

**MIPUG MFR 28**

**Capital Expenditures**

**Major Capital Projects Quarterly Reports to the PUB since the 2019/20 Rate Application.**

Please refer to Attachment 1 to this response for the Major Capital Reports Quarterly Reports since the 2019/20 Rate Application.

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

## Bipole III Project Update

Q3 Update ending December 31, 2018



*Bipole III transmission tower - N4 –addition of corona ring stiffeners*

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## EXECUTIVE SUMMARY

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### Project Description

Bipole III is a high voltage direct current transmission line that delivers renewable energy to southern Manitoba. Bipole III went into operation in July of 2018.

The Bipole III project included:

- 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); and,
- Two ground electrodes at each of the new converter stations.

Bipole III adds 2,000 megawatts to Manitoba Hydro's high voltage direct transmission and strengthens the reliability of Manitoba's electricity supply by reducing dependency on existing high voltage direct current transmission lines and the Dorsey Converter Station. Prior to Bipole III, the two existing Bipole lines delivered over 70 per cent of the electricity produced in the province.

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

### Background

The Bipole III Project Environment Act Licence was issued August 14, 2013. In fall 2016, a review of the Bipole III budget and schedule was conducted and the budget was increased to \$5.04 billion with an in-service date of July 2018.

#### *Keewatinohk and Riel Converter Stations*

The Bipole III transmission line originates at a new northern converter facility, the Keewatinohk Converter Station, and terminates at a new southern converter facility, the Riel Converter Station. In addition to the new transmission line and the new converter stations, the project included new collector lines linking the Keewatinohk Converter Station to the northern collector system at the existing switchyards at Henday Converter Station and Long Spruce Generating Stations. Each of those facilities required some modifications for these new "collector lines". Each of the new converter stations required the development of a separate ground electrode, connected to the station by a low voltage feeder line.

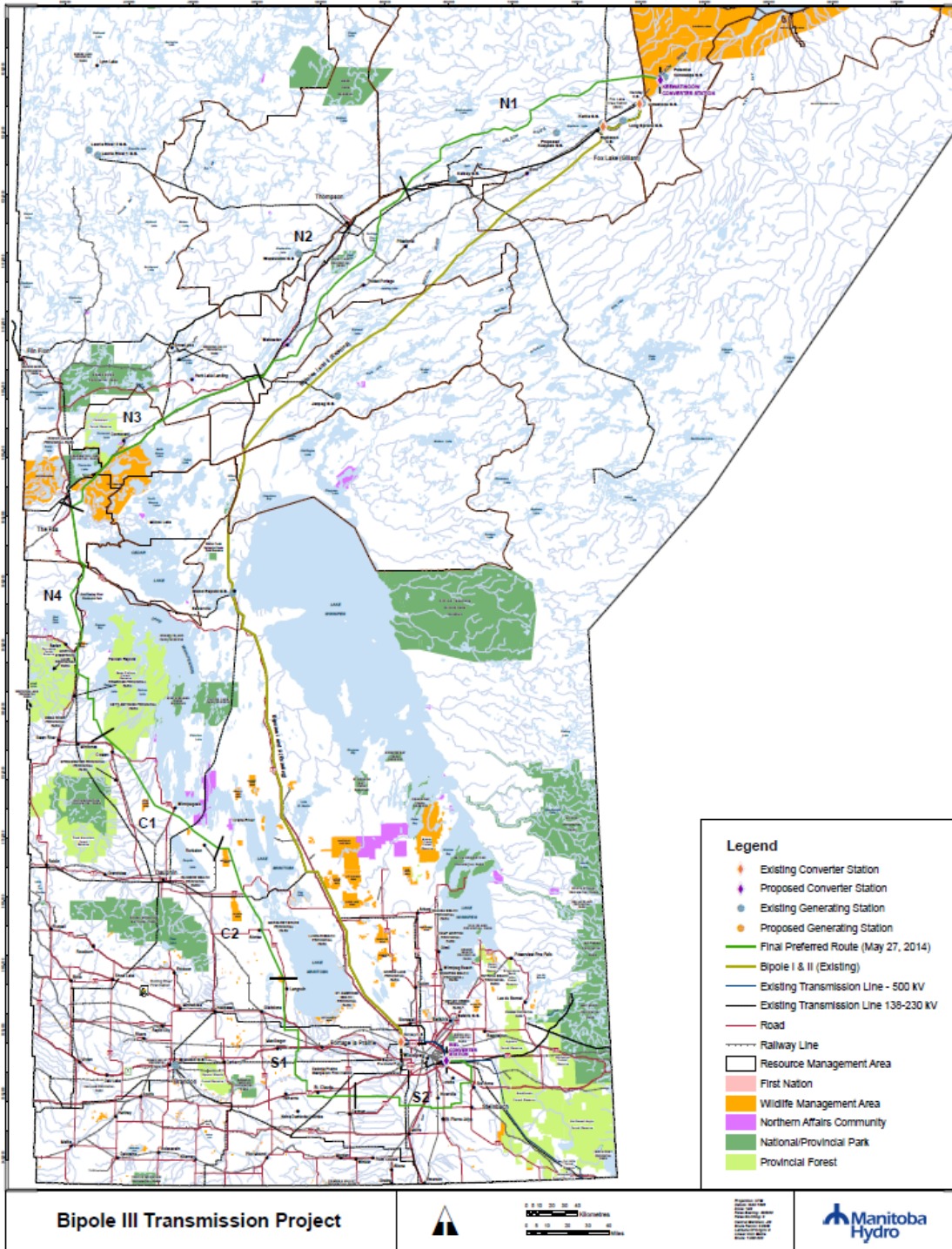
### *Transmission Line Construction*

The Keewatinohk Converter Station and the Riel Converter Station are linked by a new +/- 500 kV HVDC transmission line approximately 1,384 km in length, centered on a 66 meter wide right-of-way following a route west of lakes Winnipegosis and Manitoba. This new transmission line has been routed as far as practical, sufficiently far from the existing Bipole I and II lines so as to 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



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## PROJECT UPDATE

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On July 4, 2018 Bipole III was turned over for commercial service to Manitoba Hydro operations. With Bipole III now in-service, Manitoba Hydro has been balancing the transmission of HVDC power from northern Manitoba across Bipoles I, II and III.

Construction of the fourth and final synchronous condenser at the Riel Converter Station was completed and turned over for commercial service on November 17, 2018.

The remaining work on the Bipole III Project includes final clean up and the decommissioning of temporary construction infrastructure. At the Keewatinohk Converter Station, work also continues on the construction of the permanent staff accommodations and the water treatment plant.

As part of the decommissioning of the Keewatinohk Lodge, a contract for brokering the sale of the Keewatinohk Lodge was awarded in November, 2018. It is expected the Lodge will be publicly advertised for sale in January 2019.

At the Riel Converter Station site, the contractor's field office trailers and associated temporary infrastructure and the temporary construction power have been decommissioned and removed.

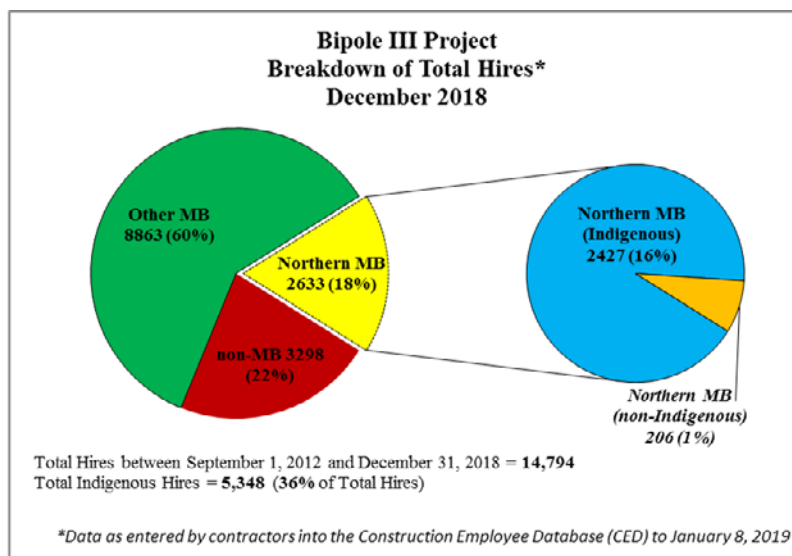
**Total Hires:** – as of December 31, 2018

- Since September 2012 there have been a total of 14,794 hires to the Bipole III project.
- Of the total hires, 78% have been Manitoban, including 18% northern Manitobans.
- 36% of total hires have self-declared as being Indigenous.
  - 38% of Keewatinohk, 16% of Riel and 46% of the hires for the transmission line have self-declared as being Indigenous.

Active hires are no longer being reported under the Project.

The number of total hires will be updated as contractors submit their final employment reports.

Additional information is provided below regarding the percentage of project hires (Manitoban – both Northern and Other, along with non-Manitobans).



## FINANCIAL SUMMARY

- A Recommendation was approved by Manitoba Hydro's Major Project Executive Committee (MPEC) on August 28, 2018 to reduce the Bipole III control budget by \$271.8 million from \$5.04 billion to approximately \$4.77 billion. The new control budget will be updated to reflect this number in IFF19/CEF19.
- Expenditures were \$4.467 Billion to the end of December 31, 2018.

Item #	Item	Current Approved Budget (2016\$)	Actuals to Dec 31, 2018
1.1	Transmission Line	1.457	1.510
1.2	Converter Stations	2.285	2.276
1.3	Collector Lines	0.199	0.193
1.4	Community Development Initiative	0.053	0.053
1.5	Escalation @ CPI	0.052	0.000
1.6	Interest (Capitalized)	0.487	0.435
1.7	Contingency	0.509	0.000
1.8	Total	5.042	4.467

**Table A Notes:**

1. The Escalation and Contingency Components (1.5 and 1.7) 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).

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

## Keeyask Project Update

Q3 Update ending December 31, 2018

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## EXECUTIVE SUMMARY

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- Entering the 2018 construction season, the project required at least a 10% improvement in the General Civil Contract (“GCC”) performance for the remainder of their work and no substantive risks to materialize to achieve the control budget.
- Significant progress was achieved in the 2018 construction season and all key milestones were achieved. In 2018, the GCC placed 32% more concrete and moved 27% more earth material than in 2017. As a result of the strong performance in 2018, the cost of the project is tracking to the \$8.7B control budget. The first unit In-Service Date (ISD) is trending towards 10 months ahead of schedule. Schedule advances have helped to lower the forecasted project costs and are the main reason the project is now tracking to meet its budget of \$8.7B. Even with these advances, Manitoba Hydro is committed to find ways to lower costs as there is still a lot of work and risks remaining.
- The control budget for the project remains at \$8.7B. There are currently no changes in budget that would impact domestic revenue requirements or Manitoba Hydro’s financial forecasts.
- Actual expenditures to the end of December 31, 2018 were \$5.53 billion.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (KIP).
- 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 contractor 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.

### Generating Station

- The General Civil Works Contractor (GCC) exceeded the 2018 goal of 105,000 m<sup>3</sup> of concrete, placing more than 113,000 m<sup>3</sup> this year. This volume represents a year-over-year improvement of approximately 32% over 2017. In total there has been approximately 276,000 m<sup>3</sup> of concrete placed on the project; approximately 85 per cent of the total volume of concrete required for the Keeyask Project.
- In addition to the significant concrete progress, all 2018 milestones were met or exceeded. The key milestones achieved in 2018 include the following:
  - completion of the Spillway, River Diversion and opening/operation of the Spillway in August 2018;
  - opening of the South Access Road to construction traffic;
  - placement of 3.6 million m<sup>3</sup> of earth material (equivalent to 180,000 truckloads), exceeding the 2017 earthworks production by 27%;
  - installation of the planned embedded Turbine and Generator (T&G) components on units 1,2&3;



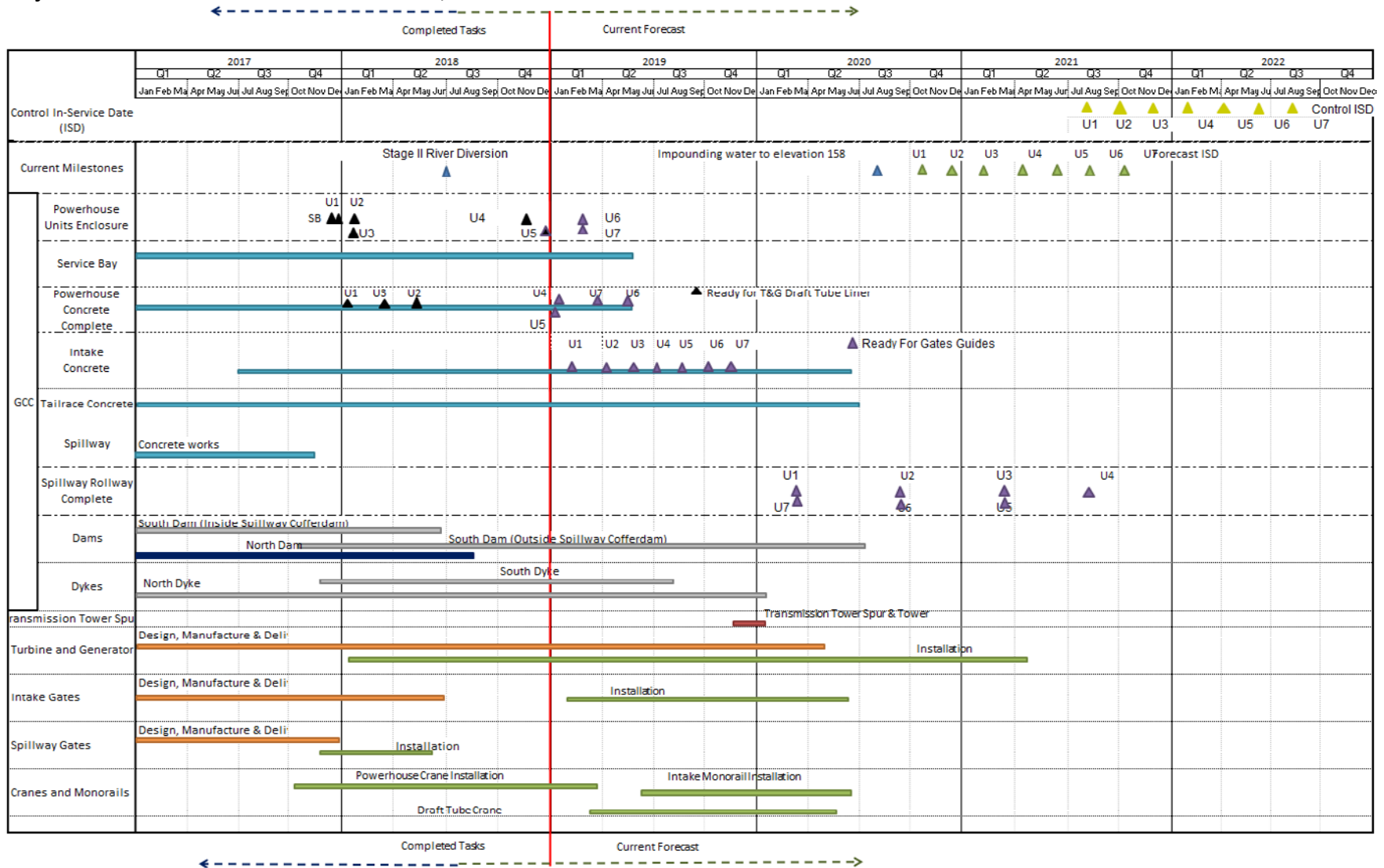
- enclosure of units 4&5 to allow for the installation of embedded T&G components over the winter 2019.
- The top risks include:
  - Execution/productivity rates of the GCC and/or the T&G contractor;
  - Loss of site access/work stoppages due to a blockade or a major safety/environmental event;
  - Unseasonable weather that shortens the warm construction season.
- By the end of 2018, excavation has progressed for the South Dam and South Dyke to the point where unexpected geotechnical/geological conditions for these structures is no longer considered a top risk item for the project.

### **Infrastructure**

- There are no infrastructure updates for the project over the previous quarter.



### Project Schedule Overview – December 31, 2018

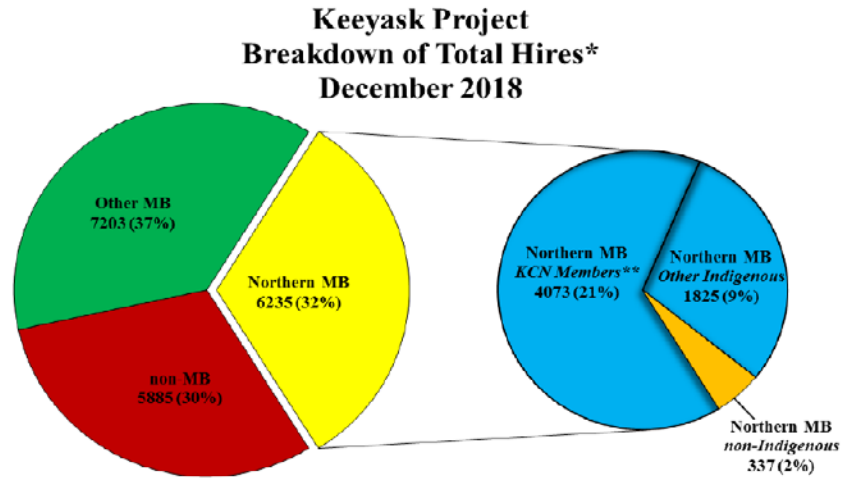


Note: Construction activities, milestones and unit ISDs reflect Manitoba Hydro's current forecast schedule. Presently, the forecast for the unit ISDs is in advance of the Control ISDs (August 2021 for first unit ISD).

- \* This is a summary of MH's current plan broken down to the major component of construction and significant contractors, and how these components and milestones relate to river management and impoundment.
- \* "Control ISD" reflects MH communicated In-Service-Date ("ISD") dates, while "Current ISD" reflects current planned ISD dates which are currently 10 months ahead of the control ISD.
- \* Powerhouse concrete remains the project critical path driving the water impoundment. Construction of the dams and dykes are currently off the critical path.
- \*MH and Voith are working together to rework the Turbine and Generator schedule.

<p><b><u>Legend:</u></b> U = Unit ISD = In Service Date SW = Spillway U/S = Up Stream C/D = Cofferdam D/S = Downstream T&amp;G = Turbine and Generator PH = Powerhouse CM = Contract Milestone GCC = General Civil Contract</p>
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**Total Project Hires – as of December 31, 2018**



- As of December 31, 2018, there have been a total of 19,323 hires on the Keeyask Project. Of these total hires, 70% (13,438) are Manitobans, 43% (8,270) have self-declared as being Indigenous persons and 21% (4,093) of the total hires are Keeyask Cree Nation (“KCN”) members.

**Active Hires – as of December 31, 2018**



- As of December 31, 2018 there were 3,068 active hires on the Keeyask Project. Of these active hires, 55% (1,677) are Manitobans, 29% (875) have self-declared as being Indigenous persons and 13% (399) are KCN members.

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## FINANCIAL SUMMARY

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- Actual expenditures to the end of December 31, 2018 were \$5.53 billion.

<b>Table A - Keeyask Budget Summary (in Billions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to December 31, 2018</b>
1.1	Generating Station	5.948	4.624
1.2	Generation Outlet Transmission (GOT)	0.202	0.144
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	0.761
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>5.529</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).

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## RECENT PHOTOS

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The following photos are intended to represent the progress achieved in during the 2018 construction season. Photos from earlier and later in the year are provided.

**Photo #1: Powerhouse Construction with Units 1 to 3 Enclosed – January 25, 2018**



**Photo #2: Powerhouse Construction with Units 4 and 5 Now Enclosed – December 9, 2018**





**Photo #3: Unit 1 Draft Tube Liner Lifted Into Place – January 21, 2018**



**Photo #4: Powerhouse Interior, Embedded Parts for Units 1-3 Installed – November 5, 2018**





**Photo #5: Intake Construction – January 20, 2018**



**Photo #6: Intake Construction – November 21, 2018**



**Photo #7: Spillway – June 24, 2018**



**Photo #8: Spillway – December 12, 2018**





**Photo #9: Central Dam – May 21, 2018**



**Photo #10: Central Dam – October 23, 2018**





**Photo #11: South Dam – early July 2018**



**Photo #12: South Dam – December 5, 2018**



## **MMTP Project Description**

Manitoba Hydro's 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 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 Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line (GNTL), and is being constructed by Minnesota Power.

## **MMTP Project Update**

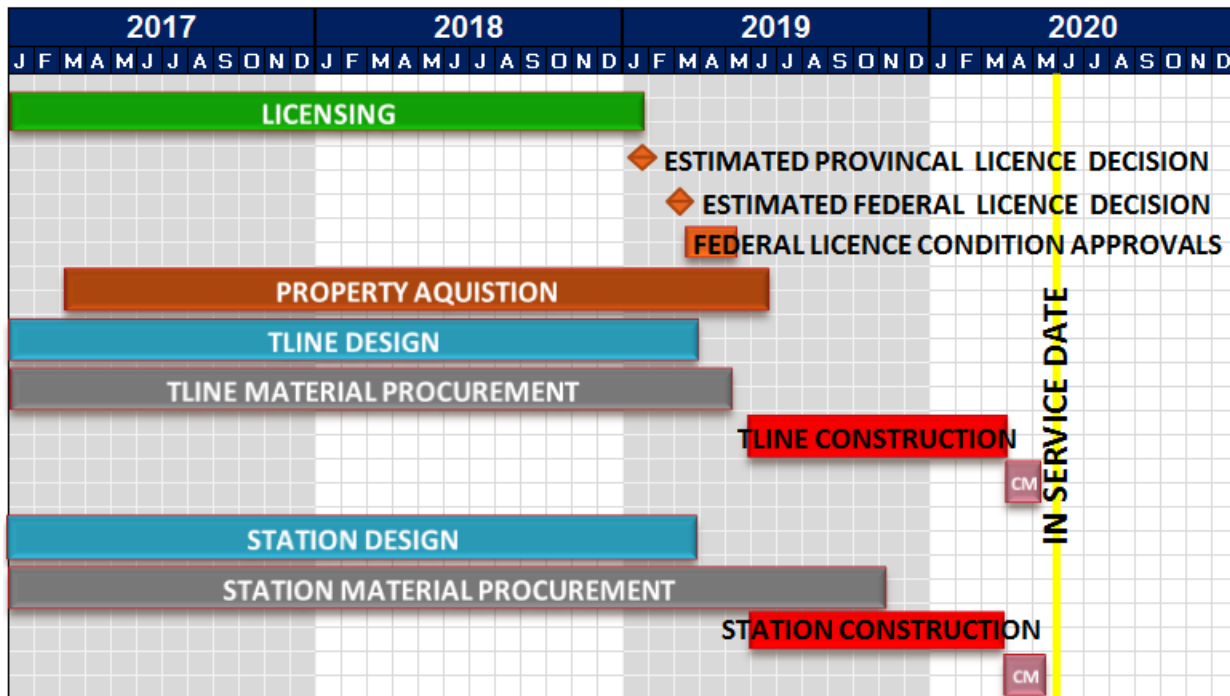
- Manitoba Hydro is awaiting a licensing decision by Manitoba Sustainable Development. Sagkeeng First Nation has put their request for judicial review of MMTP into abeyance until licensing decisions have been made.
- On November 15, 2018, the National Energy Board (NEB) released its Reasons for Decision report on MMTP determining "the Project is and will be required by the present and future public convenience and necessity" and recommending the Governor in Council (GIC) issue a certificate for the Project. There were 28 recommended conditions attached to the decision.
- Manitoba Hydro now awaits a decision on the approval of the issuance of a certificate by the GIC.
- Property acquisition is continuing and over 80% of the private land owners along the proposed transmission line route between Vivian, Manitoba and the U.S. Border have signed easement agreements.
- In order to secure the project in-service date Manitoba Hydro must move forward with long lead time items such as the material contracts prior to receiving Provincial and Federal regulatory approvals. Failure to do so would result in substantial project delays. Should Manitoba Hydro receive notification that the project will not receive its necessary regulatory approvals, materials may be re-used on future transmission projects in order to recover sunk costs.
- Tower steel began to arrive at the material storage yard in November and will continue to be delivered into January 2019.
- Regulatory approvals were not received in time to start construction in December 2018 as anticipated, therefore contractors who submitted proposals for the construction contracts were asked to update their pricing and plans for a later construction start date of June 2019. Contractors were asked to submit this information by December 19, 2018. Construction Contracts will not be awarded until receipt of regulatory approvals.
- The control budget will be reviewed later this year once regulatory approvals and conditions have been received, and construction start established.

**MMTP Budget**

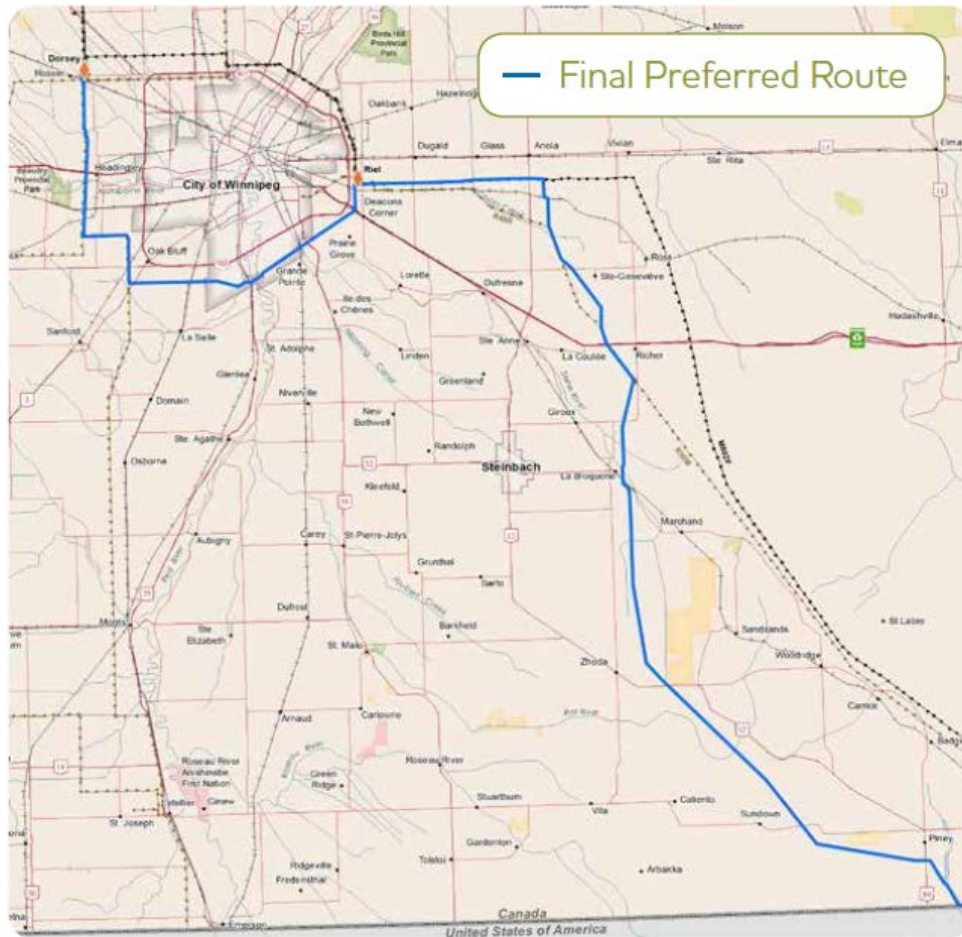
<b>MMTP Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to Dec 31, 2018</b>
1.1	Licensing & Environmental	31.5	22.8
1.2	500 kV Transmission Line *	213.6	61.3
1.3	Station Upgrades*	112.8	24.6
1.4	Contingency	95.3	-
1.5	Total	453.2	108.7

\*No construction contracts above \$50 million are currently in place.

