River, and quality issues with the supply of gate equipment.

## PROJECT UPDATE

**Main and South Dams:**

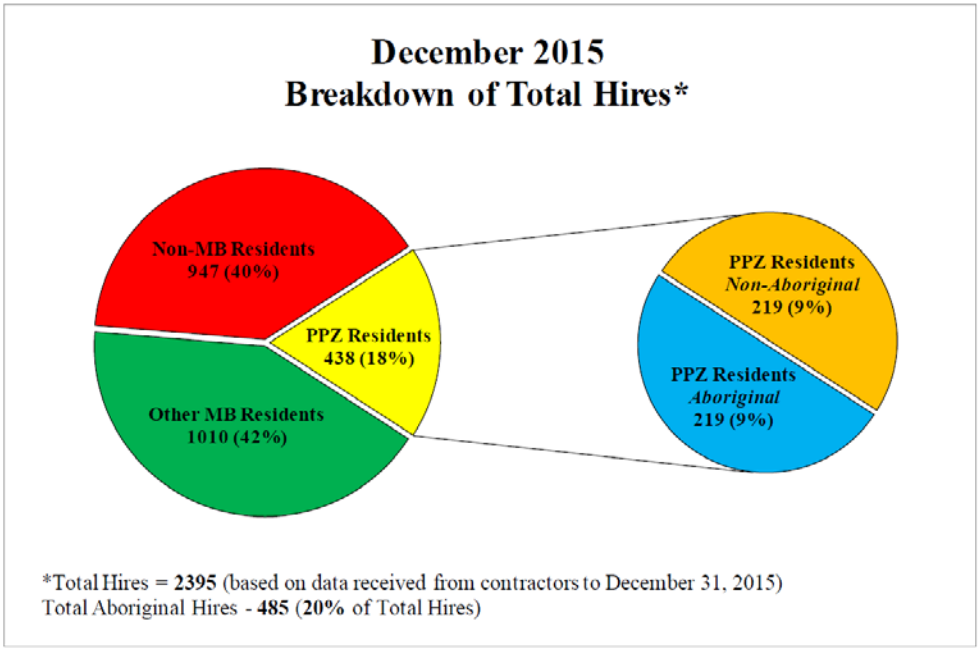
- Impoundment of the main and south dams was completed in October. Monitoring of the structures continued with no issues. Decommissioning of the old spillway structures was completed, including removal of all electrical and mechanical equipment. All temporary electrical infrastructure was decommissioned. The spillway secondary power feed from the powerhouse to the new spillway is complete and will be tested in January, 2016.

**Site Demobilization and Cleanup:**

- Grading of work areas was completed in preparation for re-vegetation activities in 2016. All civil contractor buildings and equipment were demobilized.

**Project Schedule Overview** – December 31, 2015


**Employment –** as of December 31, 2015




**Employment Summary**

Between January 2012 and December 31, 2015, there have been a total of 2,395 hires to the Pointe du Bois Spillway Replacement Project. Of the total hires –

- 60% are Manitobans (18% are within the Project Preference Zone);
- 20% have declared being aboriginal persons; and,
- Aboriginal PPZ residents account for 9% of the total hires (45% of the aboriginal hires).

## FINANCIAL SUMMARY

- Expenditures to the end of December 31, 2015 were $554.4 million. This is a $4.0 million decrease from the previous quarter largely due to reimbursement of disputed items within the General Civil Works contract.

| Pointe du Bois Budget Summary (in Millions $) | | | |
|---|---|---|---|
| **Item #** | **Item** | **Current Approved Budget CEF15** | **Actuals to Dec. 31, 2015** |
| 1.1 | Spillway Replacement Project | 490.800 | 456.100 |
| 1.2 | Pre-Construction | 47.500 | 47.500 |
| 1.3 | GS Modernization | 1.400 | 1.400 |
| 1.4 | Interest | 50.200 | 49.400 |
| 1.5 | Contingency | 4.900 | 0.000 |
| **1.6** | **Total** | **594.800** | **554.400** |

## RECENT PHOTOS

**Photo 1: Main and South Dams at full supply level** (October 2015)

**Photo 2: Demobilization of equipment** (November 24, 2015)

**Photo 3: Demolition of concrete abutment to old spillway** (December 14, 2015)

# MANITOBA – MINNESOTA TRANSMISSION PROJECT

**Q3 Update ending December 31, 2015**

## MMTP Project Description

Manitoba Hydro is proposing to construct and operate a new 500kV Transmission Line between Winnipeg and Duluth, Minnesota to transport power to the United States to meet sales contracts, improve reliability of the transmission system, and bring electricity to Canada from the United States in emergency situations.