**MMTP Project Schedule**



## MMTP Project Route



## **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle transmission line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

## **Birtle Project Update**

- Manitoba Hydro filed the Environmental Act Proposal for the project on January 30, 2018. Manitoba Sustainable Development is continuing with the Section 35 consultation process. Manitoba Hydro has been granted permission to conduct geotechnical drilling in advance of receipt of the Environmental License for this project, which aids in advancing completion of design and material procurement. As a result, Manitoba Hydro has explored options of advancing construction timelines for new the Birtle Transmission Line B71T, and determined construction may possibly be advanced, pending receipt of License as well as property and materials being procured as required.
- Material procurement for tubular steel towers is underway. Contract documents are currently being drafted; the tender is targeted to be posted on MERX in February, 2019.
- In order to secure the project in-service date Manitoba Hydro must move forward with long lead time items such as the material contracts prior to receiving Provincial regulatory approvals. Failure to do so would result in substantial project delays. Should Manitoba Hydro receive notification that the project will not receive its necessary regulatory approvals, materials may be re-used on future transmission projects in order to recover sunk costs.
- Manitoba Hydro has identified two relatively minor re-routes that will be required for the Birtle Transmission Line B71T.
- Land appraisals for easements required for B71T are continuing. Manitoba Hydro's land agent started landowner discussions in December, 2018.
- Telecommunication design activities are continuing. Procurement of Optical Ground Wire (OPGW) conductor is underway, with tender award anticipated by January, 2019.
- Automation Control Engineering for Birtle South Station is expected to continue until June, 2019. Design of foundations and structures will be initiated in January, 2019. Construction at Birtle South Station is anticipated to start in the summer of 2019 pending receipt of the Environmental License for the project.
- The overall project budget is currently under review

**Birtle Budget**

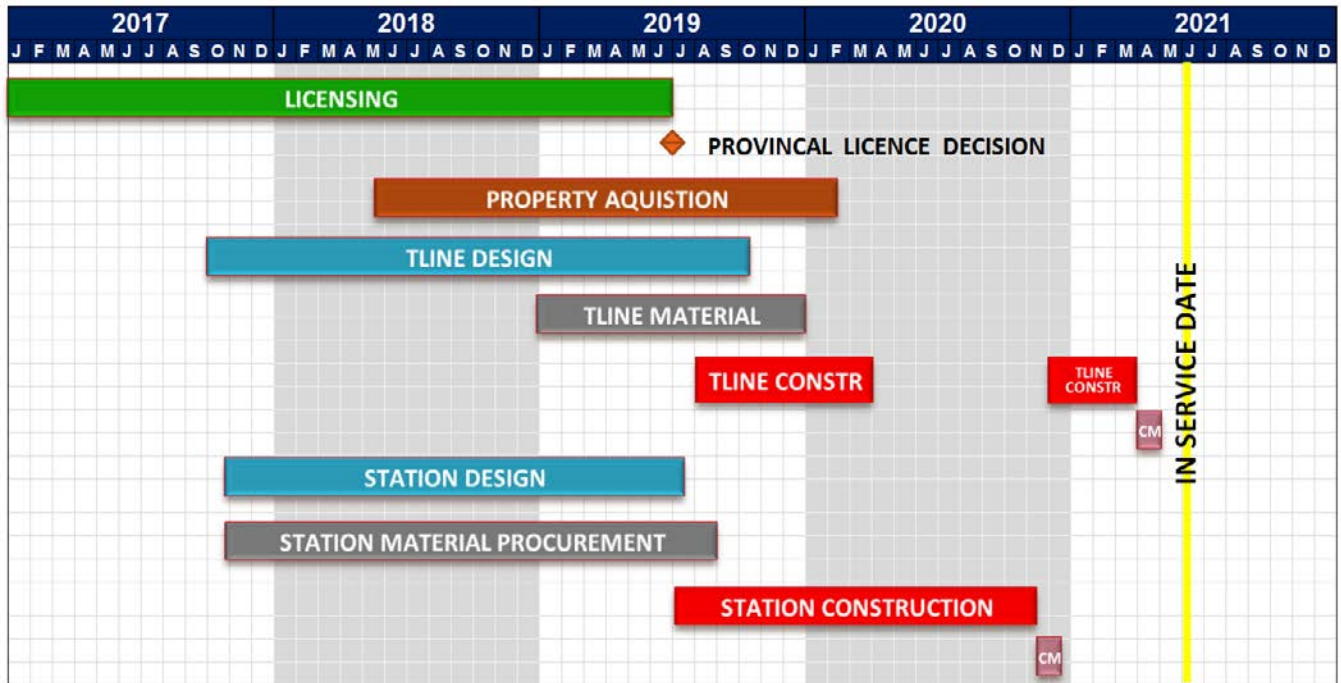
<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to Sept 30, 2018</b>
1.1	Licensing & Environmental	4.65	2.18
1.2	Transmission line <sup>1</sup>	43.83	0.68
1.3	Station Upgrades	7.94	0.44
1.4	<b>Total<sup>1</sup></b>	<b>56.5</b>	<b>3.30</b>

1. In the current control budget contingency is built into the project costs.

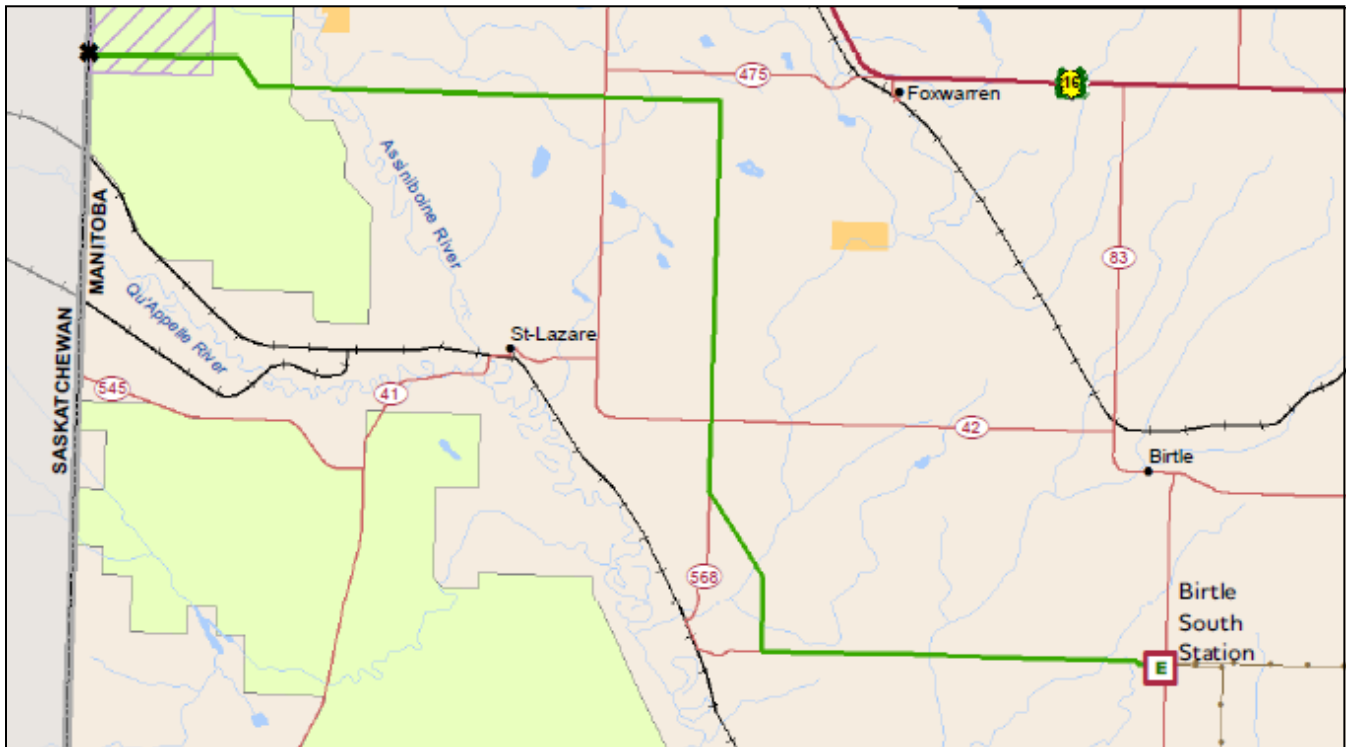
Note: there are no construction contracts or contracts above \$50 million currently in place.



### Birtle Project Schedule



### Birtle Final Preferred Route Map





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

## Keeyask Project Update

Q4 Update ending March 31, 2019

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## EXECUTIVE SUMMARY

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- Entering the 2018 construction season, the project required at least a 10% improvement in the General Civil Contract (“GCC”) performance for the remainder of their work and no substantive risks to materialize to achieve the control budget.
- Significant progress was achieved in the 2018 construction season and all key milestones were achieved. In 2018, the GCC placed 32% more concrete and moved 27% more earth material than in 2017. As a result of the strong performance in 2018, the cost of the project is tracking to the \$8.7B control budget. The first unit In-Service Date (ISD) is trending towards 10 months ahead of schedule. Schedule advances have helped to maintain the project costs and are the main reason the project is tracking to meet its control budget of \$8.7B. Even with these advances, Manitoba Hydro is committed to find ways to lower costs as there is still a lot of work and risks remaining. Meeting the control budget will require continued performance by the GCC and no major risks to materialize.
- The control budget for the project remains at \$8.7B. There are currently no changes in budget that would impact domestic revenue requirements or Manitoba Hydro’s financial forecasts.
- Actual expenditures to the end of March 31, 2019 were \$5.82 billion.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (KIP).
- 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 contractor 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.

### Generating Station

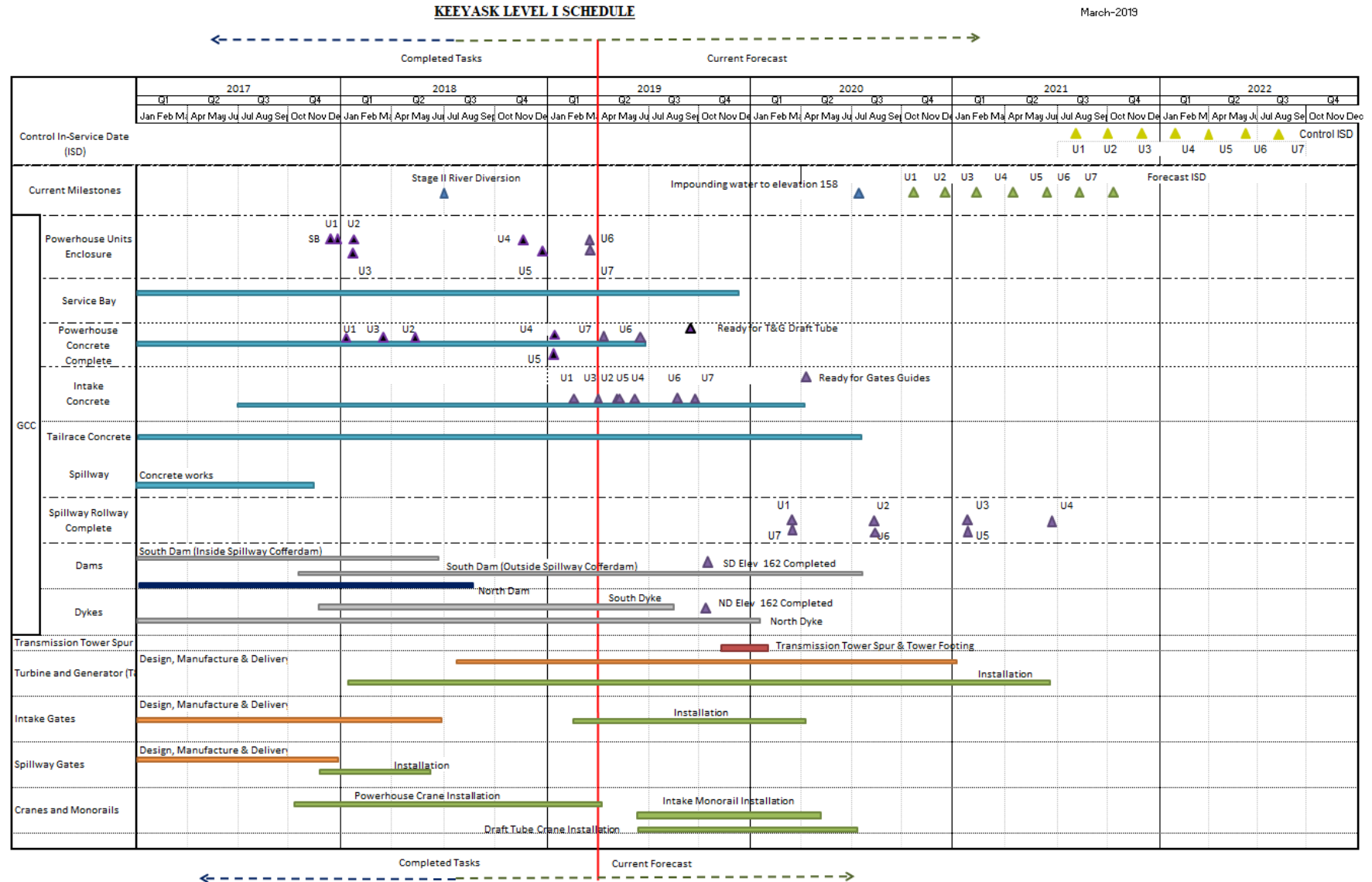
- After a brief shutdown in late December 2018 for the holiday break, the site ramped back up quickly to more than 2,000 workers in January 2019.
- After the completion of the 2018 construction season, progress goals were established for the 2019 construction season. The critical milestones identified for the 2019 season include:
  - Completion of 97 per cent all concreted by year-end including completion of Powerhouse concrete;
  - Completion of 90 per cent all earthworks by year-end and completion of all permanent earth structures including North, Central & South Dams, North & South dykes;
  - Preparation of Unit 1 mechanical and electrical systems for commissioning;
  - Enclosure of Units 6 & 7; and
  - Completion of Intake gate installation.
- Very cold temperatures over January and February 2019 impacted progress on concrete and earthworks activities. This slower than planned progress is currently not expected to impact achieving planned 2019 milestones.

- Temporary powerhouse enclosure was achieved on units 6 & 7 in March 2019.
- The winter earthworks program commenced and includes work on the South Dyke, foundation preparations for the South Dam, tailrace channel excavation and removal of the Powerhouse cofferdam top-up.
- Over 14,000 m<sup>3</sup> of concrete has been placed to date against the 2019 planned value of 49,000 m<sup>3</sup> of concrete. To date, a cumulative total of more than 287,000 m<sup>3</sup> has been placed on the Keeyask Project (86% of the total volume of concrete required).
- Units 1 and 3 Intake sections have been handed over to the Gates, Guides and Hoists Contractor.
- Unit 1 was handed over to the Turbine & Generator (T&G) Contractor to begin the work required for the installation of non-embedded parts in March.
- The installation of the Balance of Plant systems including embedded piping, equipment, cable tray, etc. continued.
- The challenge for 2019 will be to continue to meet and exceed the project plan as the work becomes more complex and additional coordination between various contractors and trades is required.

#### **Infrastructure**

- There are no infrastructure updates for the project over the previous quarter.

Project Schedule Overview – March 31, 2019



Note: Construction activities, milestones and unit ISDs reflect Manitoba Hydro's current forecast schedule. Presently, the forecast for the unit ISDs is in advance of the Control ISDs (Control ISD: August 2021 for first unit ISD).

\* This is a summary of MH's current plan broken down to the major component of construction and significant contractors, and how these components and milestones relate to river management and impoundment.

\* "Control ISD" reflects MH communicated In-Service-Date ("ISD") dates, while "Current ISD" reflects current planned ISD dates which are currently 10 months ahead of the control ISD.

**Legend:**

U = Unit

ISD = In Service Date

SW = Spillway

U/S = Up Stream

C/D = Cofferdam

D/S = Downstream

T&G = Turbine and Generator

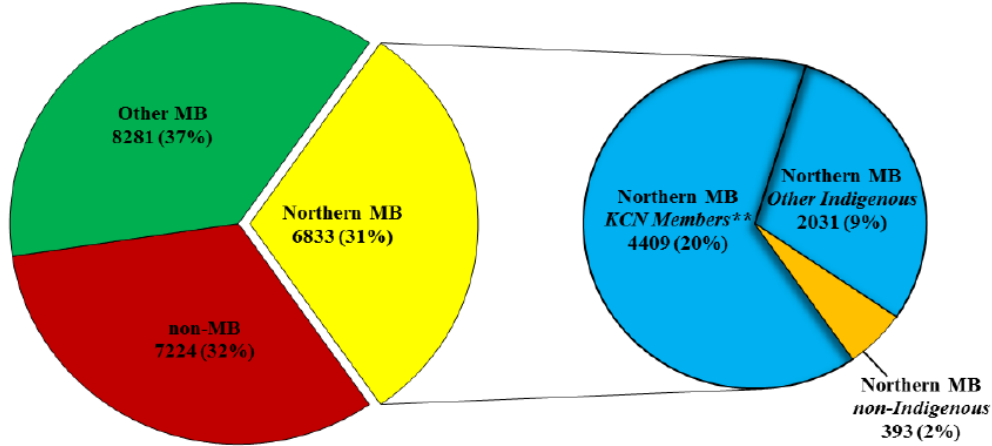
PH = Powerhouse

CM = Contract Milestone

GCC = General Civil Contract

**Total Project Hires – as of March 31, 2019**

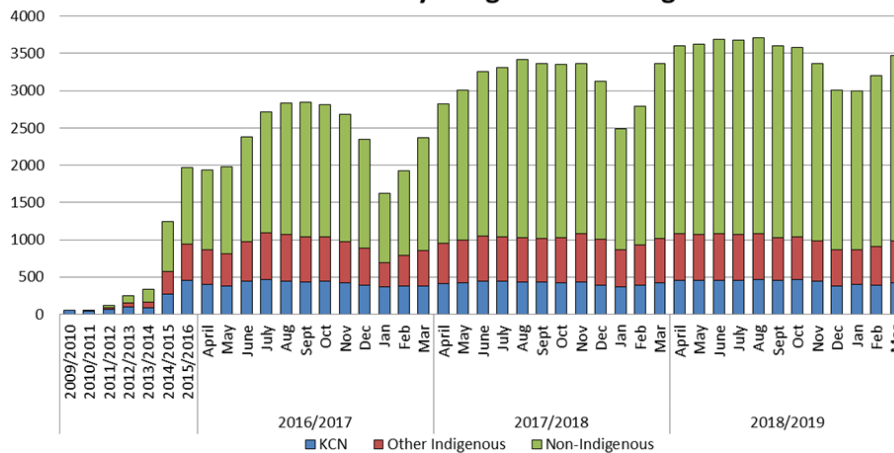
**Keeyask Project  
Breakdown of Total Hires\*  
March 2019**



- As of March 31, 2019, there have been a total of 22,338 hires on the Keeyask Project. Of these total hires, 68% (15,114) are Manitobans, 41% (9,181) have self-declared as being Indigenous persons and 20% (4,403) of the total hires are Keeyask Cree Nation (“KCN”) members.

**Active Hires – as of March 31, 2019**

**Active Hires by Indigenous Heritage**



- As of March 31, 2019 there were 3,472 active hires on the Keeyask Project. Of these active hires, 56% (1,930) are Manitobans, 29% (990) have self-declared as being Indigenous persons and 12% (418) are KCN members.

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**FINANCIAL SUMMARY**

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- Actual expenditures to the end of March 31, 2019 were \$5.82 billion.

<b>Table A - Keeyask Budget Summary (in Billions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to March 31, 2019</b>
1.1	Generating Station	5.948	4.847
1.2	Generation Outlet Transmission (GOT)	0.202	0.161
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	0.815
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>5.822</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).



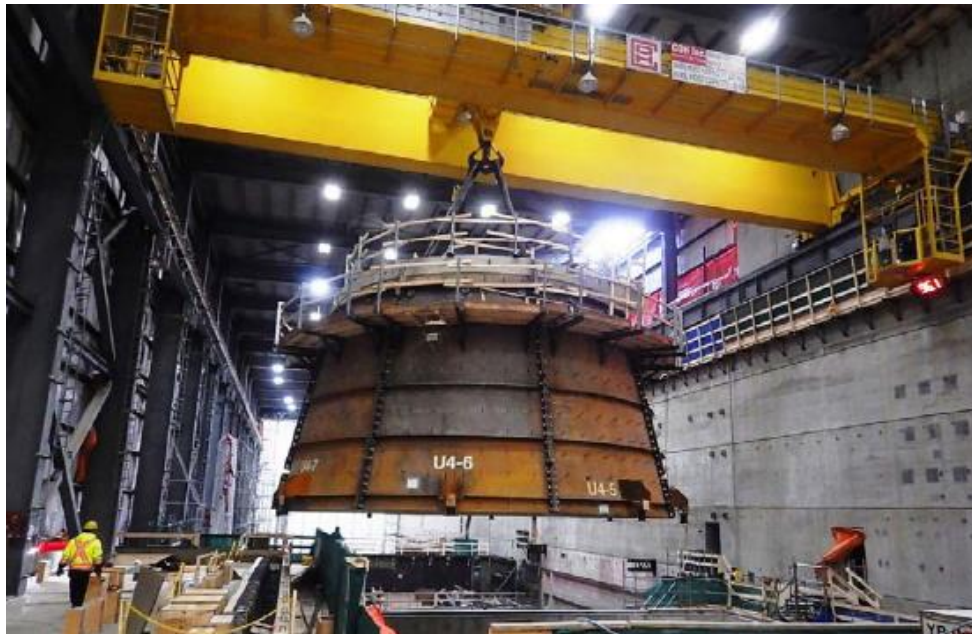
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## RECENT PHOTOS

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**Photo 1:** Discharge Ring Installed in Unit 1 Turbine Pit – March 2019



**Photo 2:** Draft Tube Liner Installation – January 2019





**Photo 3: Intake Construction - March 2019**



**Photo 4: Keeyask Powerhouse Complex with Units 6 & 7 Enclosed – March 2019**





**Photo 5:** Keeyask Spillway – March 2019

## **MANITOBA – MINNESOTA TRANSMISSION PROJECT**

### **Q4 Update ending March 31, 2019**

#### **MMTP Project Description**

Manitoba Hydro's 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, Manitoba, northwest of Winnipeg and extend 213 km south around Winnipeg to the Manitoba-Minnesota border, near Piney, Manitoba. The MMTP 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 Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line (GNTL), and is being constructed by Minnesota Power.

#### **MMTP Project Update**

- On November 15, 2018, the National Energy Board (NEB) released its Reasons for Decision report on MMTP determining “the Project is and will be required by the present and future public convenience and necessity” and recommending the Governor in Council (GIC) issue a certificate.
- Manitoba Sustainable Development approved the project and issued an Environment Act license for the project on April 4<sup>th</sup> 2019.
- The Governor in Council issued an extension allowing until May 16, 2019 to decide whether or not to issue a certificate. Any certificate received (and provincial licence) will include a number of conditions that must be satisfied prior to construction commencing.
- Work is underway to prepare documentation to satisfy the known and anticipated conditions outlined in the NEB's Reasons for Decision report and the Environment Act license.
- Property acquisition is continuing and over 85% of the private land owners along the proposed transmission line route between Vivian, Manitoba and the U.S. Border have signed easement agreements.
- Tower steel has all been delivered to the material storage yard as of February 2019.
- Manitoba Hydro solicited proposals for the transmission line construction contract work. Submissions were evaluated and two preferred contractors were selected, one for section 1 (Dorsey station to Vivian corner) and one for section 2 (Vivian corner to the US Border). The Manitoba Hydro Electric-Board approved the award of these contracts pending final negotiations and receipt of regulatory approvals. The negotiation process includes contingency planning for a later than June 2019 construction start date.
- Requests for Proposals for the civil works at Dorsey station were posted in March, and remaining tenders will be posted through the spring.
- No construction contracts will be awarded until receipt of regulatory approvals.
- The control budget will be reviewed later this year once regulatory approvals and conditions have been received, and construction start established.

## MANITOBA – MINNESOTA TRANSMISSION PROJECT

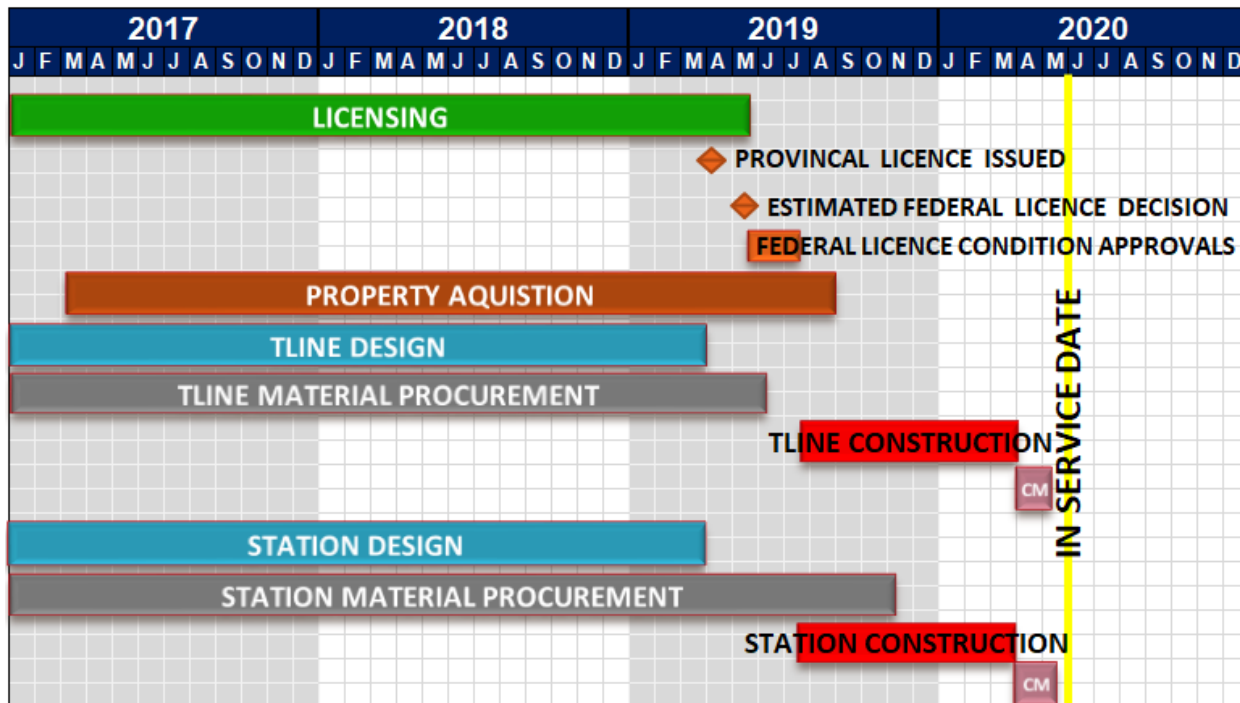
### Q4 Update ending March 31, 2019

#### MMTP Budget

<b>MMTP Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to Mar 31, 2019</b>
1.1	Licensing & Environmental	31.5	23.5
1.2	500 kV Transmission Line *	213.6	70.1
1.3	Station Upgrades*	112.8	30.7
1.4	Contingency	95.3	-
1.5	Total	453.2	124.3

\*No construction contracts above \$50 million are currently in place.

#### MMTP Project Schedule

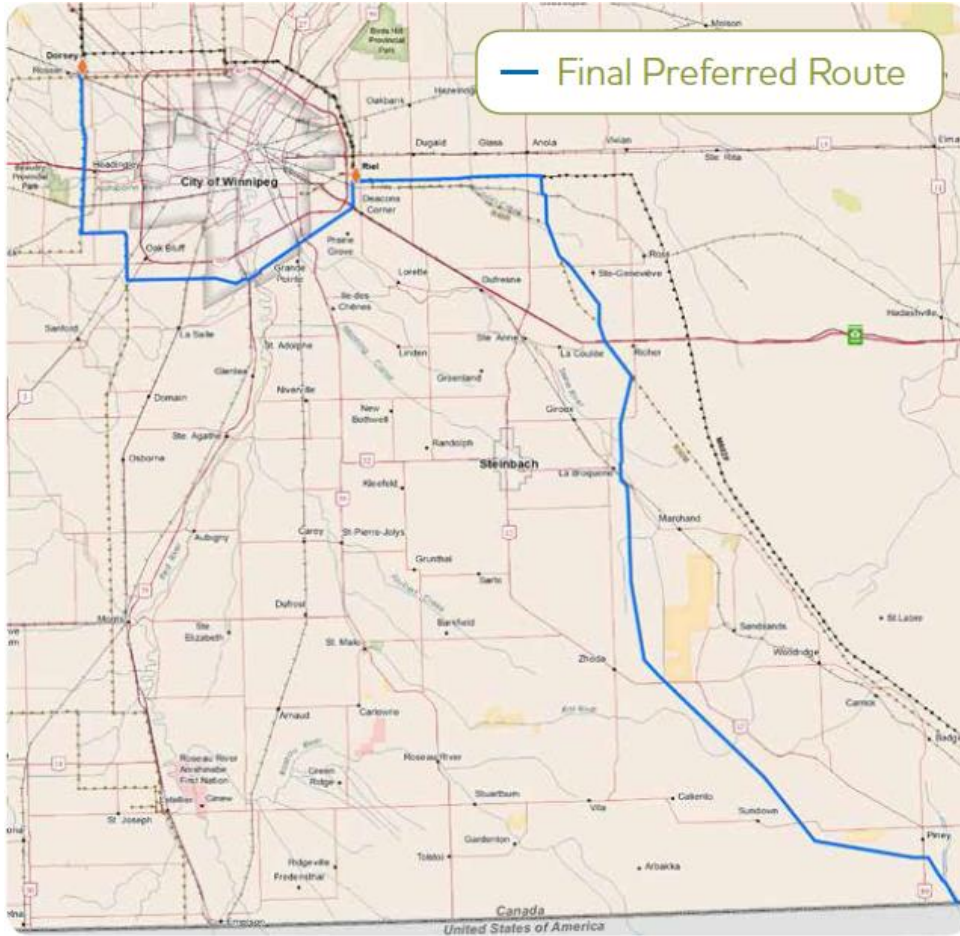




# MANITOBA – MINNESOTA TRANSMISSION PROJECT

## Q4 Update ending March 31, 2019

### MMTP Project Route



## BIRTLE TRANSMISSION PROJECT

### Q4 Update ending March 31, 2019

#### Birtle Project Description

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

#### Birtle Project Update

- Manitoba Hydro filed an Environmental Act Proposal for the project on January 30, 2018. Manitoba Sustainable Development is continuing with the Section 35 consultation process.
- Manitoba Hydro is continuing to explore options of advancing construction timelines for the new Birtle Transmission Line B71T. Construction may possibly be advanced, pending receipt of a License as well as property and materials being procured in advance, as required.
- Material procurement is continuing. In order to secure the project in-service date Manitoba Hydro must move forward with long lead time items such as the material contracts prior to receiving Provincial regulatory approvals. Failure to do so would result in substantial project delays. Should Manitoba Hydro receive notification that the project will not receive its necessary regulatory approvals, materials may be re-used on future transmission projects in order to recover sunk costs.
- Property acquisition required for B71T is underway.
- Design efforts and material procurement for Birtle South Station is progressing. Construction at the station is anticipated to start in the summer of 2019, pending receipt of an Environmental Act License.
- The overall project budget has been updated to a revised control budget of \$69.3 million.