The transmission line will originate at Dorsey Converter station located near Rosser, northwest of Winnipeg and extend 213 km south around Winnipeg to the Manitoba-Minnesota border, near Piney. This portion of the project is known as Manitoba-Minnesota Transmission Line (MMTP). The MMTP project also includes associated upgrades at Dorsey, Riel and Glenboro stations.

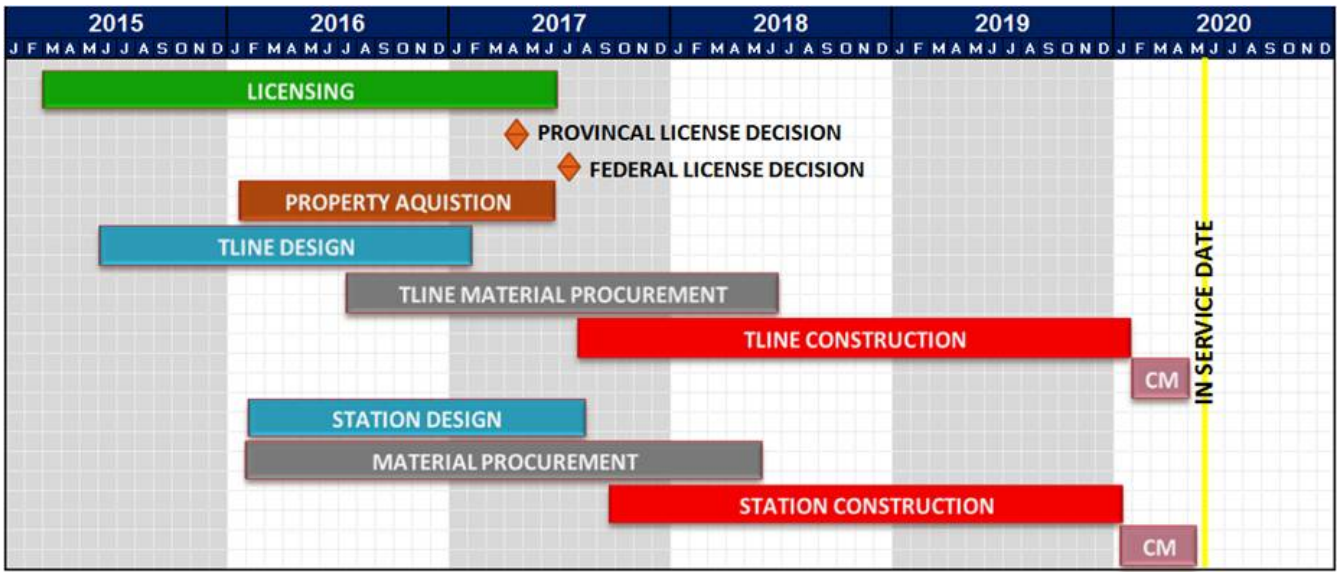
The 500 kV line will continue from the border and terminate at Blackberry Station northwest of Duluth, Minnesota. This portion of the project is known as the Great Northern Transmission Line (GNTL), and will be constructed by Minnesota Power.

## MMTP Budget

| Item # | Item | Control Budget | Actuals to Dec 31, 2015 |
|---|---|---|---|
| 1.1 | Licensing & Environmental | $ 28.0M | $ 11.3M |
| 1.2 | 500 kV Transmission Line | $ 173.1M | $ 2.3M |
| 1.3 | Station Upgrades | $ 116.4M | $ 0.6M |
| 1.4 | Contingency | $ 36.1M | $ 0 |
| **1.5** | **Total** | **$ 353.6M** | **$ 14.2M** |