#### Birtle Budget

<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to March 31, 2019</b>
1.1	Licensing & Environmental	4.64	2.31
1.2	Transmission line <sup>1</sup>	57.2	2.55
1.3	Station Upgrades	7.43	0.65
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>5.51</b>

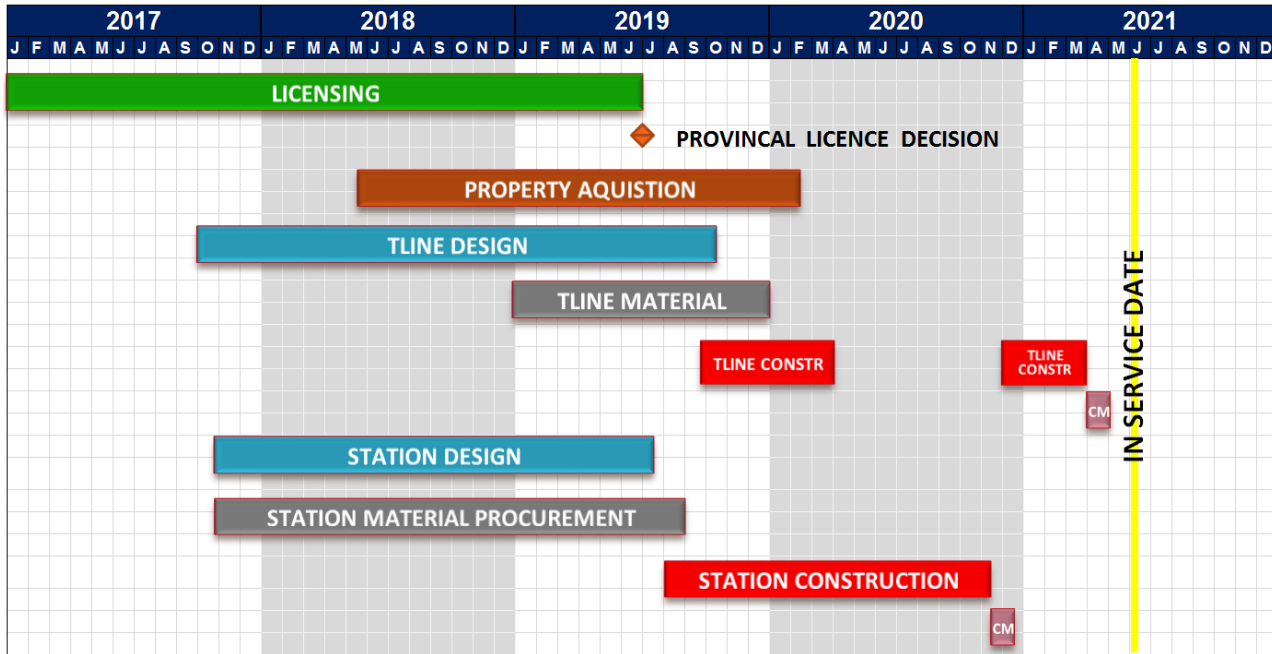
1. In the current control budget contingency is built into the project costs.

Note: there are no construction contracts above \$50 million currently in place.

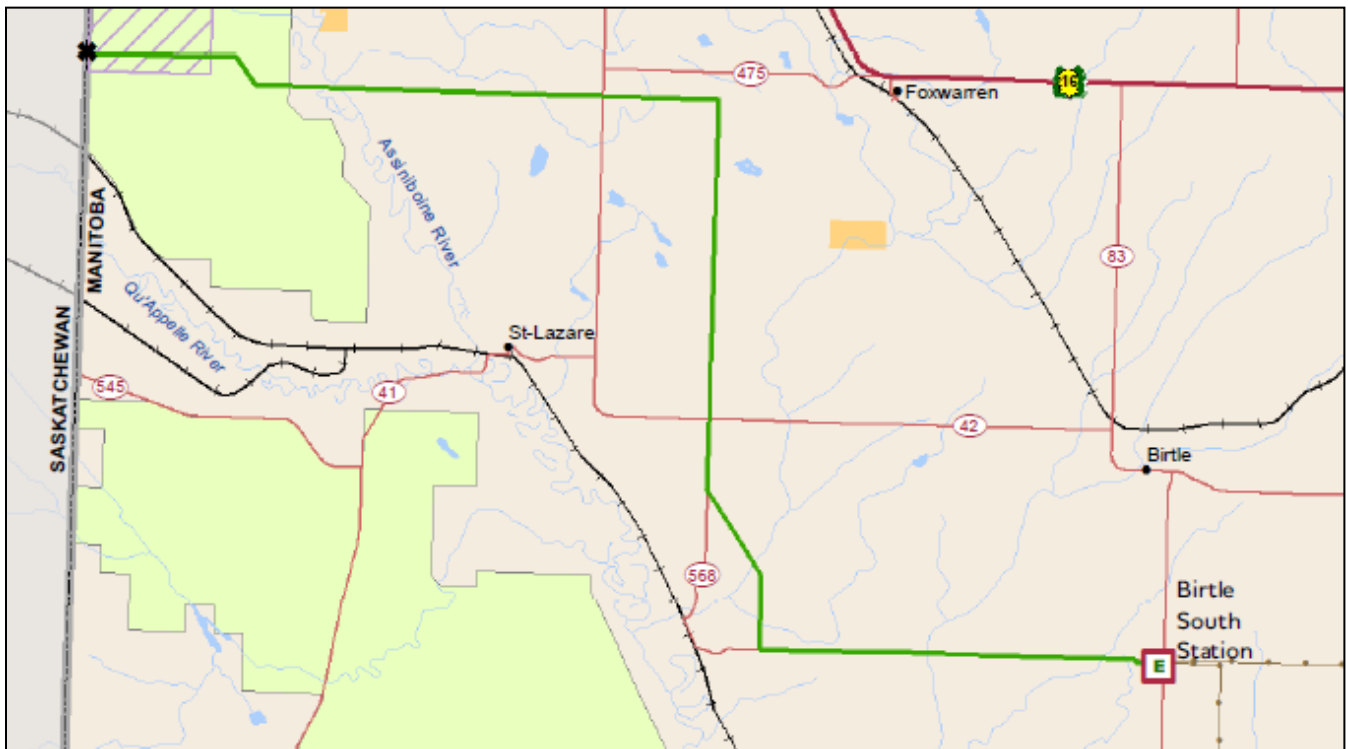
## BIRTLE TRANSMISSION PROJECT

### Q4 Update ending March 31, 2019

#### Birtle Project Schedule



#### Birtle Final Preferred Route Map



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

## Keeyask Project Update

Q1 Update ending June 30, 2019

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## EXECUTIVE SUMMARY

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- Significant progress was achieved in the 2018 construction season and all key milestones were achieved. As a result of the strong performance in 2018, the cost of the project is tracking to the \$8.7B control budget. The first unit In-Service Date (ISD) is trending towards 10 months ahead of schedule. These schedule advances have helped to maintain the project costs and are the main reason the project is tracking to meet its control budget of \$8.7B. Meeting the control budget will require continued strong performance by the GCC and no major risks to materialize. Manitoba Hydro is committed to find ways to continue to maintain or lower costs as there is still a lot of work and risks remaining.
- The control budget for the project remains at \$8.7B. There are currently no changes in budget that would impact domestic revenue requirements or Manitoba Hydro's financial forecasts.
- Actual expenditures to the end of June 30, 2019 were \$6.16 billion.



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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (KIP).
- 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 contractor 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.

### Generating Station

- Approximately 30,000 m<sup>3</sup> of concrete has been placed to date against the 2019 planned value of 49,000 m<sup>3</sup> of concrete. To date, a cumulative total of more than 302,000 m<sup>3</sup> has been placed on the Keeyask Project (91% of the total volume of concrete required).
- The General Civil Works Contractor (GCC) continues to make progress on the permanent earth structures including the North Dyke, South Dyke, Central Dam and South Dam. These earth structures are on track for completion by the end of the year.
- The installation of the Balance of Plant systems including embedded piping, equipment, cable tray, etc. continued.
- Four of seven unit intakes have been handed over to the Gates, Guides and Hoists Contractor. The contractor is preparing for gate installation on the first three units. It is expected that the gate installation will be complete on all seven units by the end of the year.
- The Turbine & Generator (T&G) Contractor is nearing completion of the embedded parts installation. All seven draft tube liners are now complete and the installation of the last two (of seven) stay rings is underway. The contractor is continuing to install the

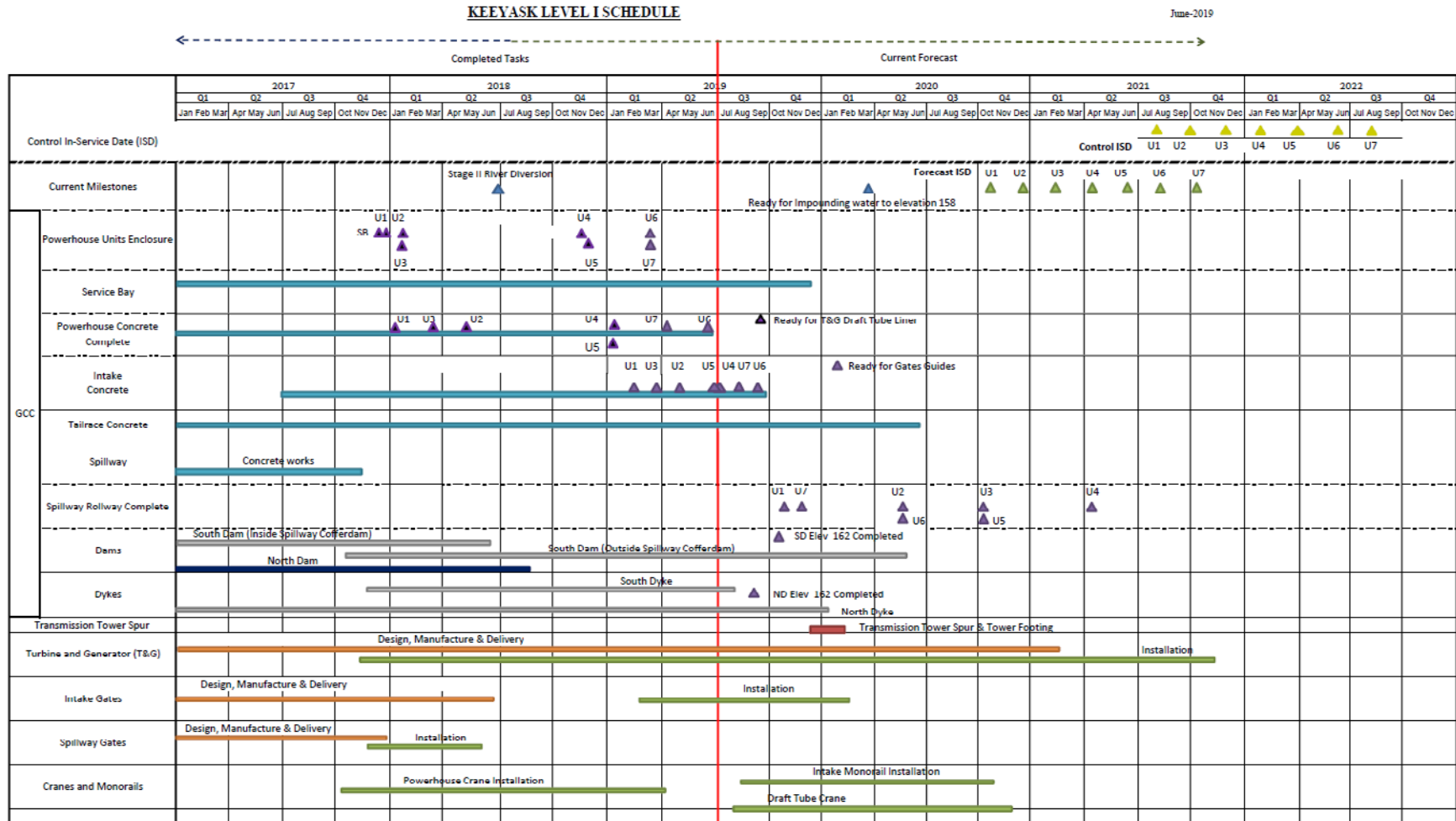
non-embedded parts in unit 1 and remains on track to have unit 1 ready to commission by the end of the year.

- The challenge for 2019 will be to continue to meet and exceed the project plan as the work becomes more complex and additional coordination between various contractors and trades is required

### **Infrastructure**

- There are no infrastructure updates for the project over the previous quarter.

### Project Schedule Overview – June 30, 2019



Note: Construction activities, milestones and unit ISDs reflect Manitoba Hydro's current forecast schedule. Presently, the forecast for the unit ISDs is in advance of the Control ISDs (Control ISD: August 2021 for first unit ISD).

\* This is a summary of MH's current plan broken down to the major component of construction and significant contractors, and how these components and milestones relate to river management and impoundment.

\* "Control ISD" reflects MH communicated In-Service-Date ("ISD") dates, while "Current ISD" reflects current planned ISD dates which are currently 10 months ahead of the control ISD.

**Legend:**

U = Unit

ISD = In Service Date

SW = Spillway

U/S = Up Stream

C/D = Cofferdam

D/S = Downstream

T&G = Turbine and Generator

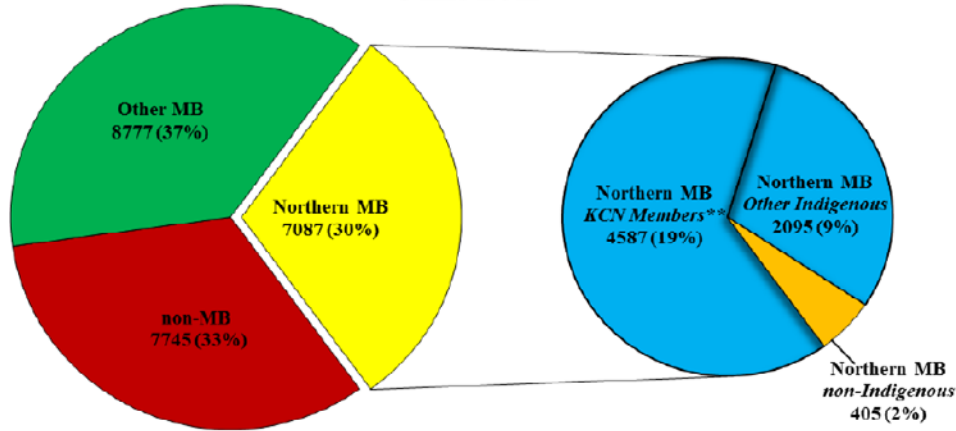
PH = Powerhouse

CM = Contract Milestone

GCC = General Civil Contract

**Total Project Hires - as of June 30 2019**

**Keeyask Project  
Breakdown of Total Hires\*  
June 2019**



- As of June 30, 2019, there have been a total of 23,609 hires on the Keeyask Project. Of these total hires, 67% (15,684) are Manitobans, 41% (9,576) have self-declared as being Indigenous persons and 19% (4,587) of the total hires are Keeyask Cree Nation (“KCN”) members.

**Active Hires – as of June 30, 2019**



- As of June 30, 2019 there were 3,564 active hires on the Keeyask Project. Of these active hires, 56% (2,012) are Manitobans, 29% (1,034) have self-declared as being Indigenous persons and 13% (471) are KCN members.



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## FINANCIAL SUMMARY

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- Actual expenditures to the end of June 30, 2019 were \$6.16 billion.

Item #	Item	Current Approved Budget (2016\$)	Actuals to June 30, 2019
1.1	Generating Station	5.948	5.119
1.2	Generation Outlet Transmission (GOT)	0.202	0.165
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	0.874
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>6.158</b>

**Table A Notes:**

1. *The Escalation and Contingency Components (1.3 and 1.5) 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).*

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## RECENT PHOTOS

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**Photo 1:** Aerial of the Powerhouse Complex (Downstream) – June 2019



**Photo 2:** Intake Gate, Guide and Hoist – June 2019

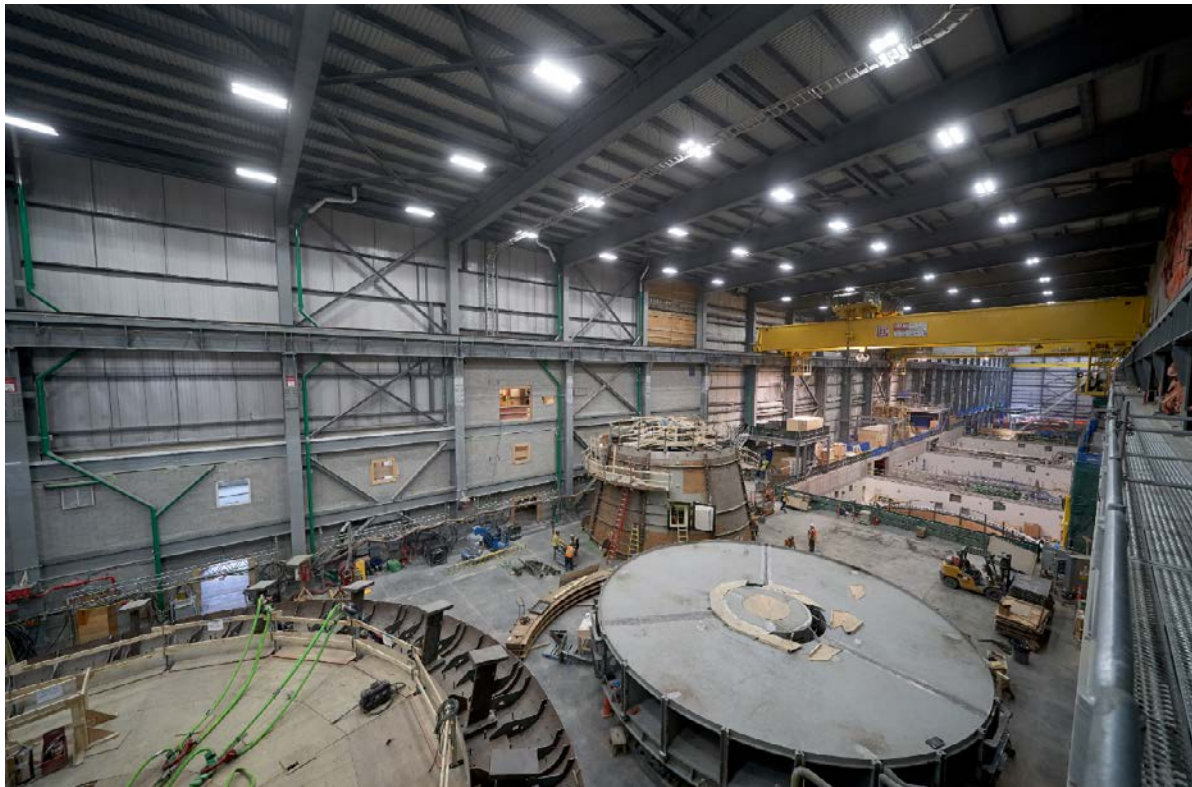




**Photo 3:** Interior View of the Powerhouse – June 2019



**Photo 4:** Turbine & Generator Component Assembly in the Service Bay – June 2019



**Photo 5: South Dam – June 2019**



## **MMTP Project Description**

Manitoba Hydro's 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, Manitoba, northwest of Winnipeg and extend 213 km south around Winnipeg to the Manitoba-Minnesota border, near Piney, Manitoba. The MMTP 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 Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line (GNTL), and is being constructed by Minnesota Power.

## **MMTP Project Update**

- Manitoba Sustainable Development approved the Construction Environmental Protection Plan and related documents that were submitted per the Environment Act Licence.
- On June 13, 2019 the Governor in Council approved the National Energy Board's recommendation that the Project should be issued a Certificate of Necessity and Public Convenience. On June 18, 2019 the National Energy Board issued Certificate EC-059, setting out 28 conditions that will apply to the Project.
- On June 19, 2019 Manitoba Hydro filed a letter with the National Energy Board (NEB) requesting relief of the timelines related to three of the pre-construction conditions in the certificate. The materials pursuant to eight of the pre-construction conditions were also filed on June 19.
- The project has now received Provincial and Federal regulatory approval, however construction cannot begin until the pre-construction conditions are approved. Construction start is currently planned for September 2019.
- Property acquisition is continuing and over 88% of the private land owners along the proposed transmission line route between Vivian, Manitoba and the U.S. Border have signed easement agreements.
- Two transmission line construction contractors were selected, one for section 1 (Dorsey station to Vivian corner) and one for section 2 (Vivian corner to the US Border) and negotiations have been ongoing. Pricing and schedule was revised by both contractors for a September 2019 construction start. The Manitoba Hydro Electric-Board (MHEB) approved the revised contract amounts and contract awards. Both contracts will be signed in early July since regulatory and MHEB approvals have been secured. These contracts are both valued at over \$50M.
- Requests for Proposals for the civil works at Glenboro and Riel were posted and closed in June, preferred contractors have been selected and negotiations will begin in July.
- The Manitoba Hydro Electric Board approved a recommendation to increase the control budget to \$490M. The budget was revised to reflect a 9 month construction schedule reduced from 3 years due to longer than anticipated regulatory process, resulting in increased construction costs. The revised budget also includes an increase to contingency allocation.



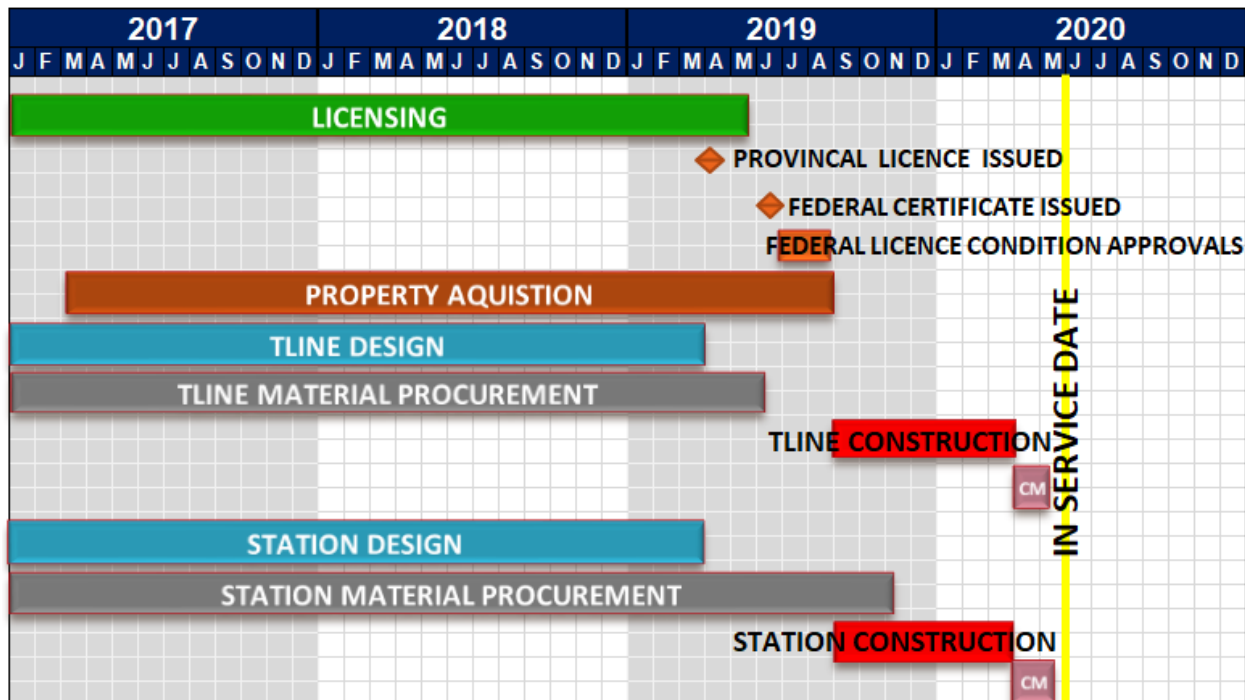
**MMTP Budget**

<b>MMTP Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to June 30, 2019</b>
1.1	Licensing & Environmental	38.7	24.2
1.2	500 kV Transmission Line *	284.0	74.6
1.3	Station Upgrades**	122.9	42.8
1.4	Contingency	44.4	-
1.5	Total	490.0	141.7

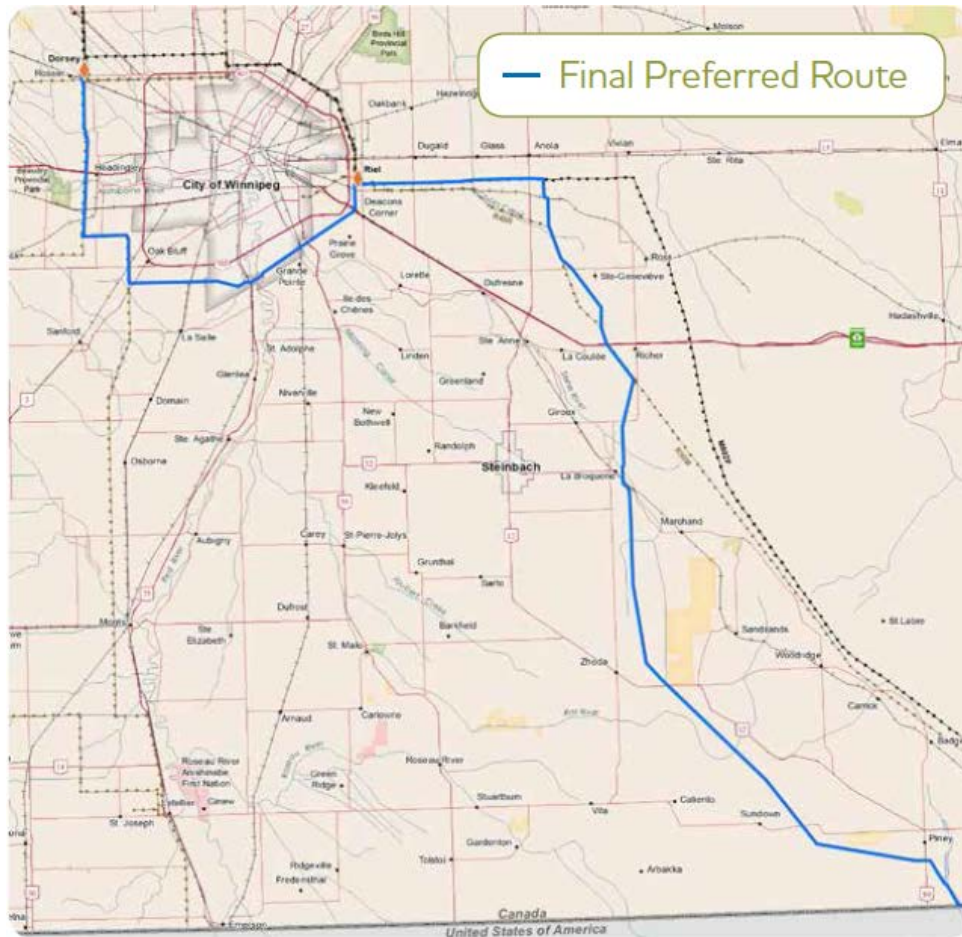
\*Two transmission line construction contracts above \$50 million will be in place by the next reporting period.