## MMTP Project Schedule

In Service Date: June, 2020



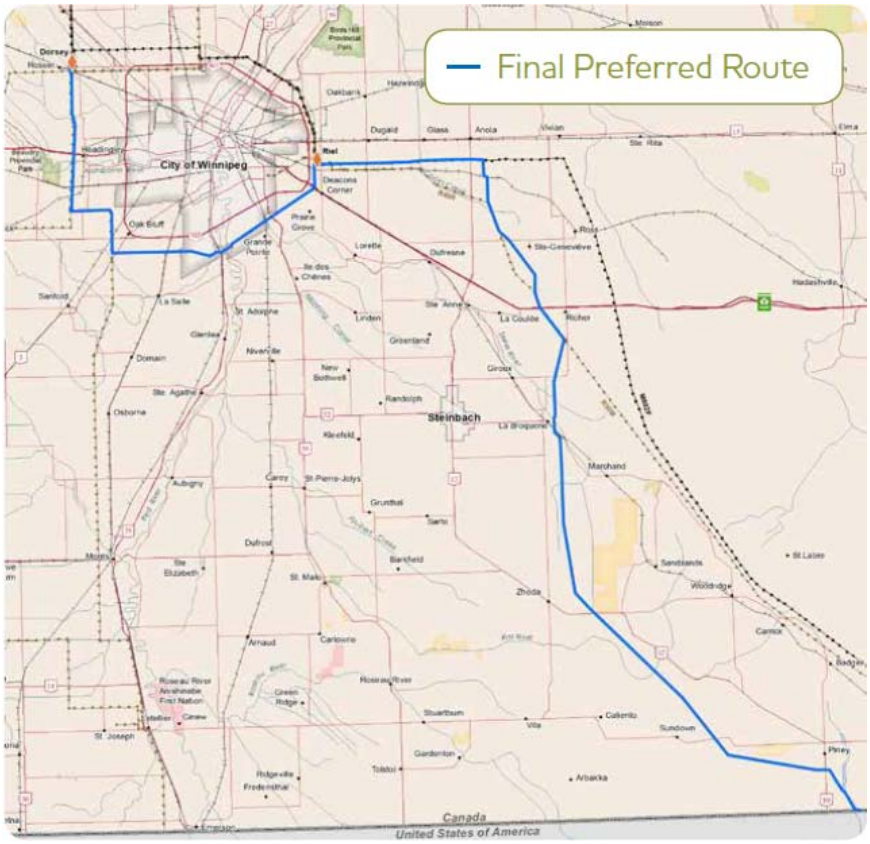
# MANITOBA – MINNESOTA TRANSMISSION PROJECT

**Q3 Update ending December 31, 2015**

## MMTP Project Update

- Information Requests are being received and responded to by Manitoba Hydro on the Environmental Impact Statement which was submitted to Manitoba Conservation and Water Stewardship in September 2015.
- A pre-application project description was filed with the National Energy Board on October 8, 2015.
- Reviews are continuing with various Manitoba Hydro internal groups in order to develop the project schedules in more detail.
- Transmission line tower design activities are now underway, after preliminary design activities were completed as part of the preparation of the Environmental Impact Statement.
- Transmission line tower material and substation equipment procurement plans continue to be developed and reviewed by meeting with Manitoba Hydro internal stakeholders to review project requirements.
- On December 31, 2015, the Minister of Conservation and Water Stewardship requested that the Clean Environment Commission hold a public hearing on the proposed MMTP.

## MMTP Project Route




MMTP Final Preferred Route

# GREAT NORTHERN TRANSMISSION PROJECT

**Q3 Update ending December 31, 2015**

## GNTL Project Description

The U.S. portion of the new 500 kV interconnection connecting southeastern Manitoba to northeastern Minnesota is known as the Great Northern Transmission Line (GNTL), and will be constructed by Minnesota Power. Manitoba Hydro's Subsidiary and Minnesota Power agreed to share the GNTL costs.

GNTL also includes a new Iron Range Station, a new Warroad Series Compensation Station and various minor system improvements to facilitate operation of the line.

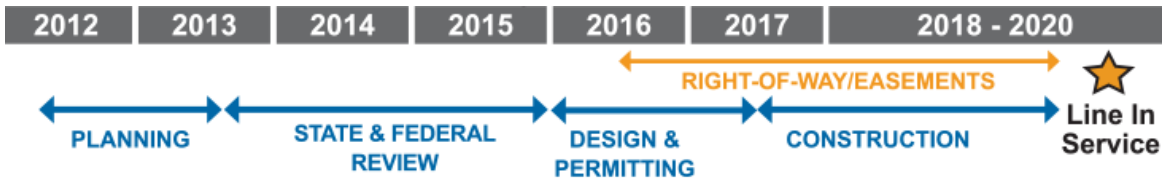
The plan is to increase the export and import transfer capability between Manitoba and the Midcontinent Independent System Operator (MISO), fulfill the transmission requirements of long term U.S. sale and purchase agreements, and improve reliability of the system.

## GNTL Budget Common Use Upgrades Cost Summary

The current capital cost estimate for the GNTL is U.S. $677M (2013$). Minnesota Power will fund 46% (U.S. $311 M) of the capital cost of the project while Manitoba Hydro's Subsidiary will fund 54% (U.S. $366 M). Consent is required from Minnesota Power to publicly share actual project costs spent to date.