\*\*No construction contracts above \$50 million are currently in place.

**MMTP Project Schedule**



## MMTP Project Route



## **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

## **Birtle Project Update**

- Manitoba Hydro filed an Environmental Act Proposal for the project on January 30, 2018. Manitoba Sustainable Development is continuing with the Section 35 consultation process. Environmental Act License was anticipated to be received by June 2019. The Environmental Approvals Branch (EAB) has indicated it is now targeting to complete its Crown-Indigenous consultation process by the end of August 2019; however, the licensing decision and its timing are guided by the results of the consultation process.
- Due to revised license timelines construction of transmission line B71T will now be planned to start in December 2019, pending receipt of Environmental Act License as well as property and materials being procured as required.
- Material procurement is continuing. In order to secure the project in-service date Manitoba Hydro must move forward with long lead time items such as the material contracts prior to receiving Provincial regulatory approvals. Failure to do so would result in substantial project delays. Should Manitoba Hydro receive notification that the project will not receive its necessary regulatory approvals, materials would be re-used on future transmission projects in order to recover sunk costs.
- Property acquisition required for B71T is continuing with easements secured for over half of private landowners.
- Design efforts and material procurement for Birtle South Station are nearing completion. Due to revised license timelines construction at the station is now anticipated to start in late fall of 2019, pending receipt of Environmental Act License.

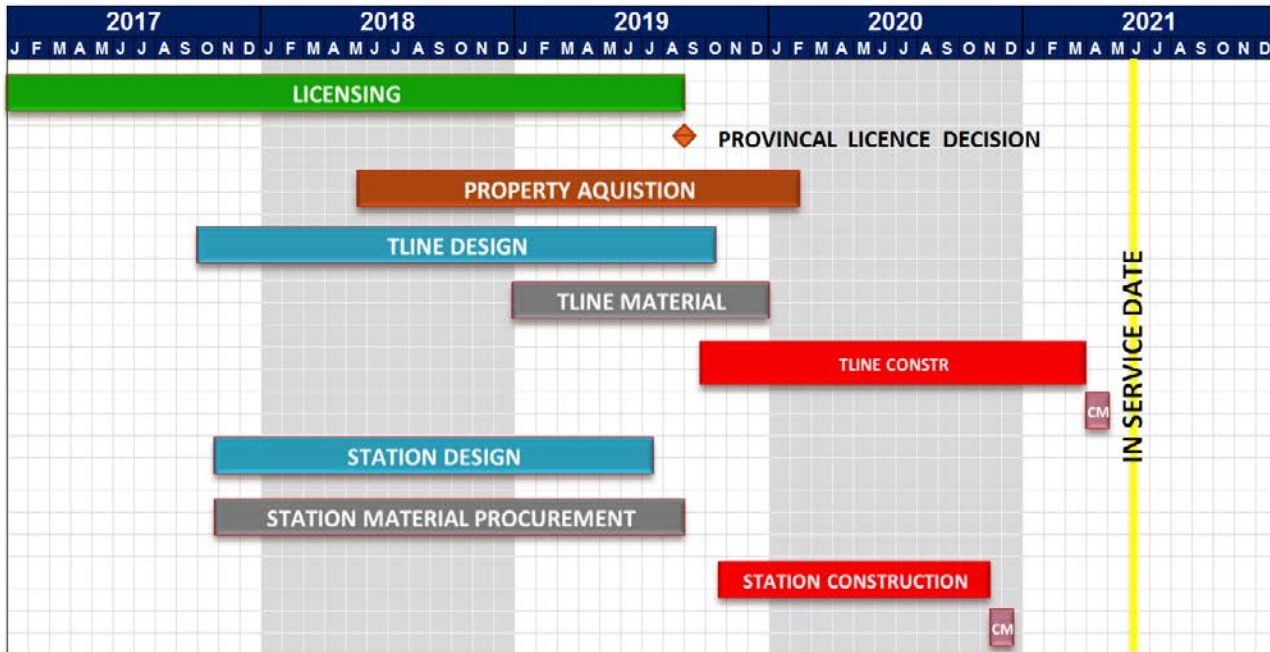
**Birtle Budget**

<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to June 30, 2019</b>
1.1	Licensing & Environmental	4.64	2.40
1.2	Transmission line <sup>1</sup>	57.2	3.56
1.3	Station Upgrades	7.43	1.86
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>7.82</b>

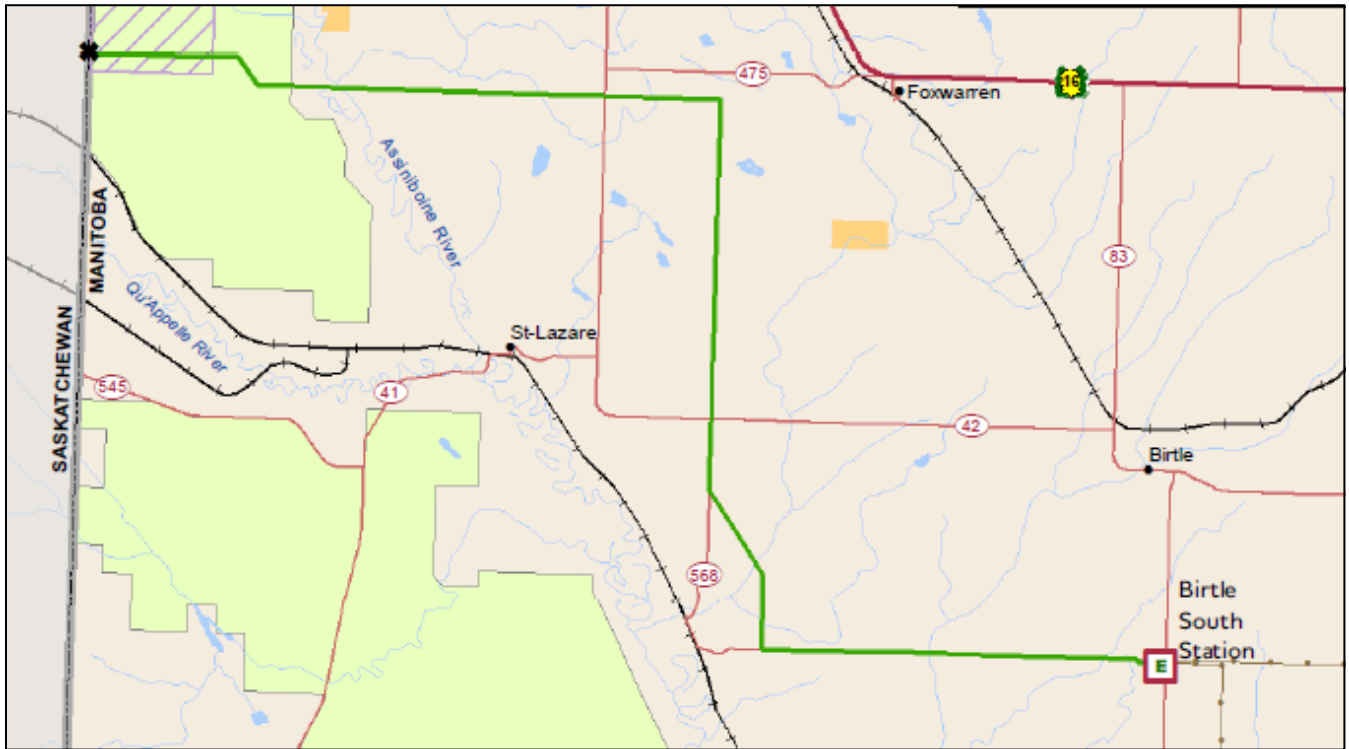
1. In the current control budget contingency is built into the project costs.

Note: there are no construction contracts above \$50 million currently in place.

**Birtle Project Schedule**



### Birtle Final Preferred Route Map





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

## Keeyask Project Update

Q2 Update ending September 30, 2019

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## EXECUTIVE SUMMARY

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- Building on the success of the 2018 construction season, the 2019 construction season continued to be successful for the Keeyask Project. The project is forecasting to meet the \$8.7B control budget and the first unit in-service is trending earlier to at least 10 months in advance of the August 2021 control schedule. Manitoba Hydro is committed to find ways to continue to maintain or lower costs as there is still a lot of work and risks remaining.
- The control budget for the project remains at \$8.7B. There are currently no changes in the control budget that would impact domestic revenue requirements or Manitoba Hydro's financial forecasts.
- Actual expenditures to the end of September 30, 2019 were \$6.47 billion.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (KIP).
- The General Civil Works (GCC) 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 contractor 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.

### Generating Station

- Concrete placements are trending ahead of plan for the year. Approximately 45,000 m<sup>3</sup> of concrete has been placed to date against the 2019 total planned value of 49,000 m<sup>3</sup> of concrete. To date, a cumulative total of nearly 318,000 m<sup>3</sup> has been placed on the Keeyask Project (95% of the total volume of concrete required). Intake concrete has been completed.
- The GCC has substantially completed the permanent earth structures, including the North Dyke, South Dyke, North Dam, Central Dam and South Dam.
- The installation of the Balance of Plant systems, including embedded piping, equipment, cable tray, etc. continues.
- All seven intake units have been handed over to the Gates, Guides and Hoists Contractor, and gate installation was completed on the first three units. The gates, guides and hoists for the remaining four intake units will be installed over the next few months.
- The Turbine & Generator (T&G) Contractor has completed installation of the embedded parts for all seven units (draft tube liners and stay rings). The contractor is continuing to

install the non-embedded parts in unit 1 and remains on track to have unit 1 ready to commission in early 2020.

### **Infrastructure**

- There are no infrastructure updates for the project over the previous quarter.



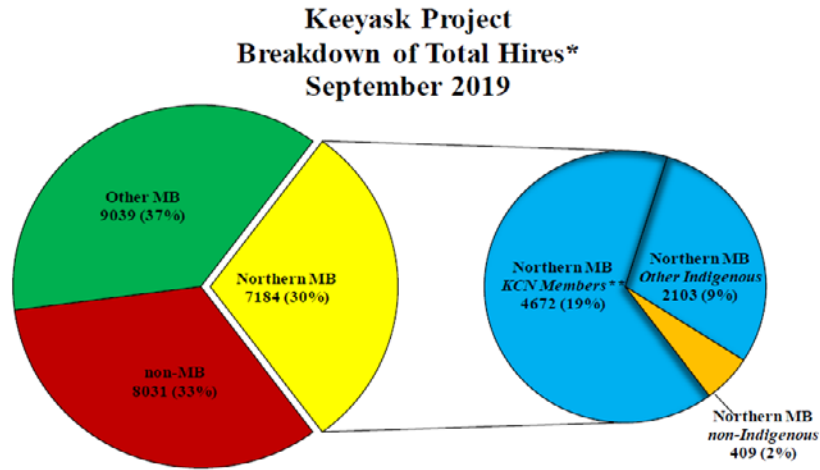


Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is 10 months ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD).

The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and significant contractors, and how these components and milestones relate to river management and impoundment.

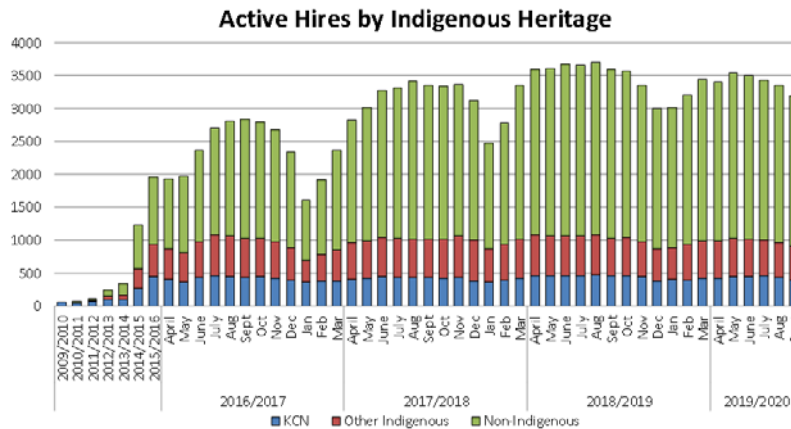
<p><b>Legend:</b> U = Unit ISD = In Service Date SW = Spillway U/S = Up Stream C/D = Cofferdam D/S = Downstream T&amp;G = Turbine and Generator PH = Powerhouse CM = Contract Milestone GCC = General Civil Contract</p>
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**Total Project Hires - as of September 30, 2019**



- As of September 30, 2019, there have been a total of 24,254 hires on the Keeyask Project. Of these total hires, 67% (16,223) are Manitobans, 40% (9,773) have self-declared as being Indigenous persons and 19% (4,672) of the total hires are Keeyask Cree Nation (“KCN”) members.

**Active Hires – as of September 30, 2019**



- As of September 30, 2019 there were 3,192 active hires on the Keeyask Project. Of these active hires, 59% (1,880) are Manitobans, 29% (910) have self-declared as being Indigenous persons and 13% (400) are KCN members.

## FINANCIAL SUMMARY

- Actual expenditures to the end of September 30, 2019 were \$6.47 billion.

<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to September 30, 2019</b>
1.1	Generating Station	5.948	5.361
1.2	Generation Outlet Transmission (GOT)	0.202	0.169
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	0.936
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>6.466</b>
	First in-service Date	Aug-2021	

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).

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## RECENT PHOTOS

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**Photo 1:** Powerhouse Complex (looking upstream) – September 2019



**Photo 2:** Intake Concrete Complete – September 2019

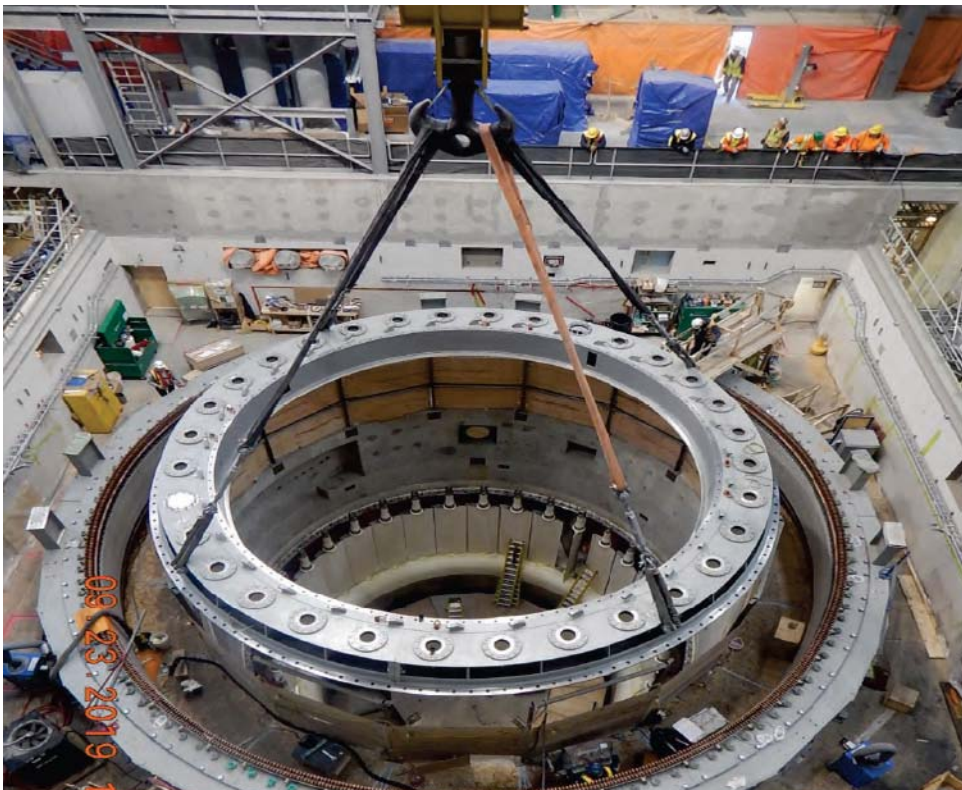




**Photo 3:** Unit 1 Rotor Pole Installation – September 2019



**Photo 4:** Unit 1 Outer Headcover being lowered into place – September 2019





**Photo 5:** Central Dam Construction – September 2019



**Photo 6:** South Dam – September 2019



## MANITOBA – MINNESOTA TRANSMISSION PROJECT

### Q2 Update ending September 30, 2019

#### MMTP Project Description

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

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

The United States (US) portion of the 500 kV line will initiate at the border and terminate at Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line (GNTL), and is being constructed by Minnesota Power.

#### MMTP Project Update

- The project has received Provincial and Federal regulatory approvals.
- The Canada Energy Regulator (formerly the National Energy Board) approved the pre-construction conditions on August 22, 2019. With all approvals in place, Manitoba Hydro commenced construction. Clearing, tower assembly, foundation installation and station work have begun.
- Manitoba Hydro continues regular filings with both provincial and federal regulators pursuant to the provincial *Environment Act* license and federal Certificate conditions.
- Legal challenges have been brought forward against the Project's regulatory approvals at the provincial and federal levels. Five federal judicial reviews have been filed in the Federal Courts. Provincially, there has been one judicial review filed and five provincial appeals.
- Property acquisition is continuing and all private land owners along the proposed transmission line route between Vivian, Manitoba and the U.S. Border have been secured.
- Two transmission line construction contracts have been awarded to Muskeko JV, one for section 1 (Dorsey station to Vivian corner), and one to Valard Construction Ltd for section 2 (Vivian corner to the U.S. Border).
- In Section 1, 22 hectares of clearing was completed, 32 foundations have been installed and 29 towers have been assembled.
- In Section 2, 58 hectares of clearing was completed, 14 foundations were installed and 45 towers were assembled. Work also began on setting up the construction camp location for workforce accommodation as well as set up of access points and fly yards for tower assembly.
- All contracts have been awarded for the civil and electrical work at the Dorsey, Riel and Glenboro stations. Site improvement activities have begun as well as foundation installations and cable and panel assembly work.
- Major station equipment manufacturing is complete. Shunt Reactors have been shipped to Dorsey station, and Riel and Glenboro station transformer shipments are planned for when foundations are ready in the coming months.

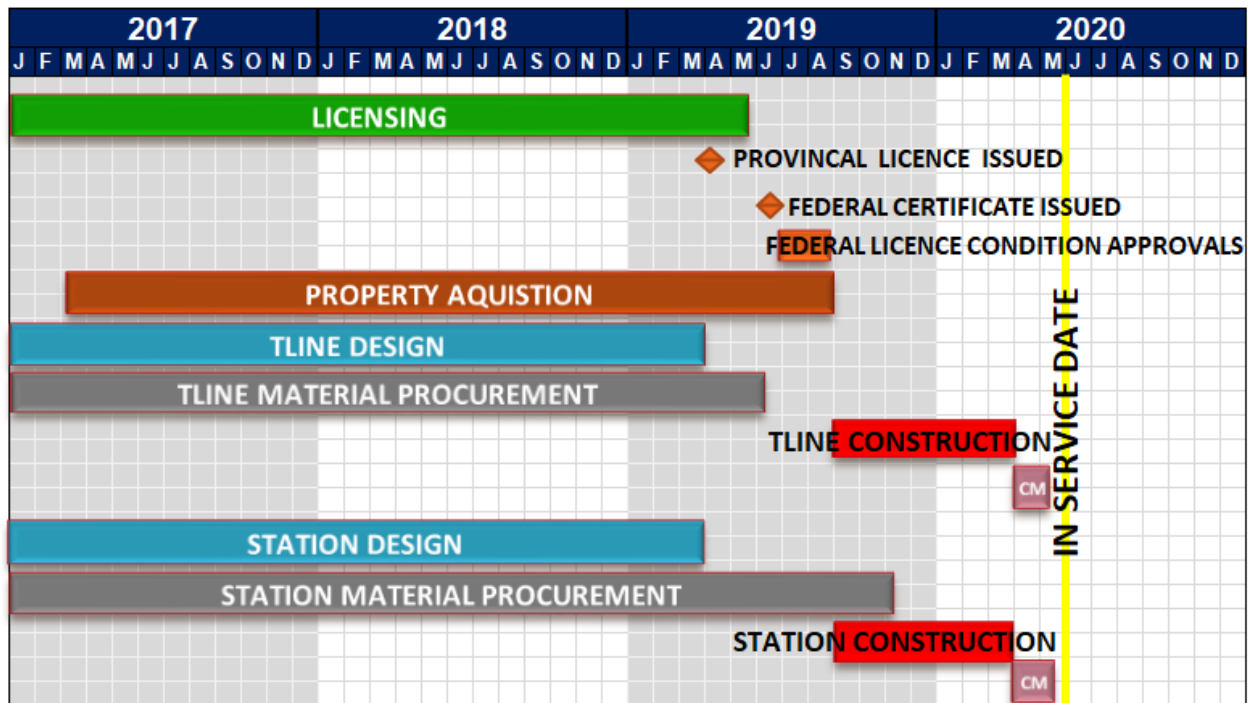
## MANITOBA – MINNESOTA TRANSMISSION PROJECT

### Q2 Update ending September 30, 2019

#### MMTP Budget

MMTP Budget Summary (in Millions \$)			
Item #	Item	Total Project Control Budget	Actual costs to September 30, 2019
1.1	Licensing & Environmental	38.7	25.3
1.2	500 kV Transmission Line	284.0	96.5
1.3	Station Upgrades	122.9	56.1
1.4	Contingency	44.4	-
1.5	Total	490.0	177.9

#### MMTP Project Schedule





# MANITOBA – MINNESOTA TRANSMISSION PROJECT

## Q2 Update ending September 30, 2019

### MMTP Progress Photos

Foundation Installation



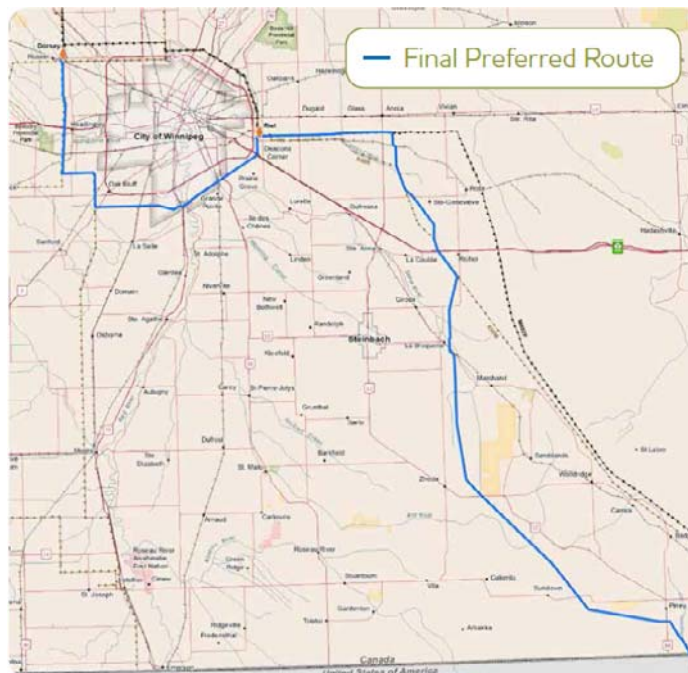
Foundation Installation



Tower Assembly



### MMTP Transmission Line Route



## **BIRTLE TRANSMISSION PROJECT**

### **Q2 Update ending September 30, 2019**

#### **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

#### **Birtle Project Update**

- Manitoba Hydro filed an Environmental Act Proposal for the project on January 30, 2018. Manitoba Sustainable Development is continuing with the Section 35 consultation process. The Environmental Approvals Branch (EAB) had indicated it was targeting to complete its Crown-Indigenous consultation process by the end of August 2019; however, this date has since been revised to end the of October 2019. Manitoba Hydro has requested approval from the EAB to proceed with civil works within the existing station yard at Birtle South Station in advance of receipt of the Environmental Act License.
- Construction start date for new Transmission Line B71T is currently planned for January 2020, pending receipt of the Environmental Act License. Preparation of the Request for Proposal (RFP) for construction of the line is expected to be posted for public tender in October 2019.
- Material procurement is continuing. In order to secure the project in-service date, Manitoba Hydro must move forward with long lead time items such as the material contracts prior to receiving Provincial regulatory approvals. Failure to do so would result in substantial project delays. Should Manitoba Hydro receive notification that the project will not receive its necessary regulatory approvals, materials would be re-used on future transmission projects in order to recover sunk costs.
- Property acquisition required for line B71T is nearing completion with easements secured for 95% of private landowners.
- Design for Birtle South Station is complete and materials required for start of construction have largely been received. A Request for Service (RFS) for all construction work at Birtle South Station was issued in September. Provided the EAB grants approval to proceed with the civil works within the existing station yard at Birtle South Station, construction is expected to start late October 2019, pending availability of system outages.



## BIRTLE TRANSMISSION PROJECT

### Q2 Update ending September 30, 2019

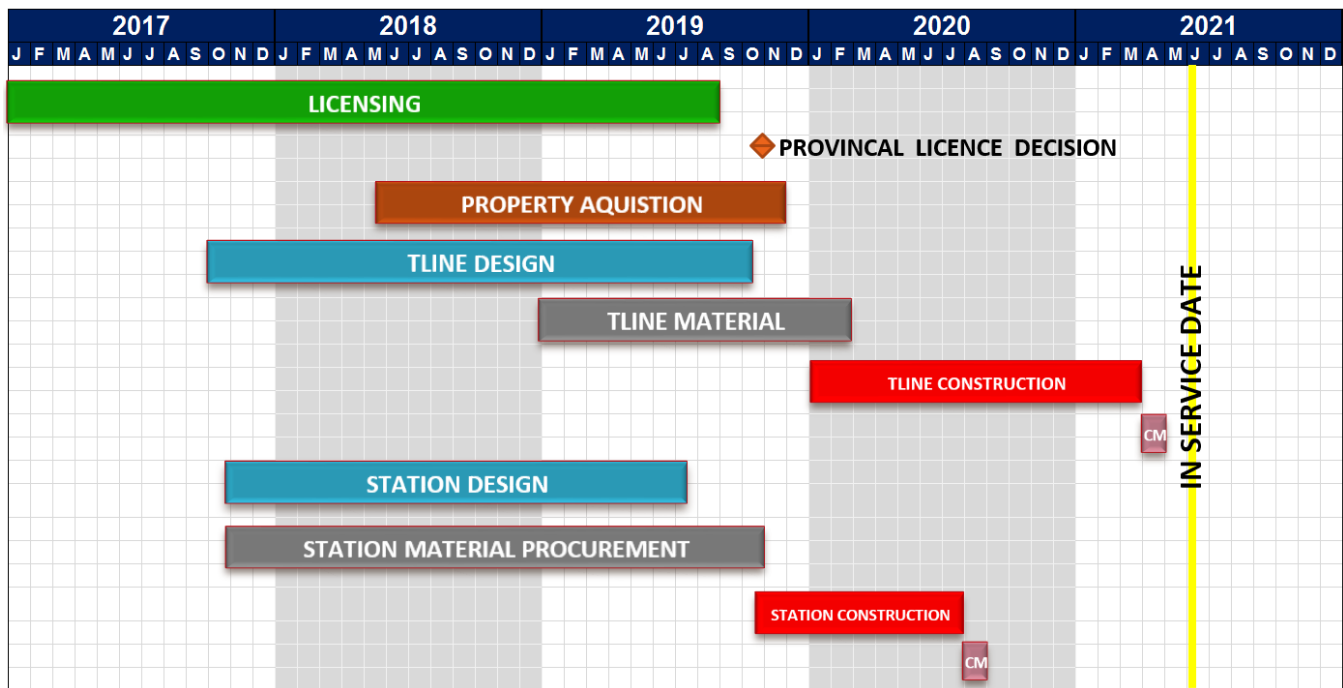
#### Birtle Budget

Birtle Budget Summary (in Millions \$)			
Item #	Item	Total Project Control Budget	Actual costs to September 30, 2019
1.1	Licensing & Environmental	4.64	2.57
1.2	Transmission line	57.2	4.14
1.3	Station Upgrades	7.43	3.39
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>10.1</b>

1. The current control budget includes contingency built into the project costs.

Note: there are no construction contracts above \$50 million currently in place.

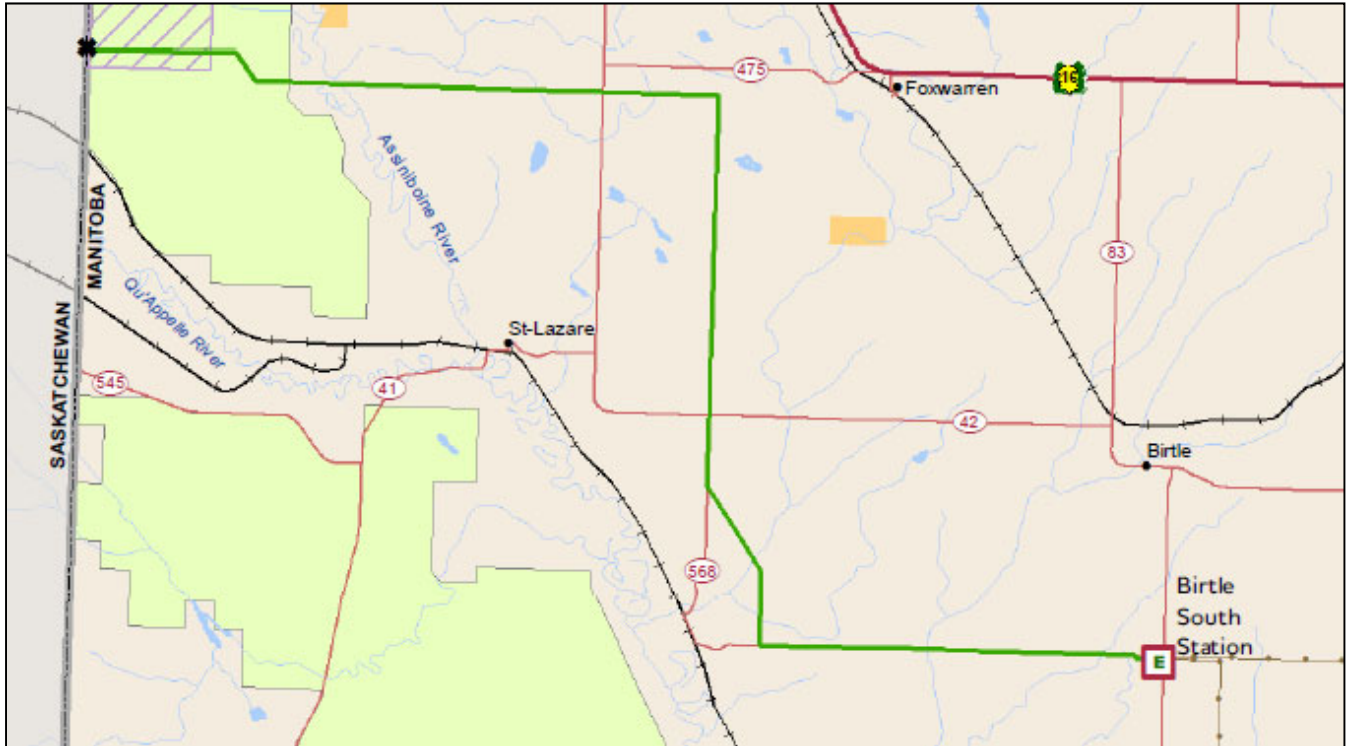
#### Birtle Project Schedule



# BIRTLE TRANSMISSION PROJECT

## Q2 Update ending September 30, 2019

### Birtle Final Preferred Route Map



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

## Keeyask Project Update

Q3 Update ending December 31, 2019

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## EXECUTIVE SUMMARY

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- Building on the success of the 2018 construction season, the 2019 construction season was successful for the Keeyask Project. The project is forecasting to meet the \$8.7B control budget and the first unit in-service is trending earlier to at least 10 months in advance of the August 2021 control schedule. Manitoba Hydro is committed to find ways to continue to maintain or lower costs as there is still a lot of work and risks remaining.
- Actual expenditures to the end of December 31, 2019 were \$6.73 billion.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project ("KIP").
- The General Civil Works ("GCC") 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 contractor 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.

### Generating Station

- Concrete placements in 2019 exceeded goals for the year. Approximately 55,000 m<sup>3</sup> was placed against a planned 49,000 m<sup>3</sup> of concrete. To date, a cumulative total of more than 328,000 m<sup>3</sup> has been placed on the Keeyask Project which is approximately 98% of the total volume of concrete required.
  - Intake concrete was completed in August 2019.
  - Tailrace concrete was completed in December 2019.
- The permanent exterior enclosure of the Powerhouse is nearing completion.
- The Central Dam and South Dam were completed in November 2019. Construction of all permanent earth structures is complete including the North Dyke, South Dyke, North Dam, Central Dam and South Dam.
- The Intake and Tailrace channels are being cleaned in preparation for water being transferred into the areas as part of the watering up process.
- Installation of the Intake Gates, Guides and Hoists has been completed on all seven units.

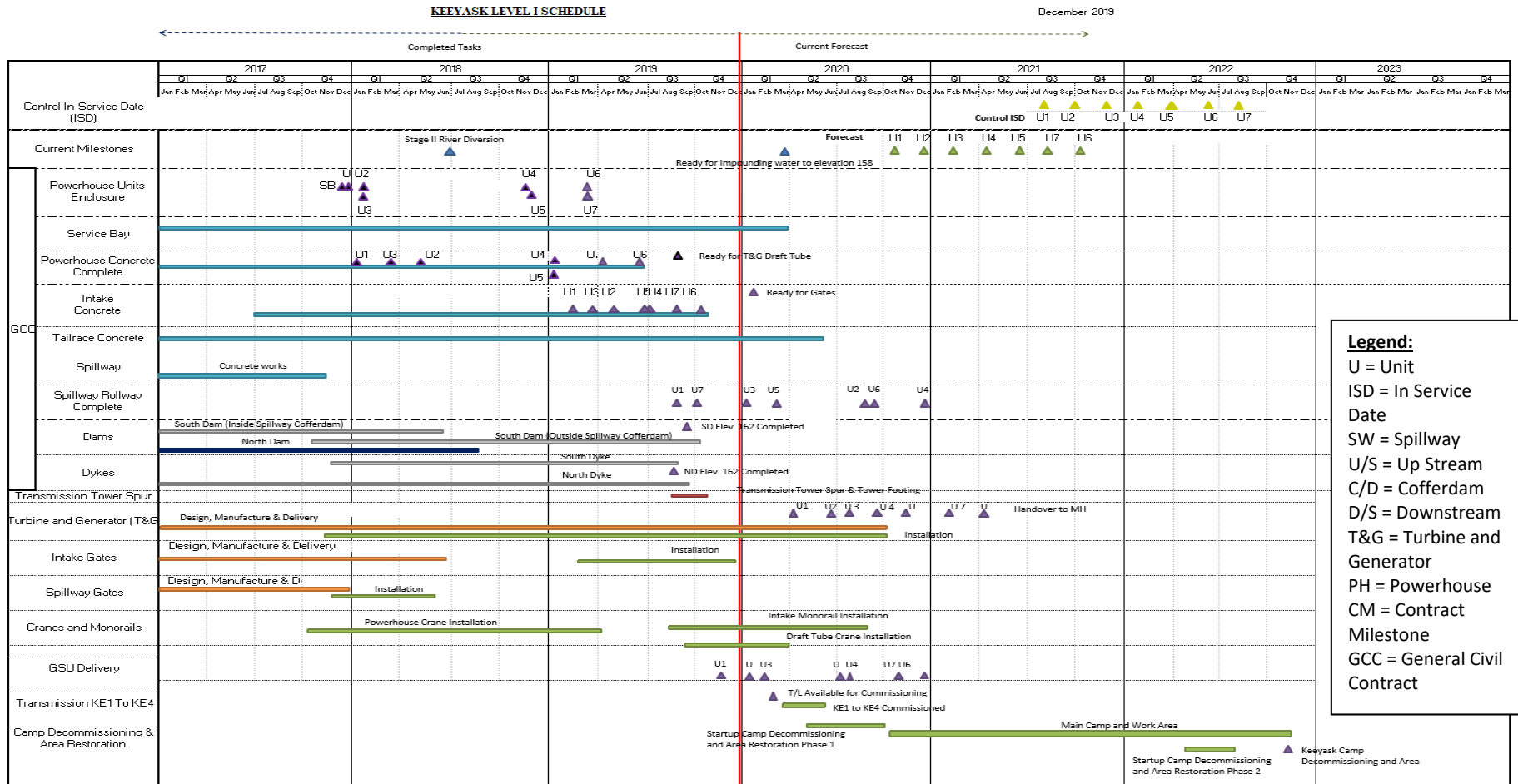


- The installation of the Balance of Plant systems, including embedded piping, equipment, cable tray, etc. continues.
- The first Generator Step Up Transformer arrived on site and is being installed on the tailrace deck adjacent to Unit 1.
- The Turbine & Generator (“T&G”) contractor is continuing to install the non-embedded parts in four units and remains on track to have Unit 1 ready to commission in 2020.
- Assembly of the four transmission tower spurs was completed.

### **Infrastructure**

- There are no infrastructure updates for the project over the previous quarter.

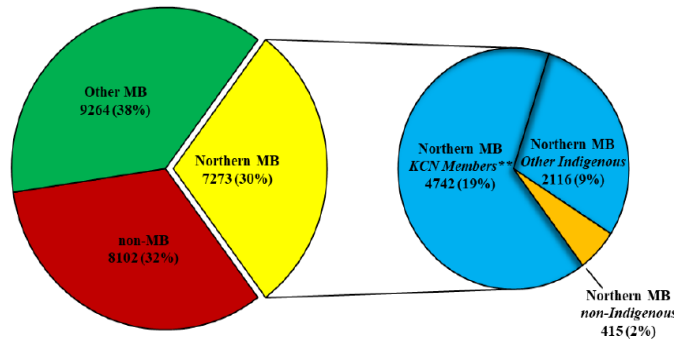
### Project Schedule Overview – as of December 31, 2019



Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is 10 months ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD).

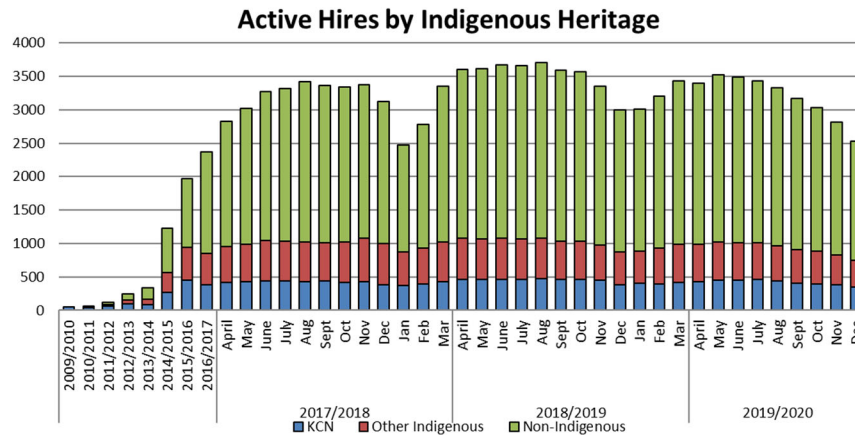
The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and significant contractors, and how these components and milestones relate to river management and impoundment.

**Total Project Hires - as of December 31, 2019**



- As of December 31, 2019, there have been a total of 24,639 hires on the Keeyask Project. Of these total hires, 67% (16,537) are Manitobans, 40% (9,907) have self-declared as being Indigenous persons and 19% (4,776) of the total hires are Keeyask Cree Nation (“KCN”) members.

**Active Hires – as of December 31, 2019**



- As of December 31, 2019 there were 2,527 active hires on the Keeyask Project. Of these active hires, 65% (1,649) are Manitobans, 29% (743) have self-declared as being Indigenous persons and 14% (352) are KCN members.

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## FINANCIAL SUMMARY

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- Actual expenditures to the end of December 31, 2019 were \$6.73 billion.

<b>Table A - Keeyask Budget Summary (in Billions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to December 31, 2019</b>
1.1	Generating Station	5.948	5.556
1.2	Generation Outlet Transmission (GOT)	0.202	0.174
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	1.000
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>6.731</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).

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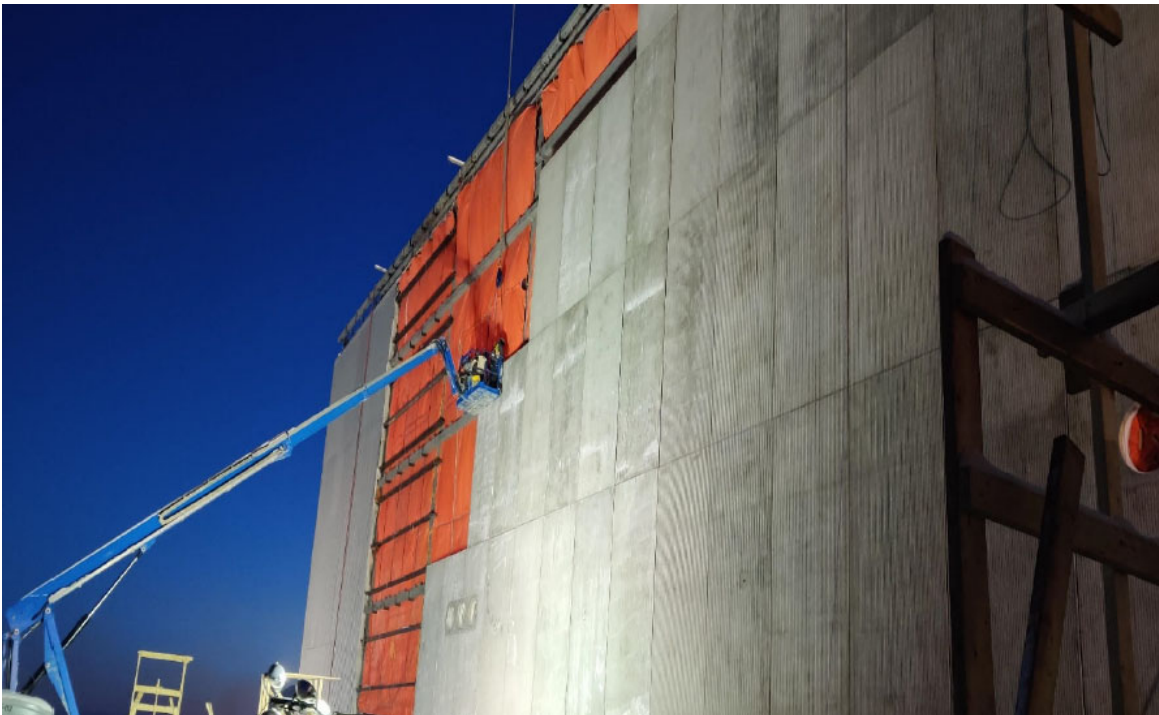
**RECENT PHOTOS**

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**Photo #1:** Aerial View of the Tailrace (December 2019)



**Photo #2 –** Installation of Permanent Exterior Wall of the Powerhouse (December 2019)





**Photo #3:** Intake – Gates, Guides and Hoists Complete (December 2019)

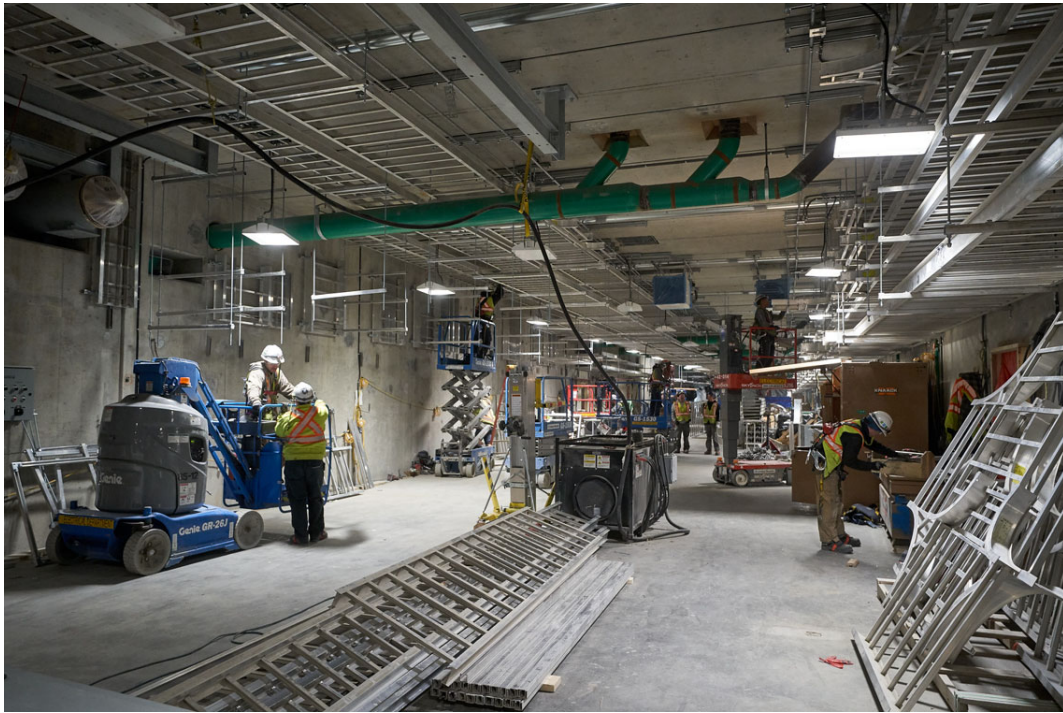


**Photo #4:** Interior of the Powerhouse (Unit 1 in the foreground) (December 2019)





**Photo #5:** Cable Tray Installation as Part of the Balance of Plant Scope (December 2019)



**Photo #6:** Installation of the Transmission Tower Spurs (December 2019)



## MANITOBA – MINNESOTA TRANSMISSION PROJECT

### Q3 Update ending December 31, 2019

#### **MMTP Project Description**

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

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

The United States ("U.S.") portion of the 500 kV line will initiate at the border and terminate at Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line ("GNTL"), and is being constructed by Minnesota Power.

#### **MMTP Project Update**

- The project has received Provincial and Federal regulatory approvals.
- Manitoba Hydro continues regular filings with both provincial and federal regulators pursuant to the provincial *Environment Act* licence and federal Certificate conditions.
- Legal challenges have been brought forward against the Project's regulatory approvals at the provincial and federal levels. Four federal judicial reviews are currently under Case Management (part of the litigation process). Provincially, there has been one judicial review filed and five provincial appeals. Final submissions from the five appellants are due January 20, 2020. A decision regarding the judicial review is pending.
- All private land along the transmission line route between Vivian, Manitoba and the U.S. Border has been secured.
- In Section 1, Muskego JV has completed all of the required clearing, 131 foundations have been installed, 154 towers have been assembled and 41 towers erected.
- In Section 2, Valard Construction has completed 50% of the clearing, 127 foundations have been installed, 251 towers have been assembled and 44 towers erected.
- Stringing in both Sections will begin in early January 2020.
- At Glenboro station, distribution lines and 230kV lines have been re-located to allow for site expansion and foundation installation. Electrical work has also begun, and the phase shifting transformers will be shipped to site in January 2020.
- At Riel station, foundation installation is complete, while electrical work is ongoing. Two of the three auto transformers were delivered to site in December and the third will arrive in early January 2020.
- At Dorsey station, the site expansion and foundations are complete, while electrical work is ongoing.
- Some funds within the control budget have been re-allocated back to contingency due to lower than anticipated costs within the station and transmission line work.

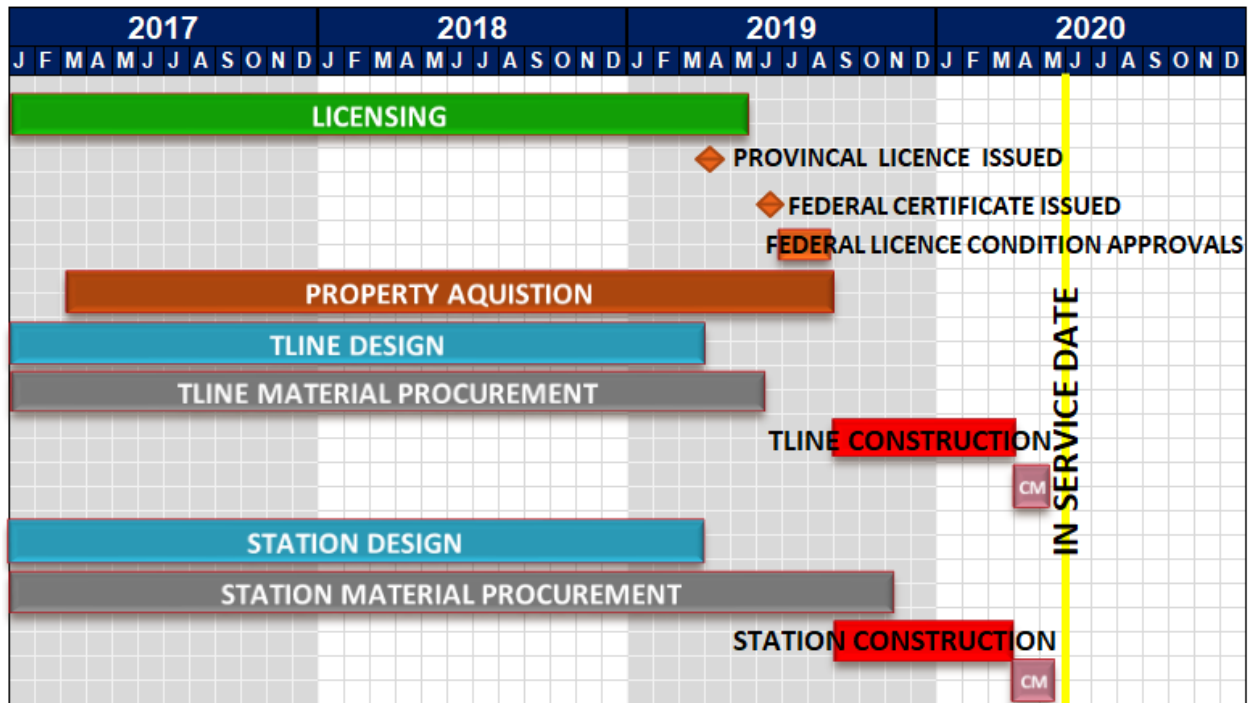
## MANITOBA – MINNESOTA TRANSMISSION PROJECT

### Q3 Update ending December 31, 2019

#### MMTP Budget

MMTP Budget Summary (in Millions \$)			
Item #	Item	Total Project Control Budget	Actual costs to December 31, 2019
1.1	Licensing & Environmental	38.7	27.4
1.2	500 kV Transmission Line	280.3	138.3
1.3	Station Upgrades	118.9	86.7
1.4	Contingency	52.1	-
1.5	Total	490.3	252.4

#### MMTP Project Schedule





# MANITOBA – MINNESOTA TRANSMISSION PROJECT

## Q3 Update ending December 31, 2019

### MMTP Progress Photos

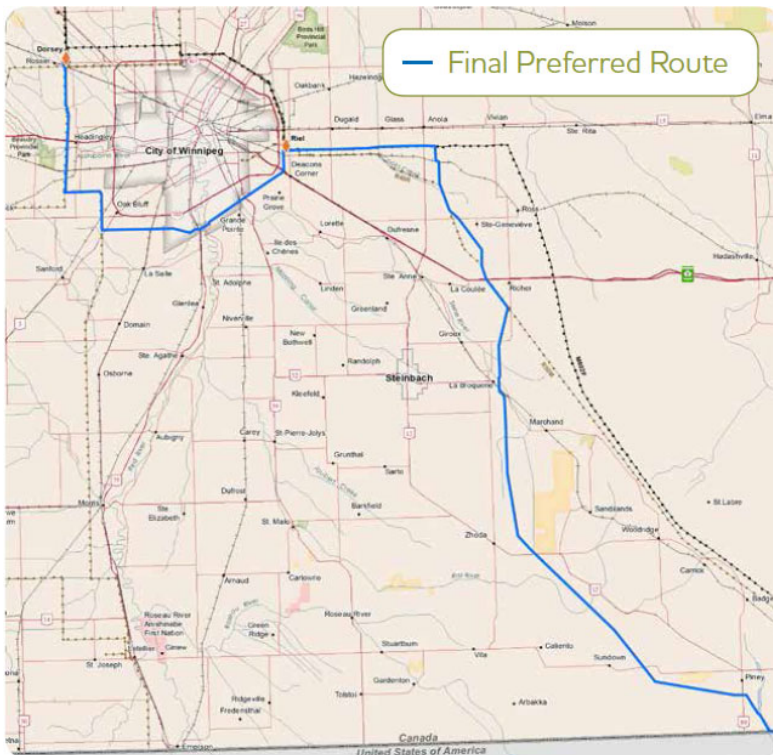
Tower Erection:



Hanging Insulators:



### MMTP Transmission Line Route





## **BIRTLE TRANSMISSION PROJECT**

### **Q3 Update ending December 31, 2019**

#### **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

#### **Birtle Project Update**

- Manitoba Hydro filed an Environmental Act Proposal for the project on January 30, 2018. Manitoba Sustainable Development consultation process under Section 35 of the Canadian Constitution has been longer than anticipated. The Environmental Approvals Branch (“EAB”) had indicated it was targeting to complete its Crown-Indigenous consultation process by the end of August 2019; however, this date was revised to October 2019, then further revised to January 2020. As of the writing of this report, the consultation has been completed and the EAB has issued the Environmental Act Licence for the Birtle Transmission Project (on January 14, 2020).
- A Request for Proposal (RFP) for the new Transmission Line B71T was posted for public tender in October 2019. Due to the Environmental Act Licence delay, the decision was made in November 2019 to cancel the tender with the intent to re-post the tender after the Licence is received. A further update on the RFP will be provided in the next quarterly report. The construction is scheduled to commence in summer 2020.
- In order to secure the project in-service date, Manitoba Hydro continued to move forward with long lead time procurement items such as the material contracts prior to receiving Provincial regulatory approvals.
- Property acquisition required for line B71T is nearing completion with easements secured from all private landowners.
- A Request for Service for all construction work at Birtle South Station was posted for public tender and was awarded in October 2019. Construction of civil works was initiated in November 2019 and is continuing. All construction, including electrical work, is expected to be completed by fall 2020.

## BIRTLE TRANSMISSION PROJECT

### Q3 Update ending December 31, 2019

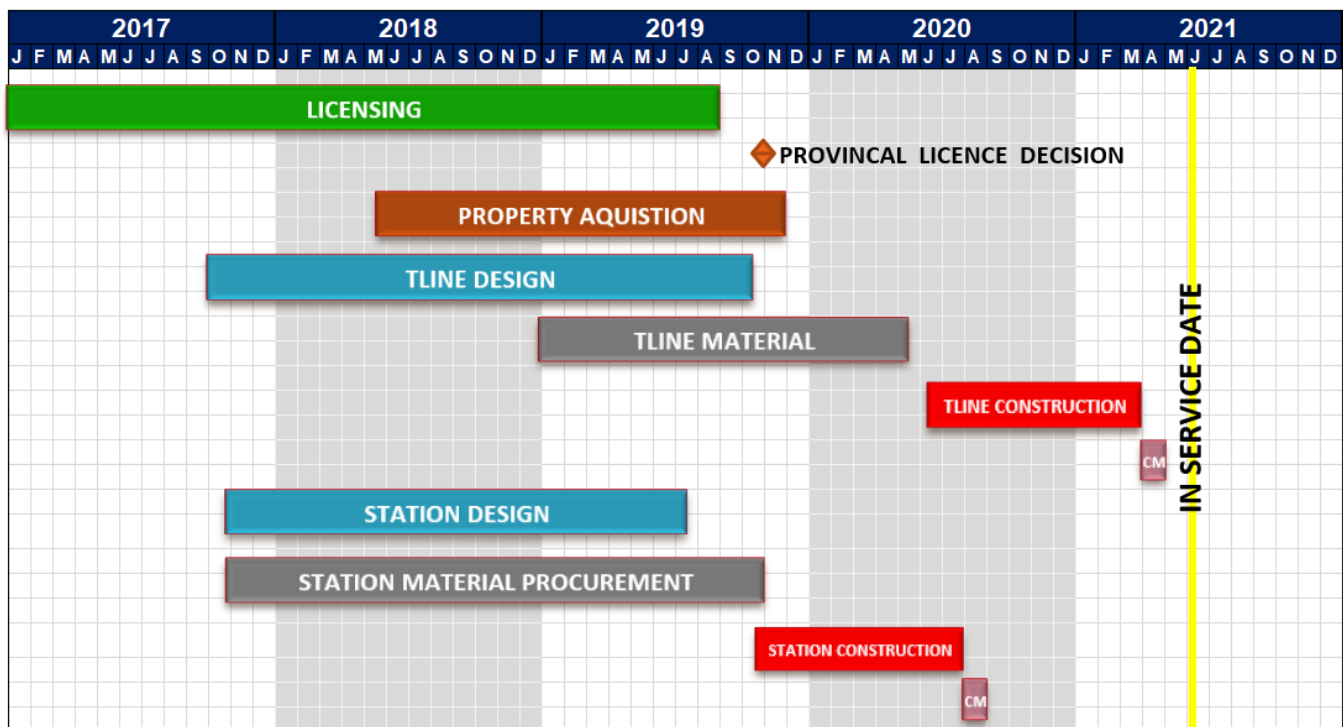
#### Birtle Budget

<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to December 31, 2019</b>
1.1	Licensing & Environmental	4.7	2.7
1.2	Transmission line	57.2	5.2
1.3	Station Upgrades	7.4	4.4
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>12.3</b>

1. The current control budget includes contingency built into the project costs.

Note: there are no construction contracts above \$50 million currently in place.