## GNTL Project Schedule

In Service Date: June, 2020



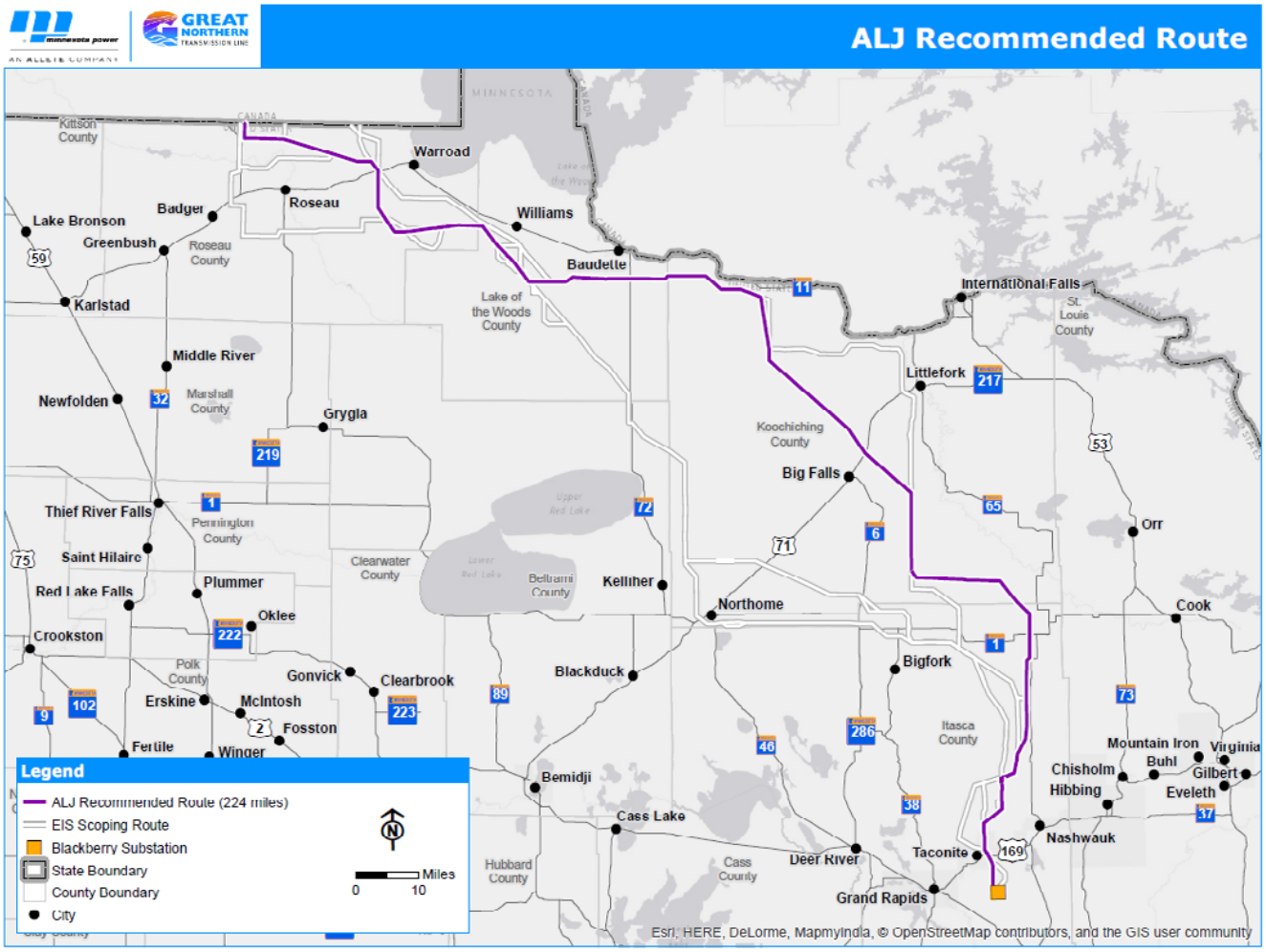

## GNTL Project Update

- On October 30, 2015, the Department of Energy (DOE) and Minnesota Department of Commerce – Energy Environmental Review and Analysis (DOC-EERA) have issued the Final Environmental Impact Statement (EIS) for the proposed Great Northern Transmission Line Project.
- Minnesota Power and Manitoba Hydro's Subsidiary completed negotiations on the Project Development Agreement (PDA) in December 2015 and the Agreement has been signed. The PDA establishes the governance structure for the GNTL project during the project development phase including the extent of influence and control of Manitoba Hydro's Subsidiary over the project.
- A Minnesota Administrative Law Judge (ALJ) has concluded that Minnesota Power has satisfied the criteria set forth in Minnesota law and rule for the issuance of a Route Permit for the GNTL. The ALJ further concluded that the proposed international border crossing and most of the recommended route best meet the legal criteria for a route for the GNTL. Accordingly, the ALJ recommended that the Minnesota Public Utility Commission issue a Route Permit to Minnesota Power for the GNTL.

# GREAT NORTHERN TRANSMISSION PROJECT

**Q3 Update ending December 31, 2015**

## GNTL Routing Map




GNTL Administrative Law Judge Recommended Route