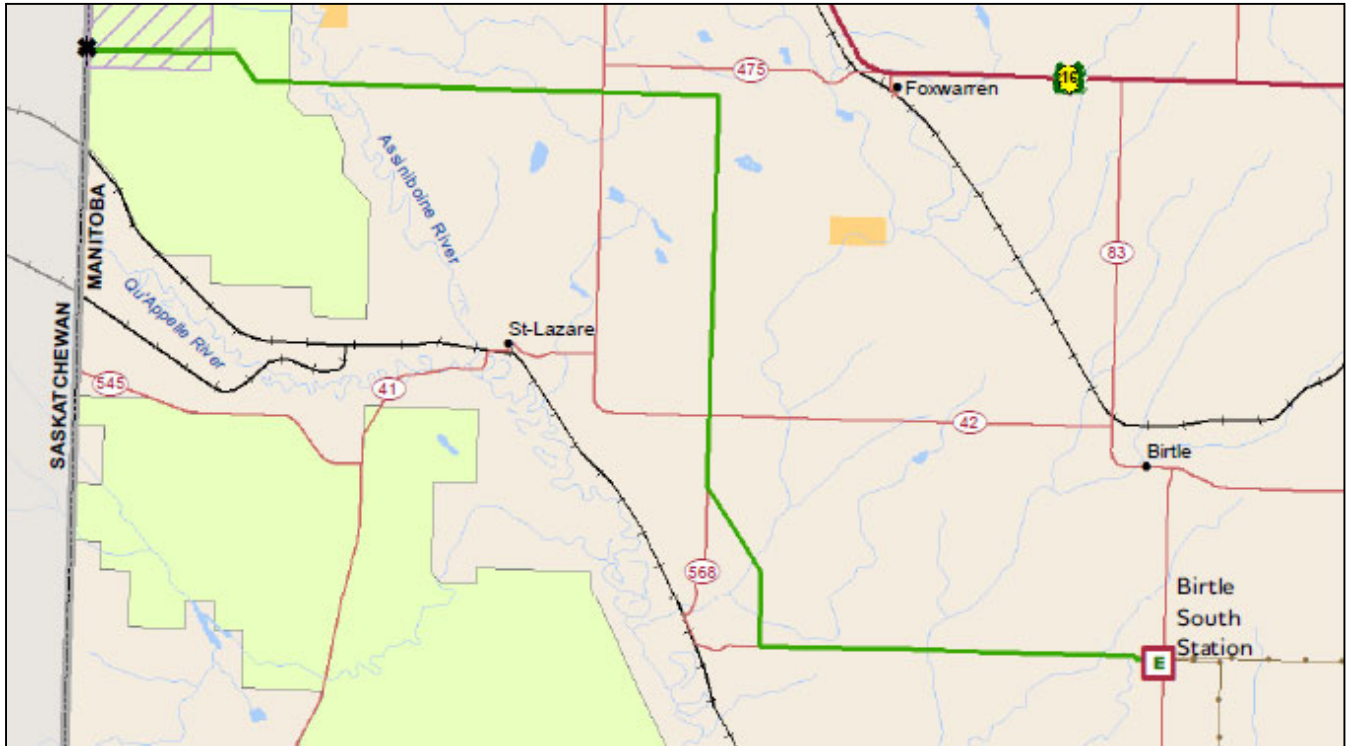
#### Birtle Project Schedule



# BIRTLE TRANSMISSION PROJECT

## Q3 Update ending December 31, 2019

### Birtle Final Preferred Route Map



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

## Keeyask Project Update

Q2 Update ending September 30, 2020

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## EXECUTIVE SUMMARY

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- The Keeyask Project is currently forecasting to meet the \$8.7B control budget and a first unit in-service date earlier than the control schedule of August 2021.
- The project team has worked diligently to bring the units on-line as early as possible and had been targeting an October 2020 ISD. Entering 2020, the past successful construction seasons provided an opportunity to advance the first unit in-service earlier than October 2020.
- Unfortunately, significant challenges were experienced in the first half of 2020 including the COVID-19 pandemic and a blockade of the project site. The impact of these challenges caused commissioning of the first unit to be delayed until August 31, 2020. The opportunity for further schedule advancement is no longer possible.
- During the Commissioning of a generator unit, testing of the first-unit discovered vibration issues and the mechanical run had to be placed on hold. Manitoba Hydro is working with the turbine and generator contractor to understand and remedy this issue.
- Despite these significant challenges, it is currently expected that the first unit will be brought into service in the fourth quarter of fiscal 2020/21. Manitoba Hydro is committed to find ways to continue to maintain or lower costs as there is still a lot of work and risks remaining.
- Manitoba Hydro continues to implement various pandemic measures and initiatives, and meets weekly with KCN and Public Health officials, to adapt measures based on the changing risk of COVID 19. As of September 30, 2020 there have been no positive cases of COVID-19 at the Keeyask site
- Actual expenditures to the end of September 30, 2020 were \$7.25 billion.



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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project ("KIP").
- The General Civil Works ("GCC") 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 contractor 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.

### Generating Station

#### Q4 2019/20 Milestones: January 1, 2020 – March 31, 2020

- Planned earthwork activities were completed in the Intake and Tailrace Channels to prepare for water-up.
- Water-up of the Intake and Tailrace began in late February 2020.
- Impoundment, which raises the water level the final 2.5m to full supply level, was delayed until late August after the bird nesting window closed in response to concerns raised by the Keeyask Cree Nations ("KCN"s) and the inability to complete joint monitoring with the KCNs due to COVID-19. This change to the impoundment date will not impact the in-service date for the first unit.
- In response to the COVID-19 pandemic, the onsite workforce was reduced by half in mid-March to 700 workers and remained at restricted levels to the end of May. Worker rotations were also suspended during this time to prevent the virus from being introduced to the project site. A number of mitigation measures were implemented at the Keeyask site including restricted access, enhanced cleaning protocols, social distancing, restricted contact with transport drivers and external communities, and closure of various facilities on site to support social distancing.

**Q1 2020/21 Milestones: April 1, 2020 – June 30, 2020**

- Water-up activities were completed on April 12.
- All major concrete placements in the Powerhouse were completed in late April. Minor concrete work continues.
- The assembly of Unit 1 was completed and turned over to Manitoba Hydro on April 30<sup>th</sup>. Balance of Plant work remains to be completed prior to starting the commissioning of Unit 1.
- On May 15, members from the KCN communities erected a blockade on PR280 in response to Manitoba Hydro's plans to resume worker rotations. On May 22, the construction site was placed into a "care and maintenance" mode with less than 100 workers remaining on site effectively stopping construction progress. The blockade was removed on May 24 and it took approximately 1 month for the site to ramp back up to 800 workers, the planned peak for the remainder of construction.

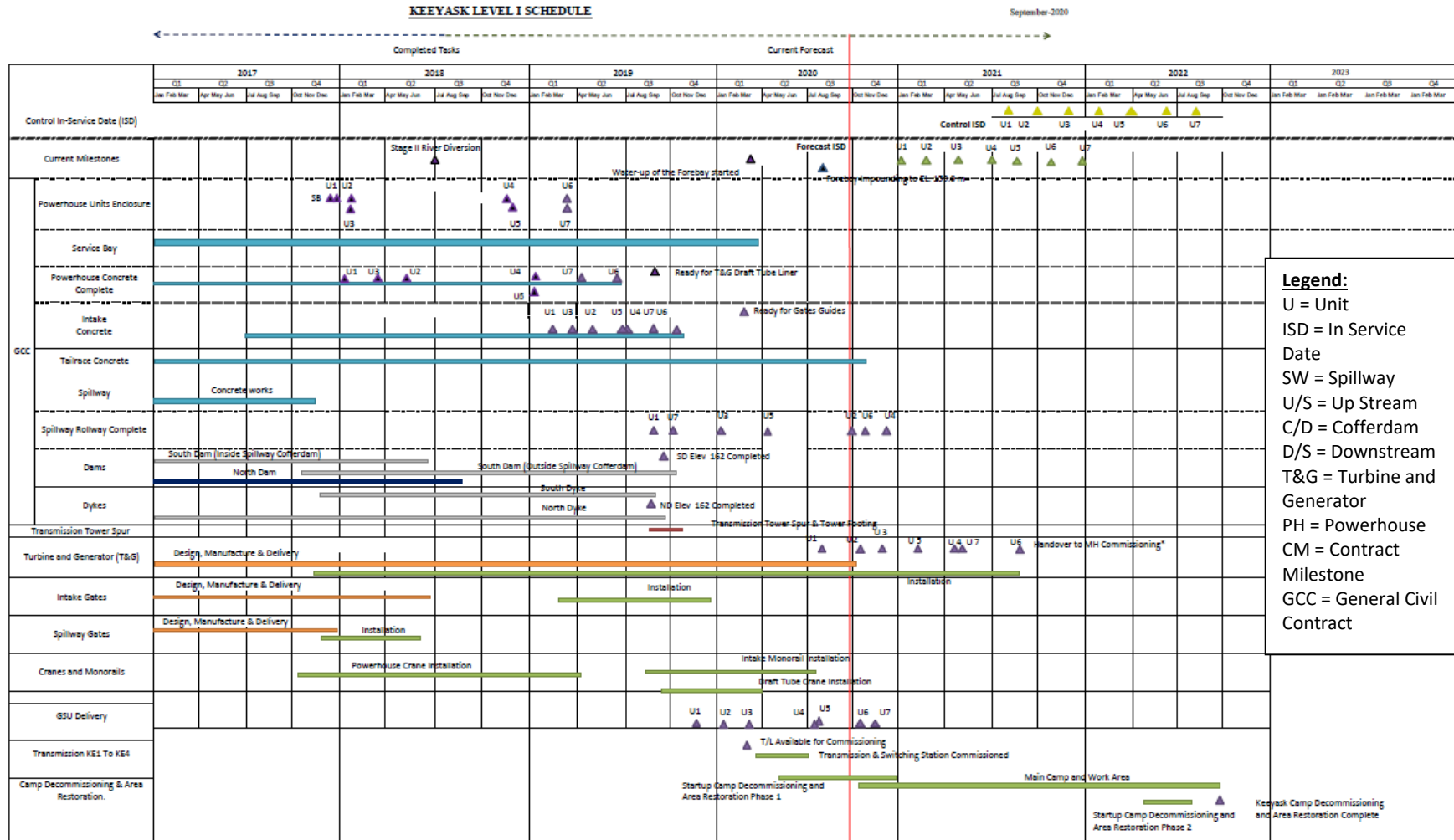
**Q2 2020/21: July 1, 2020 – September 30, 2020**

- Work progressed on the installation of the turbine and generator components and supporting Balance of Plant systems.
- Impoundment started at the end of the month and was completed on September 5.
- Unit 1 commissioning began on August 31 with the turbine being turned by the water pressure for the first time. While generally commissioning activities take about 2 months, the first unit often requires additional time as there are numerous unknown issues that can only be discovered during the testing. During the mechanical run of the first unit, vibration issues were discovered during the testing and the mechanical run had to be placed on hold. Manitoba Hydro is working with the turbine and generator contractor to understand and remedy this issue.

**Infrastructure**

- There are no infrastructure updates for the project over the previous 3 quarters.

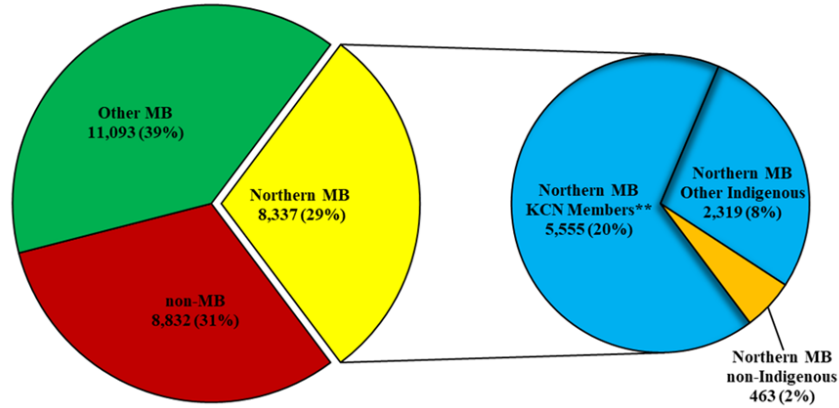
### Project Schedule Overview – as of September 30, 2020



Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD). The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and major contractors, and how these components and milestones relate to river management and impoundment.

**Total Project Hires - as of September 30, 2020**

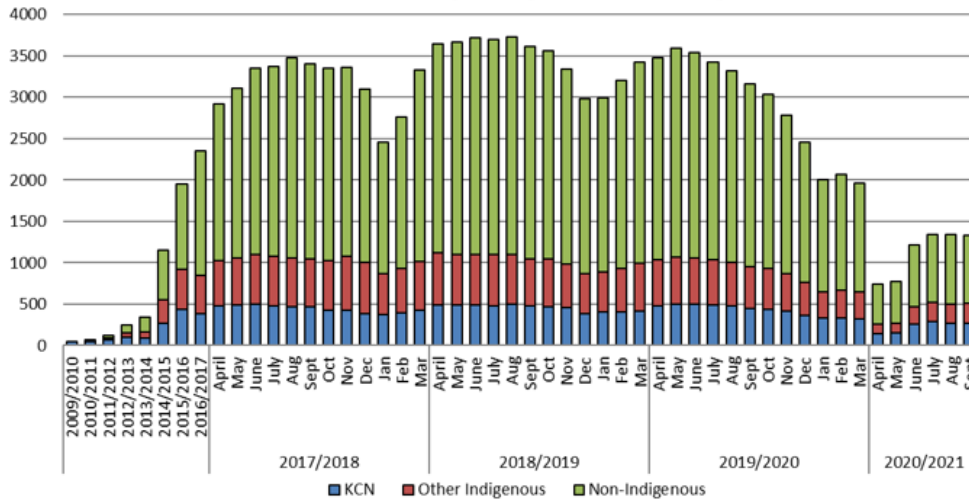
**Keeyask Project  
Breakdown of Total Hires\*  
September 2020**



- As of September 30, 2020, there have been a total of 28,262 hires on the Keeyask Project. Of these total hires, 69% (19,430) are Manitobans, 40% (11,314) have self-declared as being Indigenous persons and 20% (5,587) of the total hires are Keeyask Cree Nation (“KCN”) members.

**Active Hires – as of September 30, 2020**

**Active Hires by Indigenous Heritage**



- As of September 30, 2020, there were 1,335 active hires on the Keeyask Project. Of these active hires, 83% (1,110) are Manitobans, 38% (507) have self-declared as being Indigenous persons and 20% (273) are KCN members.

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## FINANCIAL SUMMARY

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- Actual expenditures to the end of September 30, 2020 were \$7.25 billion.

<b>Table A - Keeyask Budget Summary (in Billions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to September 30, 2020</b>
1.1	Generating Station	5.948	5.865
1.2	Generation Outlet Transmission (GOT)	0.202	0.183
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	1.204
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>7.252</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).



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## RECENT PHOTOS

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**Photo #1:** Water up of the Tailrace Channel – February 2020



**Photo #2:** Unit 1 – April 2020





**Photo #3:** Inside the Service Bay – T&G Assembly – April 2020

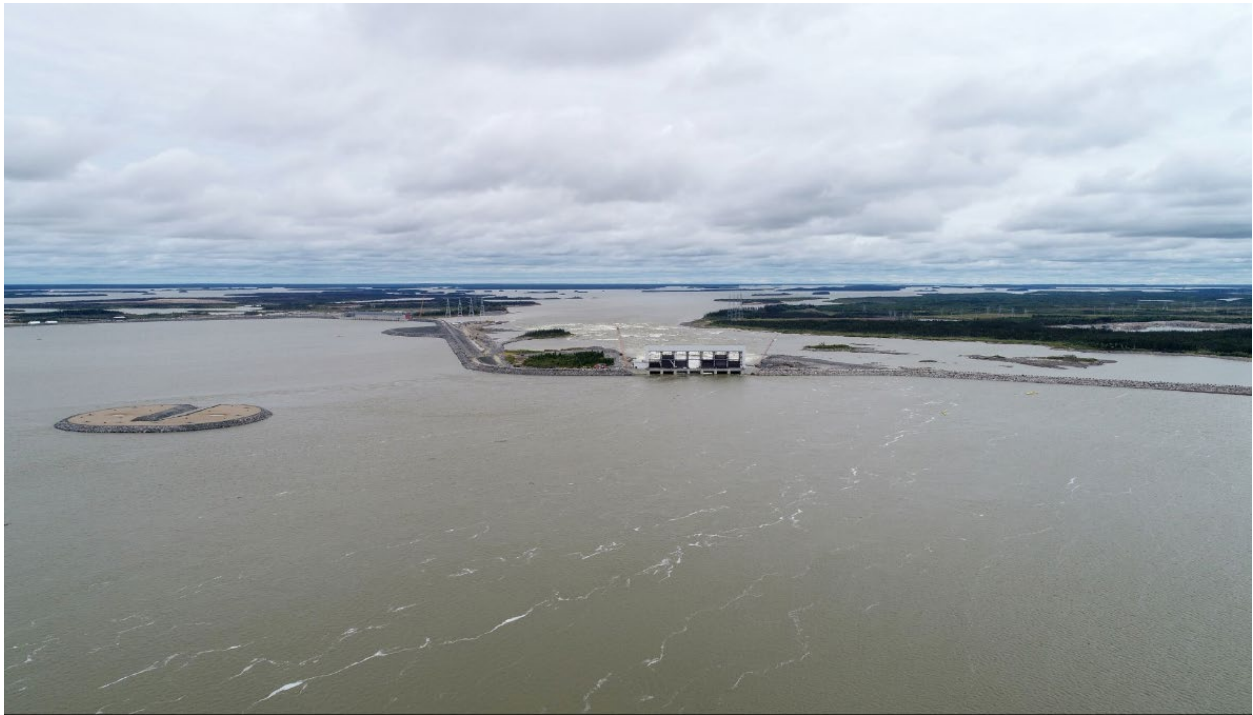


**Photo #4 –** Powerhouse Complex (upstream) after Water-Up - July 2020





**Photo #5:** Keeyask Reservoir - Post Impoundment - September 2020



**Photo #6:** Spillway – September 2020



**Photo #7:** Water Passing Through Unit 1 for the First Time – September 2020



## **MMTP Project Description**

Manitoba Hydro's capital expenditure forecast includes the construction of a new 500kV Transmission Line between Winnipeg and Duluth, Minnesota known as the Manitoba-Minnesota Transmission Project ("MMTP"). The MMTP transmission line will originate at the Dorsey Converter station located near Rosser, Manitoba, northwest of Winnipeg and extend 213 km's south, around Winnipeg to the Manitoba-Minnesota border, near Piney, Manitoba. The MMTP also includes associated upgrades at Dorsey, Riel and Glenboro stations.

The United States ("US") portion of the 500 kV line will initiate at the border and terminate at Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line ("GNTL") and is being constructed by Minnesota Power.

## **MMTP Project Update**

- Manitoba Hydro continues regular filings with both provincial and federal regulators pursuant to the provincial *Environment Act* license and federal Certificate conditions.
- In April 2020, Manitoba Hydro revised the commissioning plan due to COVID-19 and delayed the commissioning of Riel station and portions of Dorsey station to the fall of 2020. The budget is still forecasted to be within the control budget of \$490M. This revised plan was approved in May by the Canada Energy Regulator (CER) and all applicable pre-operations certificate and license conditions were fulfilled by Manitoba Hydro prior to the June 1, 2020 in-service date.
- Legal challenges have been brought forward against the Project's regulatory approvals at the provincial and federal levels. Four federal judicial reviews are currently under Case Management at the Federal level. No hearing date has been scheduled however, it will likely be scheduled for late spring or fall 2021. In April 2020 an additional Judicial Review was filed in the Federal Court. This application requests that it be joined to the four cases already before the Federal Court and if it is successful, a hearing will also likely be held in fall 2021.
- Provincially, there has been one judicial review filed and five provincial appeals. The judicial review decision was delivered May 20<sup>th</sup> dismissing the application., The decision has been appealed and a hearing will likely be set sometime in 2021. The provincial appeals were dismissed by the Provincial Cabinet in June 2020.
- In Section 1 of the transmission line (Dorsey station to Vivian corner), Muskego JV completed all clearing, foundation installation, tower erection and stringing by April 16<sup>th</sup>. A portion of the stringing in Section 1 (11 km) was removed from Muskego JV's scope and completed by Valard Construction in order to maintain schedule.
- In Section 2 of the transmission line (Vivian corner to the U.S. Border), Valard construction completed all clearing, foundations, tower erection and stringing including an additional 11km in Section 1 by mid-April 2020.
- All final inspections, telecommunications work and commissioning of the transmission line was completed on schedule and the line was placed into service June 1, 2020.

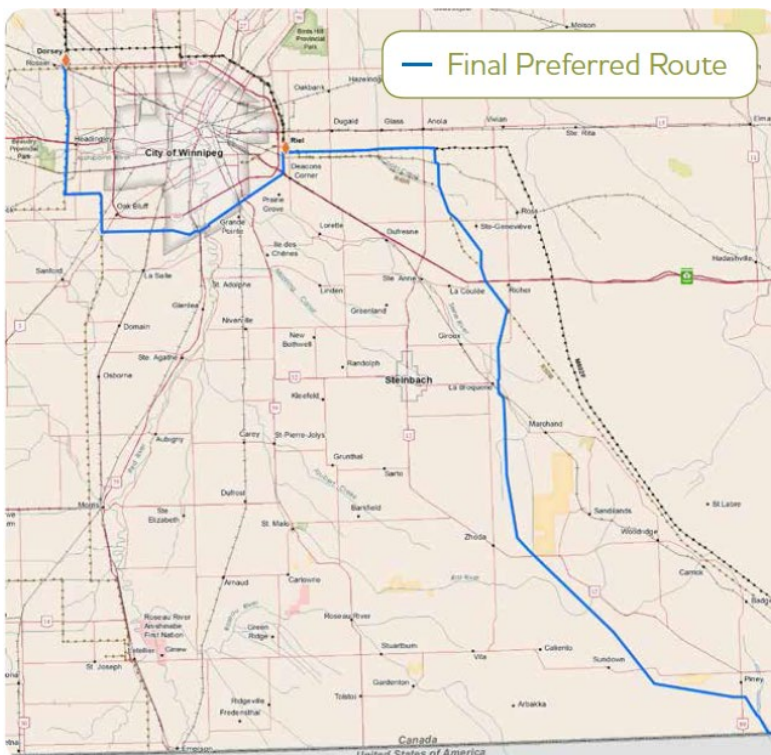


- At the Glenboro station, all construction and commissioning was completed on schedule and the station was placed into service June 1, 2020.
- At the Riel station, all major construction was completed on schedule, but a portion of the commissioning was postponed until the fall of 2020 due to COVID-19.
- At the Dorsey station, all construction to terminate the transmission line and place it into service was completed on schedule, but a portion of the commissioning was postponed to the fall of 2020 due to COVID-19.
- Final commissioning work will be complete in the fall and both Dorsey and Riel stations will be placed into service by November 1<sup>st</sup>, 2020.

**MMTP Budget**

<b>MMTP Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to September 30, 2020</b>
1.1	Licensing & Environmental	32.4	29.7
1.2	500 kV Transmission Line	309.4	307.6
1.3	Station Upgrades	125.3	118.1
1.4	Contingency	23.2	-
1.5	Total	490.3	455.4

**MMTP Transmission Line Route**



## **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

## **Birtle Project Update**

- Manitoba Hydro received an Environment Act license for the Birtle Transmission Project from the Environmental Approvals Branch (EAB) on January 14, 2020. Manitoba Hydro had received approval from the EAB in fall 2019 to commence civil works at the Birtle South Station.
- The Birtle Transmission Project was approved on August 21, 2019 to receive federal funds through the “Investing in Canada Infrastructure Program”. Costs necessary for the successful implementation of the project are eligible to receive a 50% cost sharing contribution from the federal government, up to a maximum of \$18.8M.
- A Request for Proposals for construction of new Transmission Line B71T was posted for public tender in March 2020 and the construction contract was awarded to The Birdtail Sioux – Forbes Bros. Joint Venture in July 2020. The contract was executed on July 6, 2020 and work started shortly after. Construction is progressing well. All necessary permits for access to right-of-ways have been received and all property acquisition is complete. Transmission line construction is expected to be completed in the Spring of 2021.
- All construction and commissioning activities at Birtle South Station have been completed for protection and teleprotection requirements. Final station commissioning will occur when construction of the new Transmission Line B71T is complete.

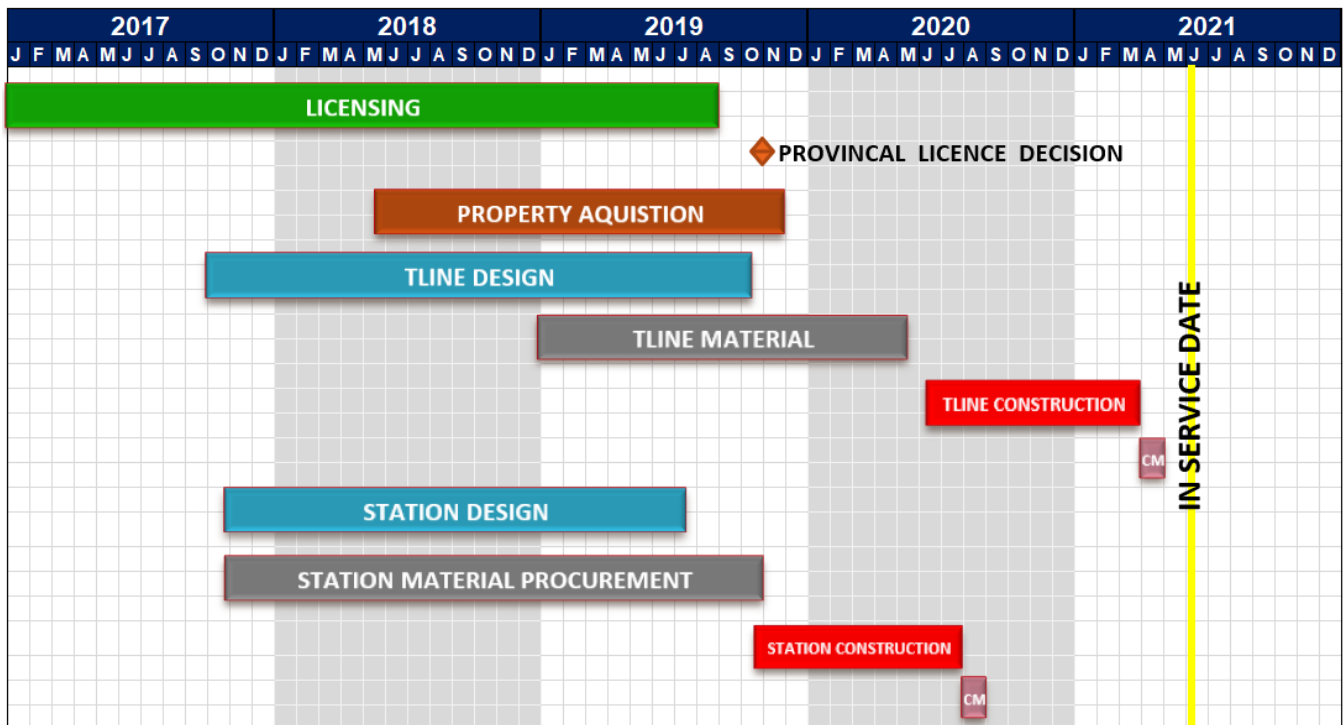
**Birtle Budget**

<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to September 30, 2020</b>
1.1	Licensing & Environmental	4.7	3.0
1.2	Transmission line	57.2	13.5
1.3	Station Upgrades	7.4	7.9
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>24.4</b>

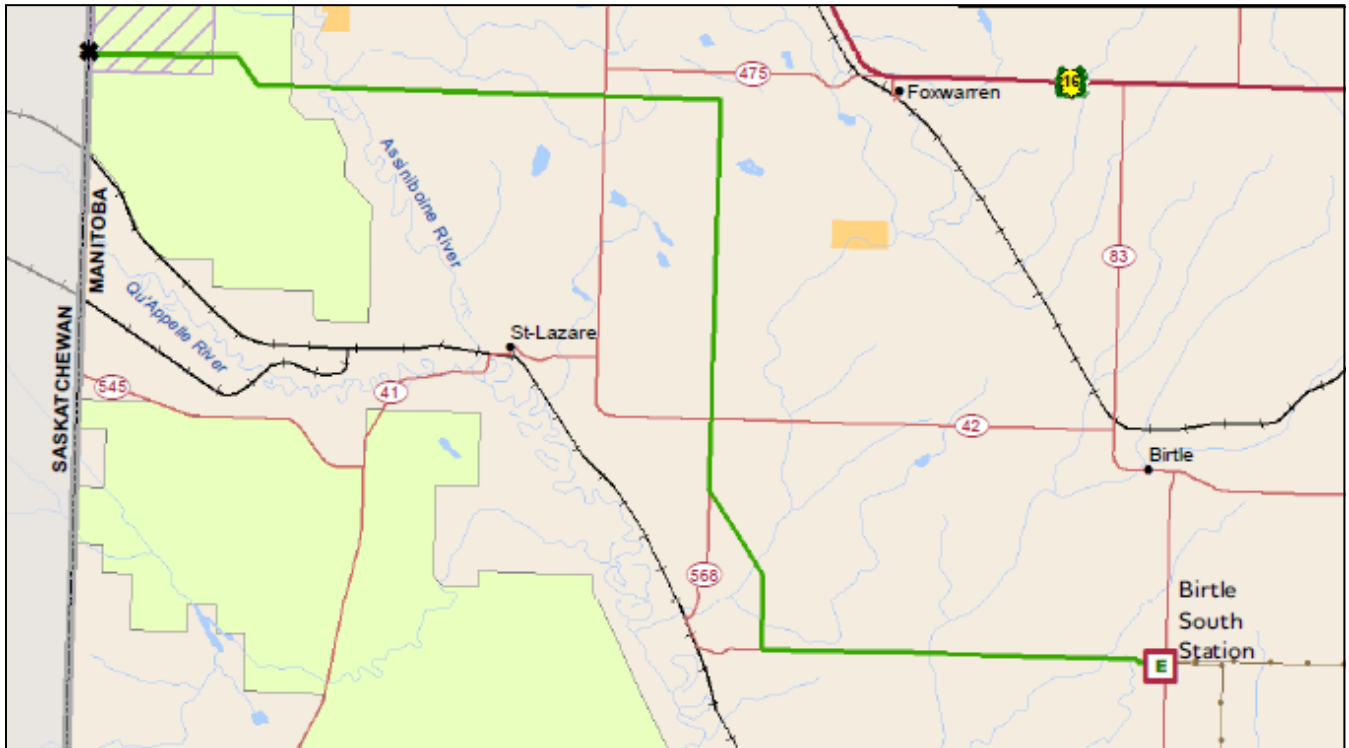
1. The current control budget includes contingency built into the project costs.

Note: there are no construction contracts above \$50 million currently in place.

**Birtle Project Schedule**



### Birtle Final Preferred Route Map



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

## Keeyask Project Update

Q3 Update ending December 31, 2020

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## EXECUTIVE SUMMARY

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- As of December 31, 2020, the Keeyask Project is currently forecasting to meet the \$8.7B control budget and a first unit in-service date in the first three calendar months of 2021, earlier than the control schedule of August 2021.
- The safety and well-being of the Keeyask workforce and local communities remains the top priority.
- The Keeyask Project has developed a comprehensive Pandemic Plan, in response to COVID-19, which minimizes the risk of introduction of the virus at site, prevents its spread within the site, and prevents transmission between the site and local communities. Manitoba Hydro has been working closely with senior public health officials who are providing direction and guidance on the measures undertaken at the Keeyask site as well as the KCN communities.
- Manitoba Hydro received confirmation of the first case of COVID-19 on October 25, 2020. The response to date has been to work together with Public Health and follow the fundamentals of contact trace, isolate, and test in an iterative process. Once a close contact is known, they are isolated within hours, tested, and test results are available within a day. The consequence of this process is that many individuals are isolated in a short-term period.
- The entire workforce was tested and a number of other COVID-19 cases were detected within the workforce causing the Province to declare an outbreak at the Keeyask site. The Project reinforced existing measures and adopted new measures recommended by Public Health to minimize further introduction and transmission of the virus.
- In total there were 39 cases of COVID-19 at Keeyask with 142 close contacts identified and isolated. There have been no cases of COVID-19 identified at Keeyask since November 14, 2020. On November 30, the Province of Manitoba declared the COVID-19 outbreak at Keeyask over.
- The project schedule and budget has been impacted by COVID. These impacts are substantial, but are included in the budget and schedule forecasts provided in this report.
- During the Commissioning of a generator unit, testing discovered vibration issues and the mechanical run had to be placed on hold. A temporary solution was implemented allowing commissioning to continue. Manitoba Hydro is working with the turbine and generator contractor to implement a permanent fix that addresses the vibration issue.
- Despite these significant challenges, it is currently expected that the first unit will be brought into service in the first three months of 2021. Manitoba Hydro is committed to find ways to continue to maintain or lower costs as there is still a lot of work and risks remaining.
- Actual expenditures to the end of December 31, 2020 were \$7.4 billion.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (“KIP”).
- The General Civil Works (“GCC”) 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 contractor 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.

### Generating Station

- Investigation of Unit 1 vibration issue which had caused a pause to Unit 1 commissioning continued. Temporary modifications were made to the air admission system for Unit 1 which allowed commissioning activities to resume. Work on implementing a permanent fix to address the vibration issue continues.
- Turbine and Generator installation work continued on Unit 2 – 7.
- Concrete placements continued on the two remaining Spillway rollways.
- Finishing work continued across the Powerhouse with work on stairways, roofing and cladding installation for the south transition stair tower, and internal safety systems such as fire alarms.

- Balance of Plant installation continued with the cabling & piping operation in the Powerhouse. Work also continued with the installation of exposed piping for various mechanical systems, cable trays, light fixtures, Motor Control Centers and Isolated Phase Bus.
- The regularly scheduled annual holiday shutdown commenced on December 19. Workers will begin returning to site in January 2021 as the ramp up proceeds over the month.

### **Infrastructure**

- There are no infrastructure updates for the quarter.

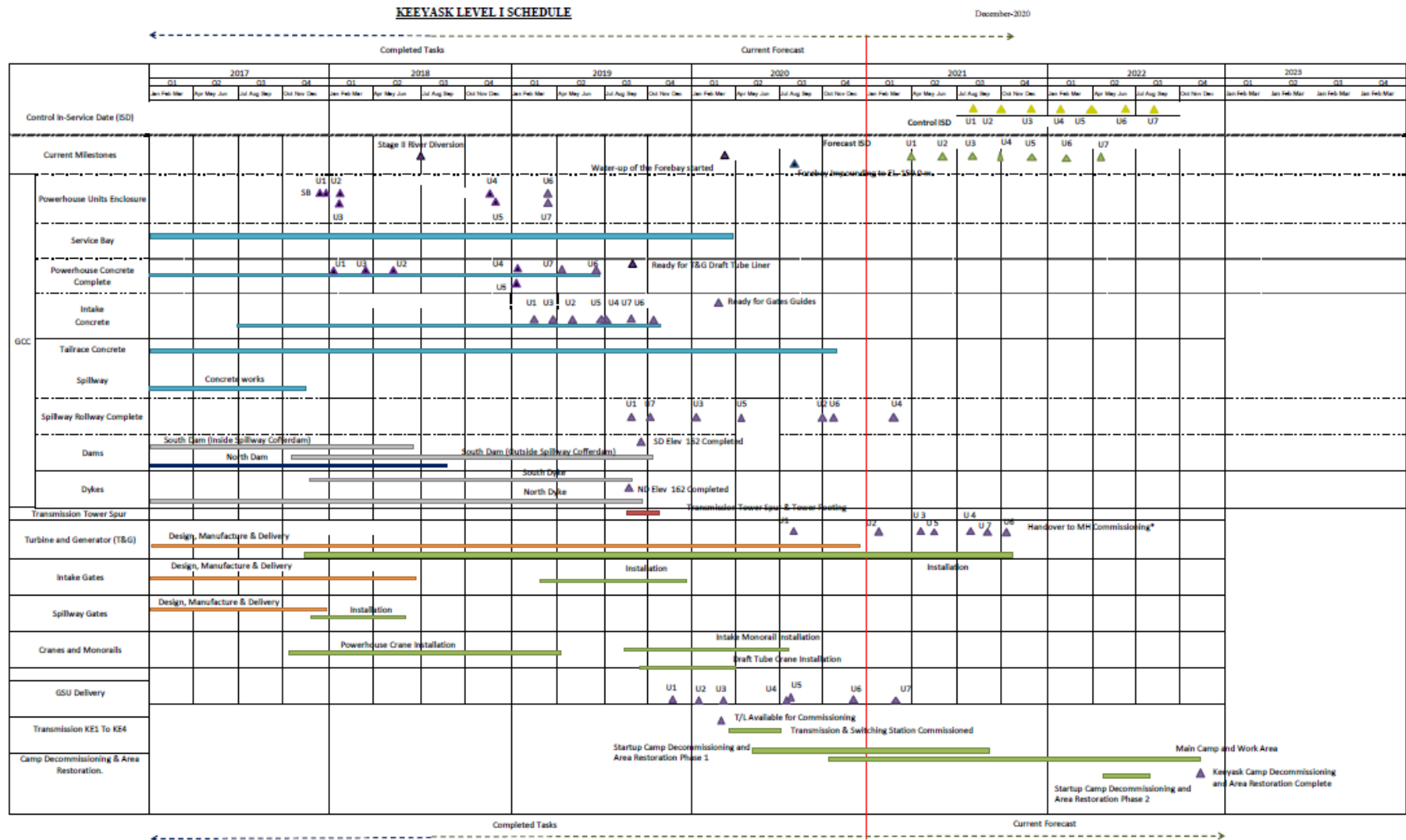
### **COVID-19 Update:**

- On October 25, confirmation was received that an individual employed at the Keeyask site was diagnosed with COVID-19. The response to date has been to work together with Public Health and follow the fundamentals of contact trace, isolate, and test in an iterative process. Once a close contact is known, they are isolated within hours, tested, and test results are available within a day. The consequence of this process is that many individuals are isolated in a short-term period.
- Manitoba Hydro tested the entire onsite workforce to ensure the best information was available to understand the full extent of the problem. A total of 770 people were tested and 20 additional cases were identified. These individuals were immediately placed into isolation in dedicated isolation dorms on site until arrangements were made to safely transfer them to Winnipeg. Contact tracing was conducted on these individuals and close contacts were isolated.
- At the beginning of November, the Province declared an outbreak at Keeyask and on November 1, 2020, Manitoba Hydro temporarily reduced the number of workers at the Keeyask site as part of a measured strategy to contain COVID-19 cases identified through ongoing testing of the project's entire workforce. To protect the health and safety of the workers on the project and the neighbouring communities, worker travel to site was suspended between October 30 and November 15 except for a few key staff required to maintain critical project operations.
- During November, the project team continued to effectively manage the outbreak. A second and third round of site wide testing was conducted and the iterative process of test, contact trace, and isolate continued. The Project reinforced existing measures and adopted new measures recommended by Public Health to minimize further introduction and transmission of the virus. This effort included adjusting worker transportation and lunchrooms, self-monitoring for 14 days, as well as the development of crew cohorting to reduce close contacts. After the project had demonstrated the outbreak had been

effectively contained, worker travel resumed in mid-November to refresh the workforce. Pre-site access requirements were temporarily changed to require that workers self-isolation for 14 days and receive a negative test result prior to travelling to site. Work schedules were adjusted to accommodate the new requirements.

- Changes to the Keeyask response plan will reflect the evolving risk of COVID-19 and respective Manitoba orders. Changes will be performed in a systematic way that involves signaling what the possible next steps will be, allowing time for feedback and then implementing the change.
- On November 30, the Province of Manitoba declared the COVID-19 outbreak at Keeyask over.
- In total there were 39 cases of COVID-19 at Keeyask with 142 close contacts identified and isolated. There have been no cases of COVID-19 identified at Keeyask since November 14.

### Project Schedule Overview – as of December 31, 2020

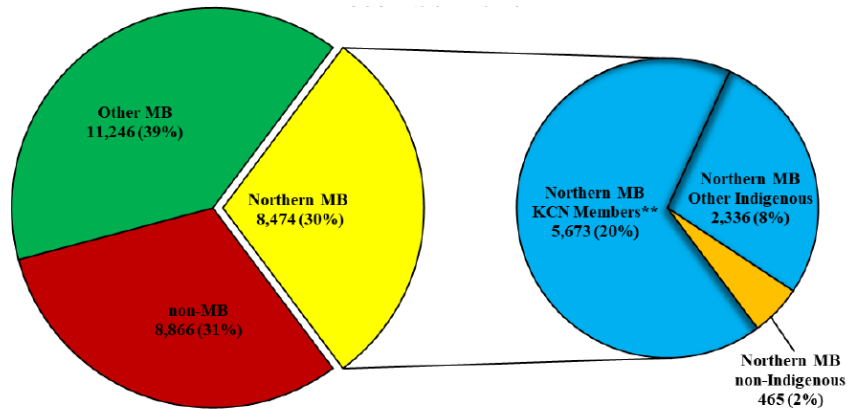


Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD).

The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and major contractors, and how these components and milestones relate to river management and impoundment.

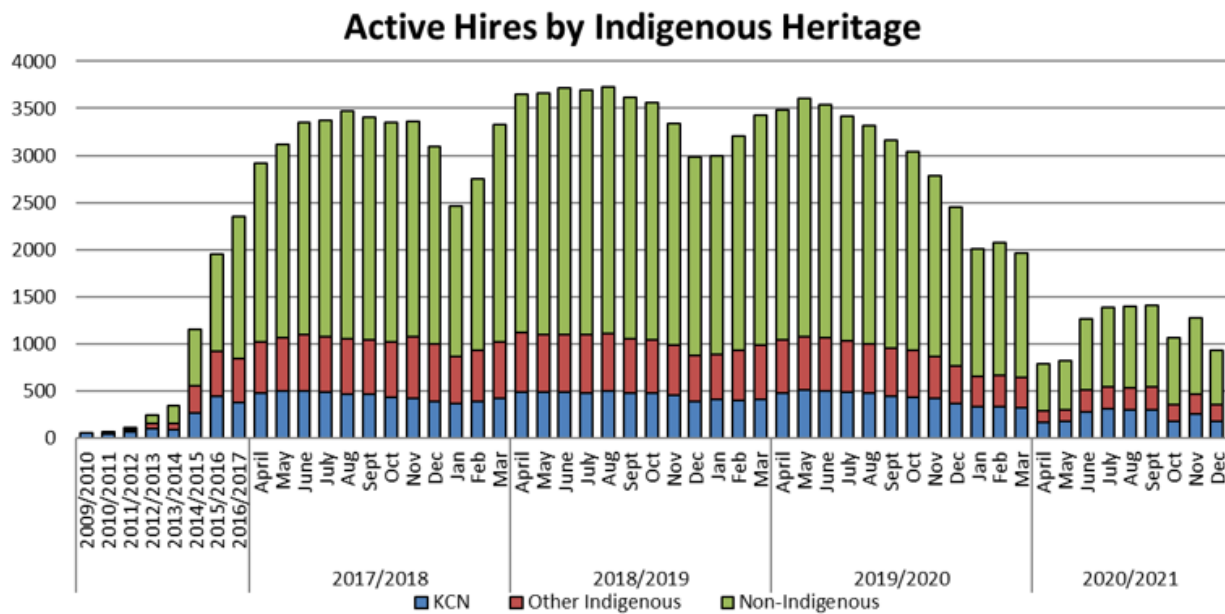


**Total Project Hires - as of December 31, 2020**



- As of December 31, 2020, there have been a total of 28,586 hires on the Keeyask Project. Of these total hires, 69% (19,720) are Manitobans, 40% (11,492) have self-declared as being Indigenous persons and 20% (5,722) of the total hires are Keeyask Cree Nation members.

**Active Hires – as of December 31, 2020**



- As of December 31, 2020, there were 935 active hires on the Keeyask Project. Of these active hires, 85% (791) are Manitobans, 38% (351) have self-declared as being Indigenous persons and 19% (182) are KCN members.

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## FINANCIAL SUMMARY

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- Actual expenditures to the end of December 31, 2020 were \$7.4 billion.

<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to December 31, 2020</b>
1.1	Generating Station	5.948	5.947
1.2	Generation Outlet Transmission (GOT)	0.202	0.184
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	1.275
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>7.406</b>

**Table A Notes:**

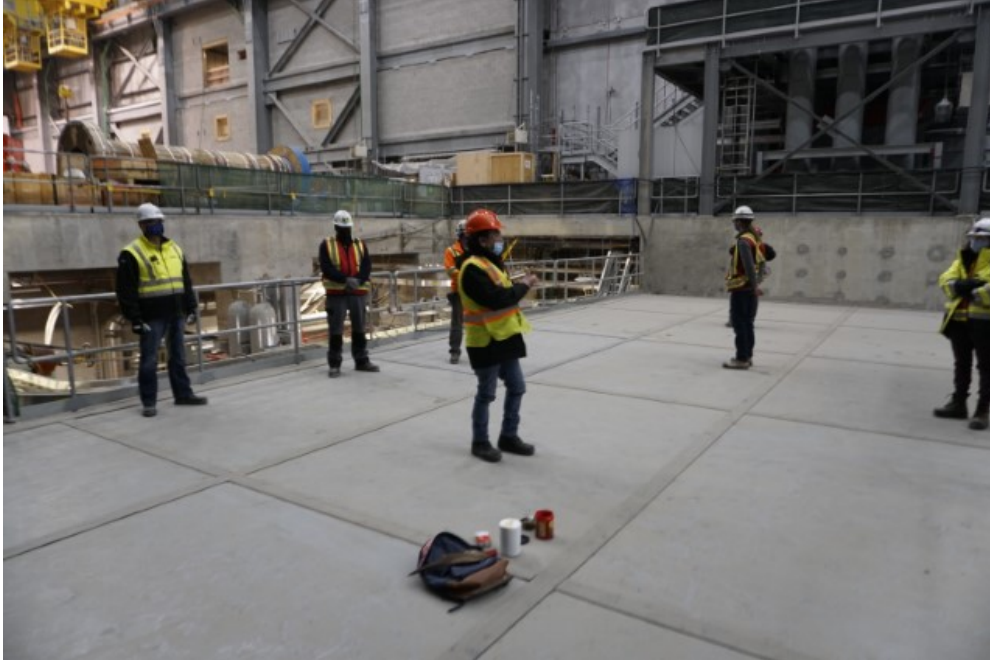
1. The Escalation and Contingency Components (1.3 and 1.5) will have no actual costs incurred against them; these costs will form part of the actual costs in the Generating Station, Generation Outlet Transmission and Interest Components (1.1, 1.2 and 1.4).

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## RECENT PHOTOS

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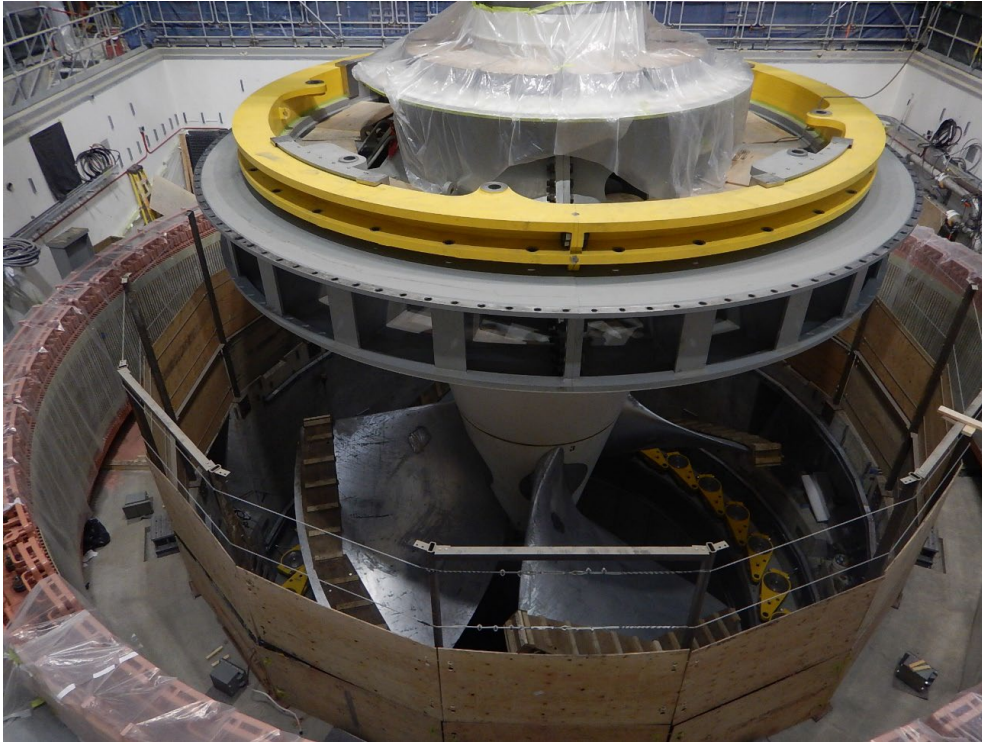
**Photo #1:** Unit 1 Smudge and Blessing – October 2020



**Photo #2:** Aerial view of Powerhouse, towers and Spillway – October 2020



**Photo #3:** Unit 5 lifting rotation and reinstallation of the Tower Assembly – November 2020



**Photo #4:** Unit 5 Upper Bracket Installation – December 2020





**Photo #5:** Ice Formation on Forebay – November 2020





## **MMTP Project Description**

Manitoba Hydro's capital expenditure forecast includes the construction of a new 500kV Transmission Line between Winnipeg and Duluth, Minnesota known as the Manitoba-Minnesota Transmission Project ("MMTP"). The MMTP transmission line will originate at the Dorsey Converter station located near Rosser, Manitoba, northwest of Winnipeg and extend 213 km's south, around Winnipeg to the Manitoba-Minnesota border, near Piney, Manitoba. The MMTP also includes associated upgrades at Dorsey, Riel and Glenboro stations.

The United States ("US") portion of the 500 kV line will initiate at the border and terminate at Iron Range Station near Grand Rapids, Minnesota. This project is known as the Great Northern Transmission Line ("GNTL") and is being constructed by Minnesota Power.

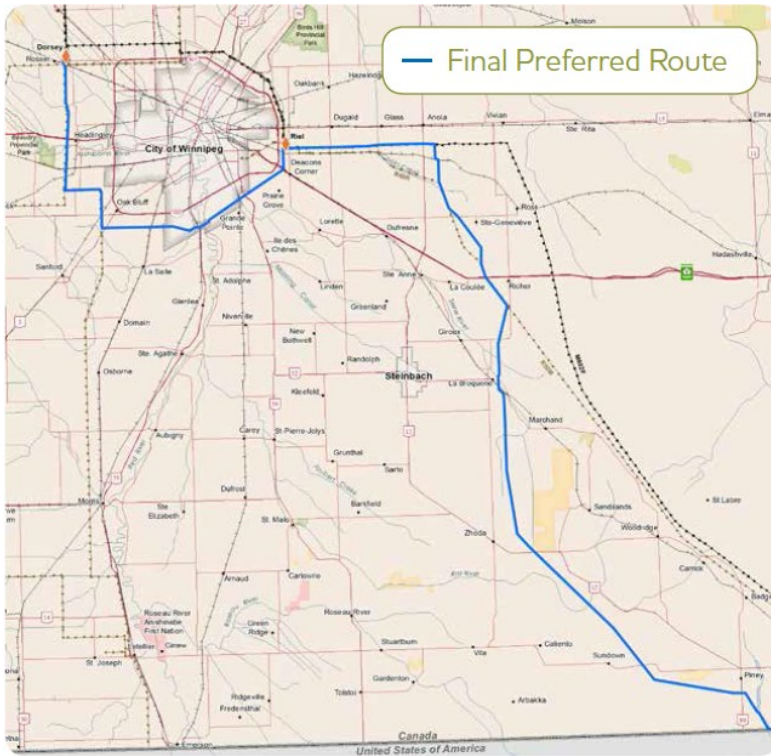
## **MMTP Project Update**

- Manitoba Hydro continues regular filings with both provincial and federal regulators pursuant to the provincial *Environment Act* license and federal Certificate conditions.
- Manitoba Hydro continues regular filings with both provincial and federal regulators pursuant to the provincial *Environment Act* license and federal Certificate conditions.
- All facilities for the Manitoba Minnesota Transmission project have been placed in service. Construction on the transmission line was completed and the line went into service on June 1, 2020. Due to COVID-19, some commissioning of the station components had to be postponed and were completed on November 1, 2020. The budget is still forecasted to be below the control budget of \$490M.
- Legal challenges have been brought forward against the Project's regulatory approvals at the provincial and federal levels. Four federal judicial reviews are currently under Case Management at the Federal level. No hearing date has been scheduled at this time, but it will likely be scheduled for late spring or fall 2021. In April 2020, an additional Judicial Review was filed in the Federal Court. This application requests that it be joined to the four cases already before the Federal Court and if it is successful, a hearing will also likely be held in fall 2021.
- Provincially, there has been one judicial review filed and five provincial appeals. The judicial review decision was delivered May 20<sup>th</sup> dismissing the application. The ruling has been appealed and a hearing has been set for April 14, 2021. The provincial appeals were dismissed by the Provincial Cabinet in June 2020.

**MMTP Budget**

<b>MMTP Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to December 31, 2020</b>
1.1	Licensing & Environmental	32.2	30.0
1.2	500 kV Transmission Line	316.6	310.7
1.3	Station Upgrades	124.6	122.3
1.4	Contingency	16.8	-
1.5	Total	490.3	463.0

**MMTP Transmission Line Route**



## **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

## **Birtle Project Update**

- Manitoba Hydro received an Environment Act license for the Birtle Transmission Project from the Environmental Approvals Branch (EAB) on January 14, 2020. Manitoba Hydro had received approval from the EAB in fall 2019 to commence civil works at the Birtle South Station.
- The Birtle Transmission Project was approved on August 21, 2019 to receive federal funds through the “Investing in Canada Infrastructure Program”. Costs necessary for the successful implementation of the project are eligible to receive a 50% cost sharing contribution from the federal government, up to a maximum of \$18.8M.
- The construction contract for the new Transmission Line B71T was awarded to the Birdtail Sioux – Forbes Bros. Joint Venture in July 2020 and construction has been progressing well. All foundations have been installed, approximately two thirds of all towers are standing and one third of conductor stringing has been completed. Transmission line construction is expected to be completed in March 2021.
- All construction work at the Birtle South Station was completed in August 2020. Commissioning activities have been largely completed. Final station commissioning will occur upon completion of construction of Transmission Line B71T.
- The overall project is tracking to be placed in service in the spring of 2021, ahead of the Power Purchase Agreement date of June 2021.

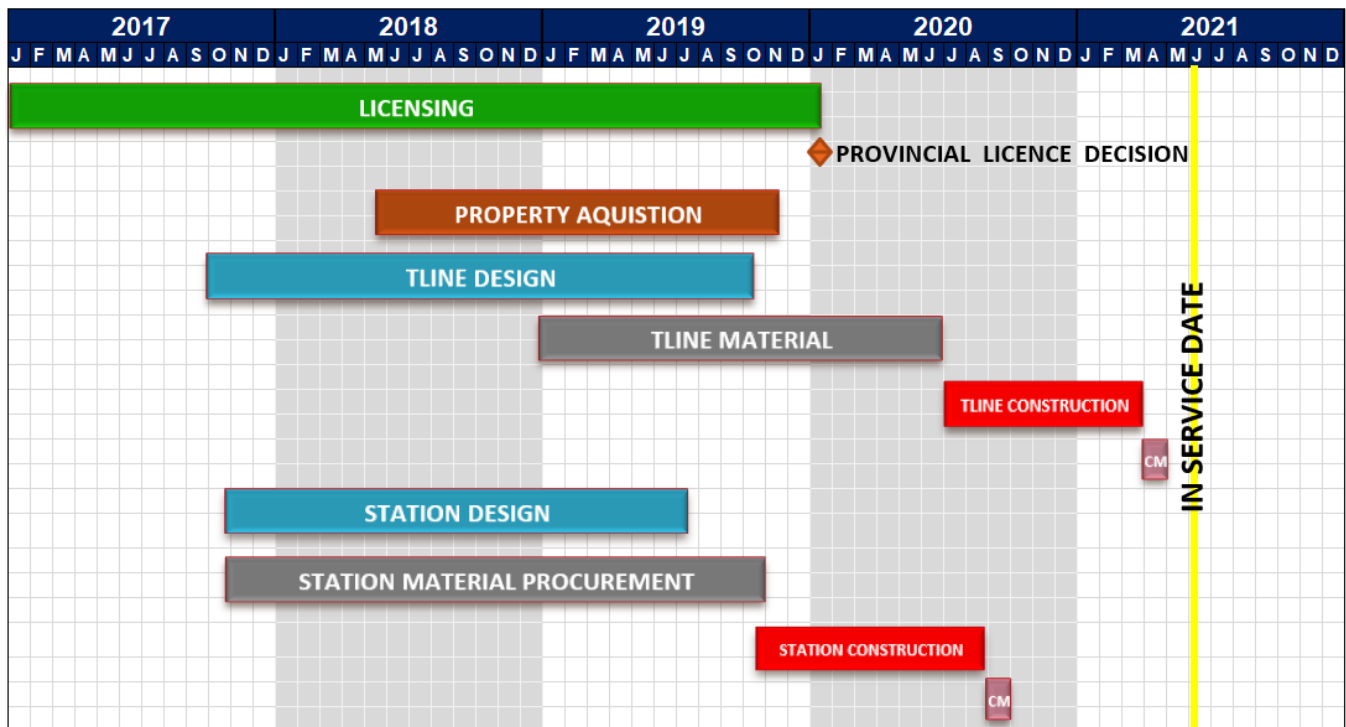
**Birtle Budget**

<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to December 31, 2020</b>
1.1	Licensing & Environmental	4.7	3.3
1.2	Transmission line	57.2	21.9
1.3	Station Upgrades	7.4	8.9
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>34.1</b>

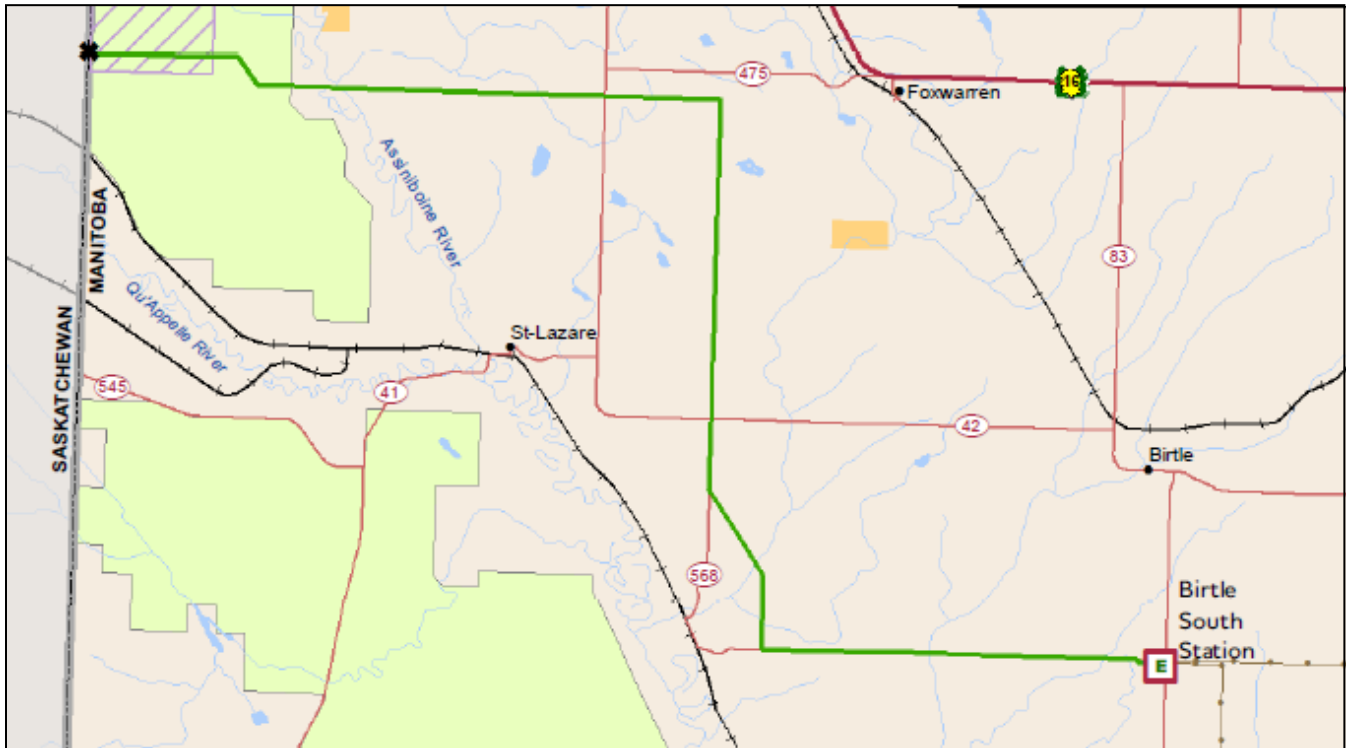
1. The current control budget includes contingency built into the project costs.

Note: there are no construction contracts above \$50 million currently in place.

**Birtle Project Schedule**



### Birtle Final Preferred Route Map





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

## Keeyask Project Update

Q4 Update ending March 31, 2021

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## EXECUTIVE SUMMARY

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- As of March 31, 2021, the Keeyask Project is currently forecasting to meet the \$8.7B control budget. The first unit was brought into service on February 16, 2021, six months earlier than the control schedule of August 2021.
- The project schedule has been impacted by COVID and although these impacts are substantial, they are being actively managed and are reflected in the schedule forecasts and budget provided in this report.
- Actual expenditures to the end of March 31, 2021 were \$7.5 billion.
- The safety and well-being of the Keeyask workforce and local communities remains the top priority.
- The Keeyask Project has developed a comprehensive Pandemic Plan, in response to COVID-19, which reduces the risk of introduction of the virus at site, spread within the site and between the site and local communities. Manitoba Hydro continues to work closely with senior public health officials who are providing direction and guidance on the measures undertaken at the Keeyask site as well as the Keeyask Cree Nation (“KCN”) communities.
- Over the last three months, there has only been one confirmed case of COVID-19 at Keeyask and two presumed positive cases.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (“KIP”).
- The General Civil Works (“GCC”) 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 contractor 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.

### Generating Station

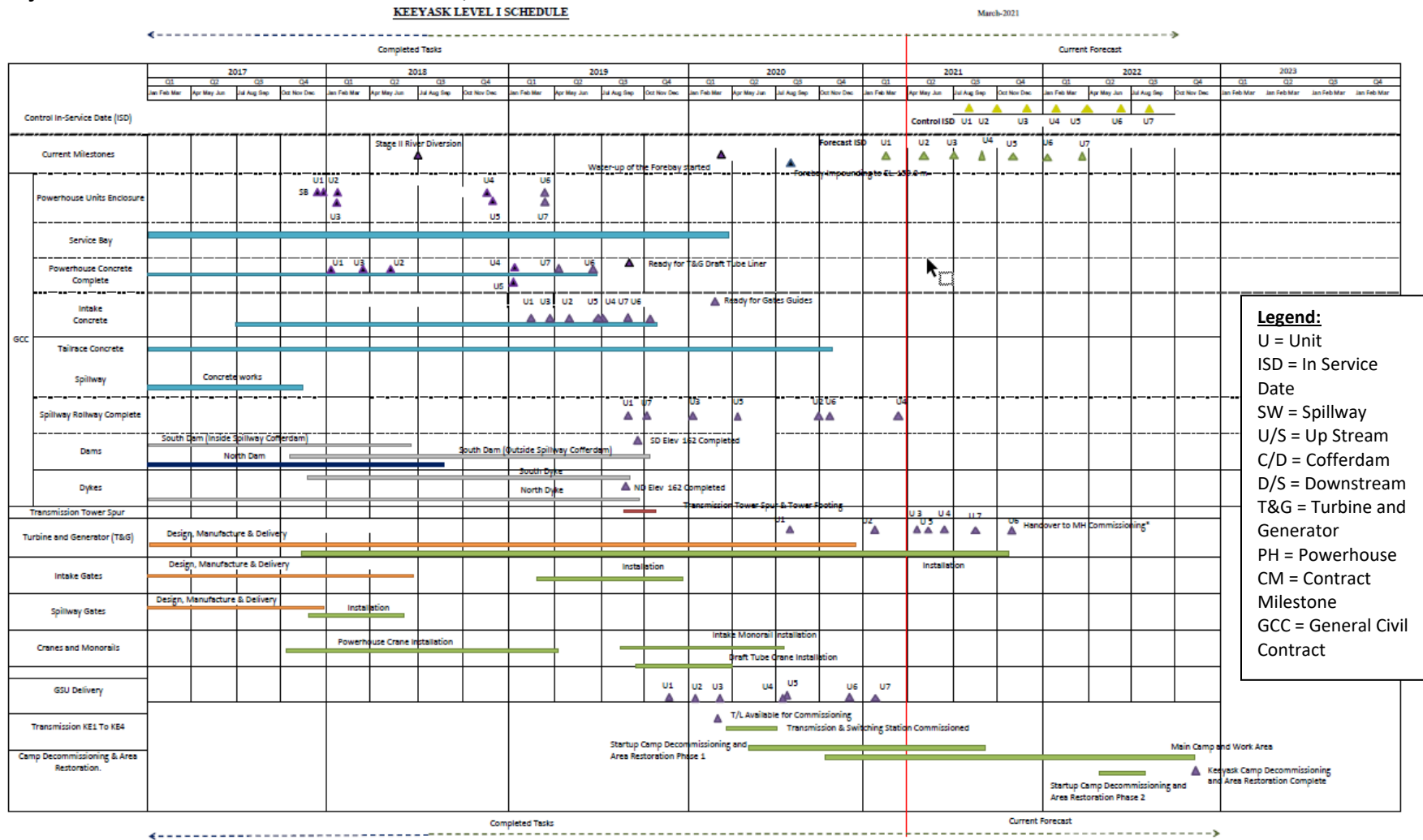
- On February 16, at 2:55 p.m., the first of seven generating units at Keeyask was brought into service and is now connected to the Manitoba Hydro power grid, supplying electricity to all Manitobans. A ceremony was held at site to commemorate Unit 1 entering service.
  - Following the holiday shutdown in December, Unit 1 commissioning resumed in January with electrical runs. Unit 1 reached an important milestone in late January with the synchronization of the generating unit to the Manitoba Hydro System. Commissioning activities continued and the first unit entered commercial service February 16, 2021.
- On January 22, 2021 Unit 2 was turned over to Manitoba Hydro from Voith to begin commissioning.
- Work on the remaining 5 units continued and it is expected that the remaining units will come online in 2-3 month increments.

- The balance of plant work is continuing with the installation of electrical and mechanical systems to support the units.
- The final placement of concrete in the Spillway occurred in March 2021 marking the end of all major concrete operations for the Keeyask project. The focus of concrete work now is the patching, repairing and finishing across the structures.

### **Infrastructure**

- There are no infrastructure updates for the quarter.

### Project Schedule Overview – as of March 31, 2021

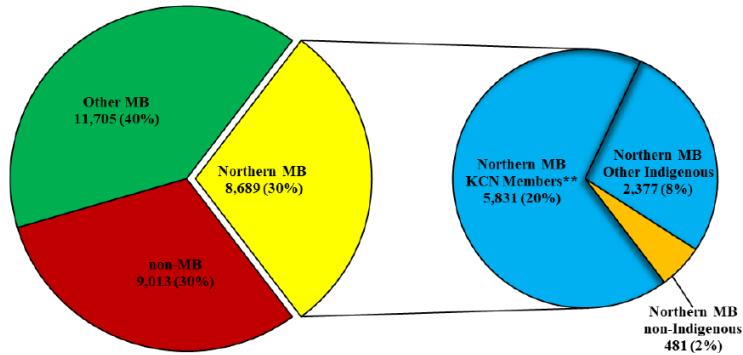


\* This is a summary of the current plan broken down to the major component of construction and milestones.  
\* T & G Handover to MH Commissioning dates under review due to Covid and vibration issue.  
Potential Delay due to IBEW Strike. This report does not have any accommodation related to the strike at this time.

Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD).  
The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and major contractors, and how these components and milestones relate to river management and impoundment.

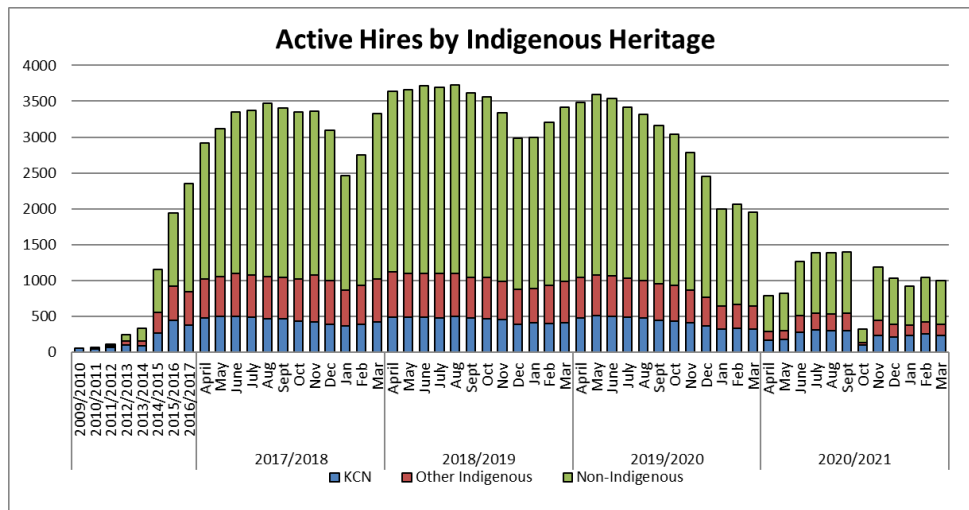


**Total Project Hires - as of March 31, 2021**



- As of March 31, 2021, there have been a total of 29,407 hires on the Keeyask Project. Of these total hires, 69% (20,394) are Manitobans, 40% (11,792) have self-declared as being Indigenous persons and 20% (5,879) of the total hires are KCN members.

**Active Hires – as of March 31, 2021**



- As of March 31, 2021, there were 995 active hires on the Keeyask Project. Of these active hires, 82% (816) are Manitobans, 39% (388) have self-declared as being Indigenous persons and 23% (229) are KCN members.

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**FINANCIAL SUMMARY**

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- Actual expenditures to the end of March 31, 2021 were \$7.5 billion.

<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to March 31, 2021</b>
1.1	Generating Station	5.948	6.009
1.2	Generation Outlet Transmission (GOT)	0.202	0.183
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	1.326
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>7.518</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).

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## RECENT PHOTOS

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**Photo #1:** Keeyask at Sunset with Unit 1 In-service (February 2021)



**Photo #2:** Offerings for the First Power Ceremony (February 2021)





**Photo #3:** Unit 4 Generator Shaft installation (March 2021)



**Photo #4:** Unit 1 Turbine Runner Inspection Following Online Testing



**Photo #5:** Unit 4 Outer Head Cover Installation (February 2021)





## **Birtle Project Description**

Construction of the Manitoba portion of a new 230kV Transmission Line between Birtle, Manitoba and Tantallon, Saskatchewan is known as the Birtle Transmission Project. The Birtle Transmission Line (B71T) will originate at Birtle South Station and extend 46 km to the Manitoba-Saskatchewan border. The Birtle Transmission Project also includes upgrades to transmission line P52E as well as upgrades at Raven Lake, Virden West, and The Pas Ralls Island stations.

## **Birtle Project Update**

- Manitoba Hydro received an Environment Act license for the Birtle Transmission Project from the Environmental Approvals Branch (EAB) on January 14, 2020. Manitoba Hydro had received approval from the EAB in fall 2019 to commence civil works at the Birtle South Station.
- The Birtle Transmission Project was approved on August 21, 2019 to receive federal funds through the “Investing in Canada Infrastructure Program”. Costs necessary for the successful implementation of the project are eligible to receive a 50% cost sharing contribution from the federal government, up to a maximum of \$18.8M.
- The construction contract for the new Transmission Line B71T was awarded to the Birdtail Sioux – Forbes Bros. Joint Venture. Construction started in July 2020 and the line was placed in-service on March 29, 2021.
- Final testing and commissioning was completed in March 2021 to allow for Transmission Line B71T to be energized on March 29, 2021.
- The project was placed in service on March 29, 2021 ahead of the Power Purchase Agreement date of June 2021.

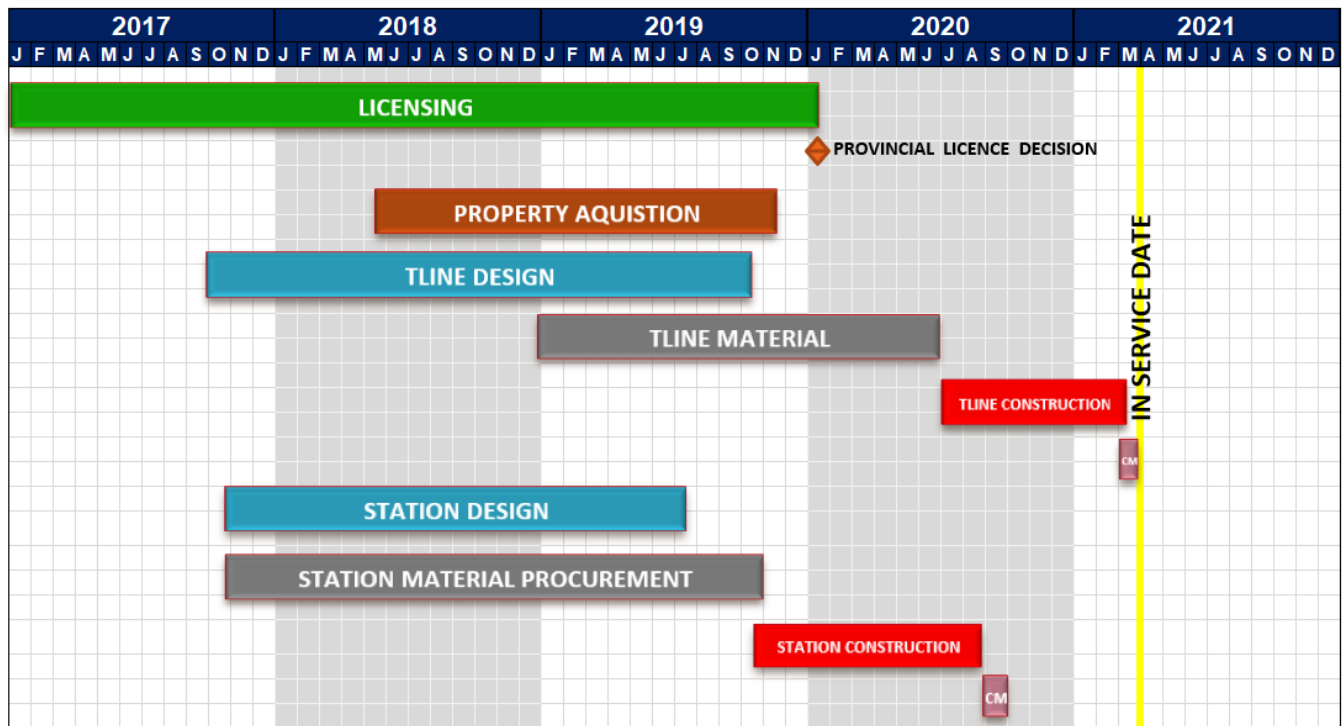
**Birtle Budget**

<b>Birtle Budget Summary (in Millions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Total Project Control Budget</b>	<b>Actual costs to March 31, 2021</b>
1.1	Licensing & Environmental	4.7	3.5
1.2	Transmission line	57.2	30.2
1.3	Station Upgrades	7.4	9.4
1.4	<b>Total<sup>1</sup></b>	<b>69.3</b>	<b>43.1<sup>2</sup></b>

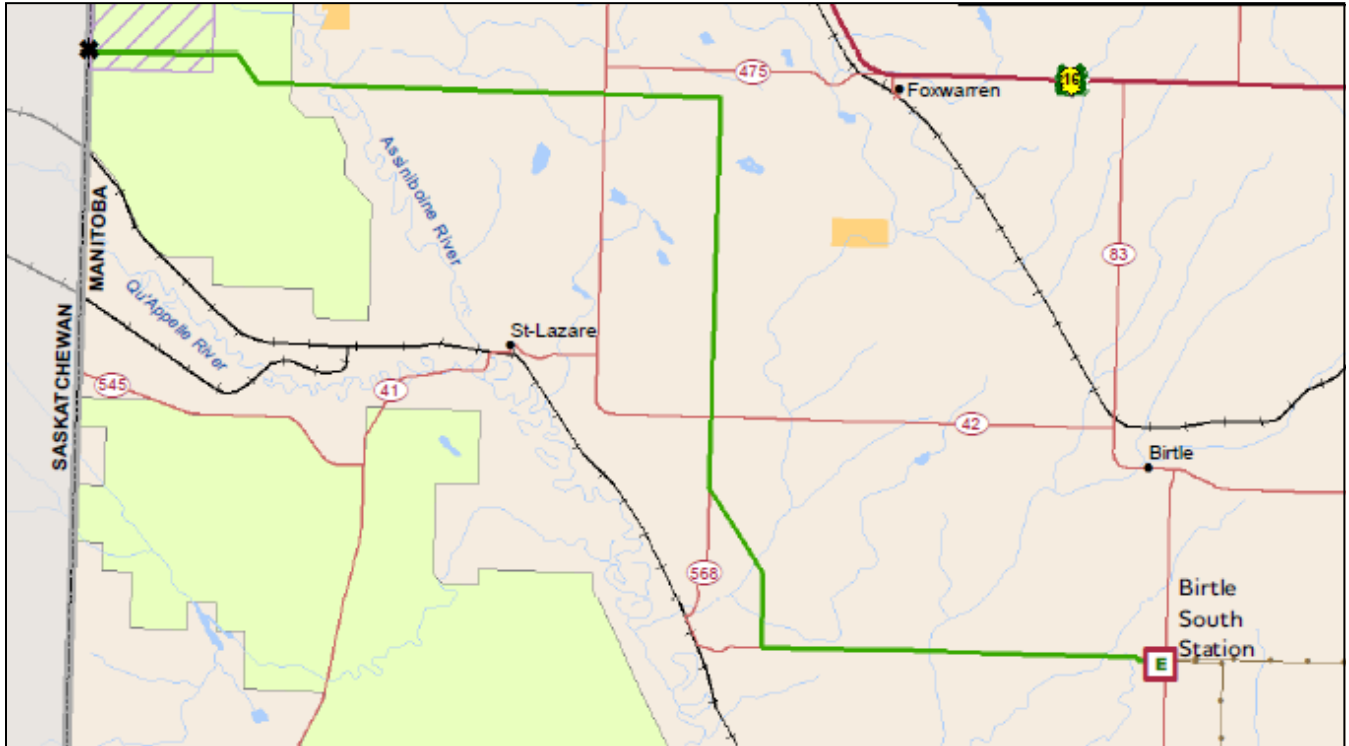
1. The current control budget includes contingency built into the project costs.
2. Actual costs do not reflect federal funding contribution applied to project.

Note: there are no construction contracts above \$50 million currently in place.

**Birtle Project Schedule**



### Birtle Final Preferred Route Map



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

## Keeyask Project Update

Q1 Update ending June 30, 2021

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## EXECUTIVE SUMMARY

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- As of June 30, 2021, the Keeyask Project is currently forecasting to meet the \$8.7B control budget.
- The second unit was brought into service on April 29, 2021, and the third unit was brought into service on June 29, 2021.
- The project schedule has been impacted by COVID and although these impacts are substantial, they are being actively managed and are reflected in the schedule forecasts and budget provided in this report.
- Actual expenditures to the end of June 30, 2021 were \$7.7 billion.
- The safety and well-being of the Keeyask workforce and local communities remains the top priority.
- The Keeyask Project has developed a comprehensive Pandemic Plan in response to COVID-19, which reduces the risk of introduction of the virus at site, reduces spread within the site and reduces spread between the site and local communities. Manitoba Hydro continues to work closely with senior public health officials who are providing direction and guidance on the measures undertaken at the Keeyask site as well as the Keeyask Cree Nation (“KCN”) communities.
- Over the last three months, there has only been one confirmed case of COVID-19 at Keeyask and one presumed positive case. This brings the yearly total to two confirmed cases of COVID-19 and three presumed positive cases.



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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project ("KIP").
- The General Civil Works ("GCC") 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 contractor 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.

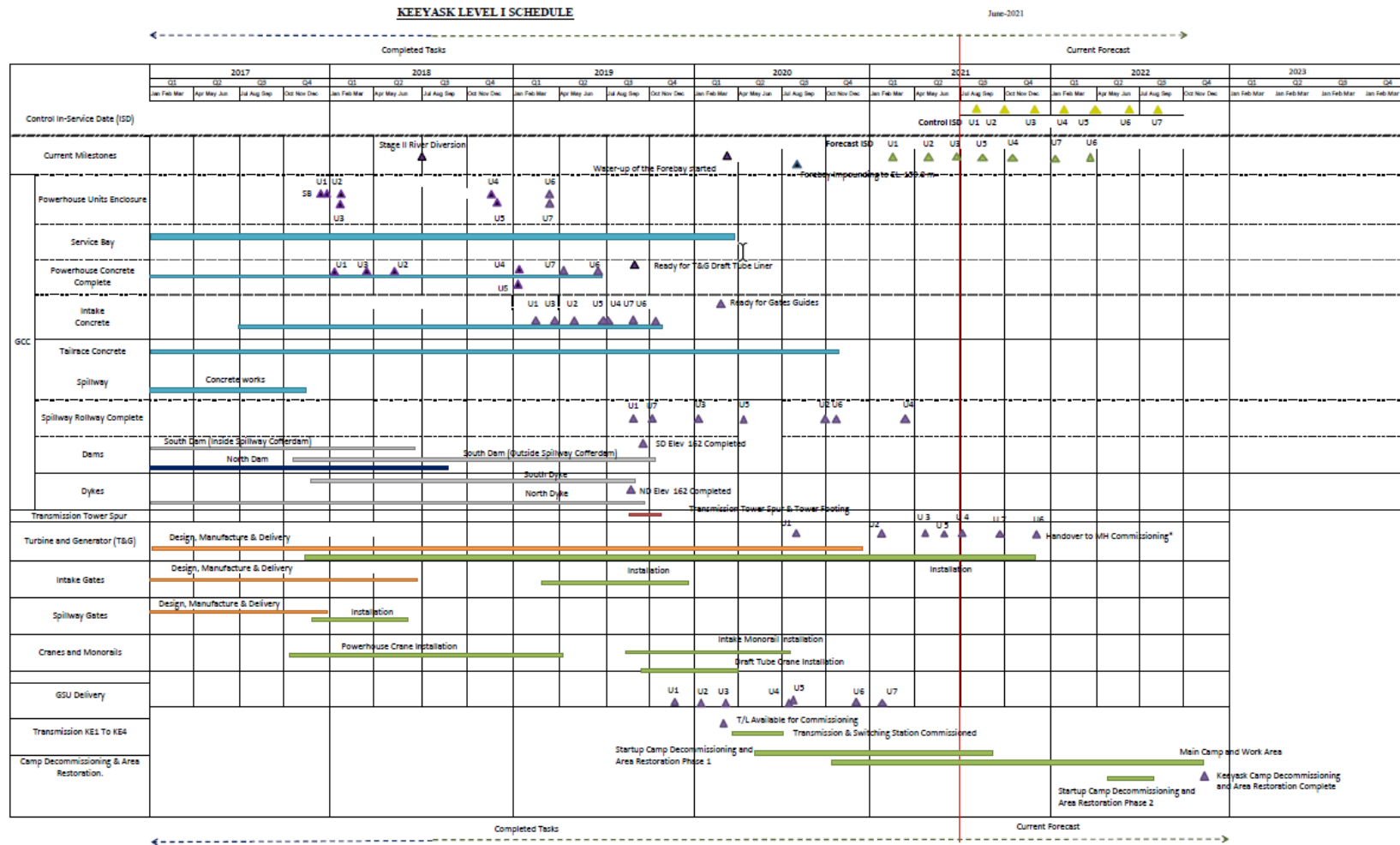
### Generating Station

- On April 29, 2021, the second unit was brought online and is now providing power.
- On June 29, 2021, the third unit was brought online, approximately two months after being turned over for commissioning.
- Work on the remaining 4 units continued and it is expected that the remaining units will come online in 2-3 month increments.
- The balance of plant work is continuing with the installation of electrical and mechanical systems to support the units.
- Major concrete work finished in the first quarter of 2021 and the batch plant is being decommissioned. The focus of concrete work now is the patching, repairing and finishing across the structures.

### Infrastructure

- There are no infrastructure updates for the quarter.

### Project Schedule Overview – as of June 30, 2021

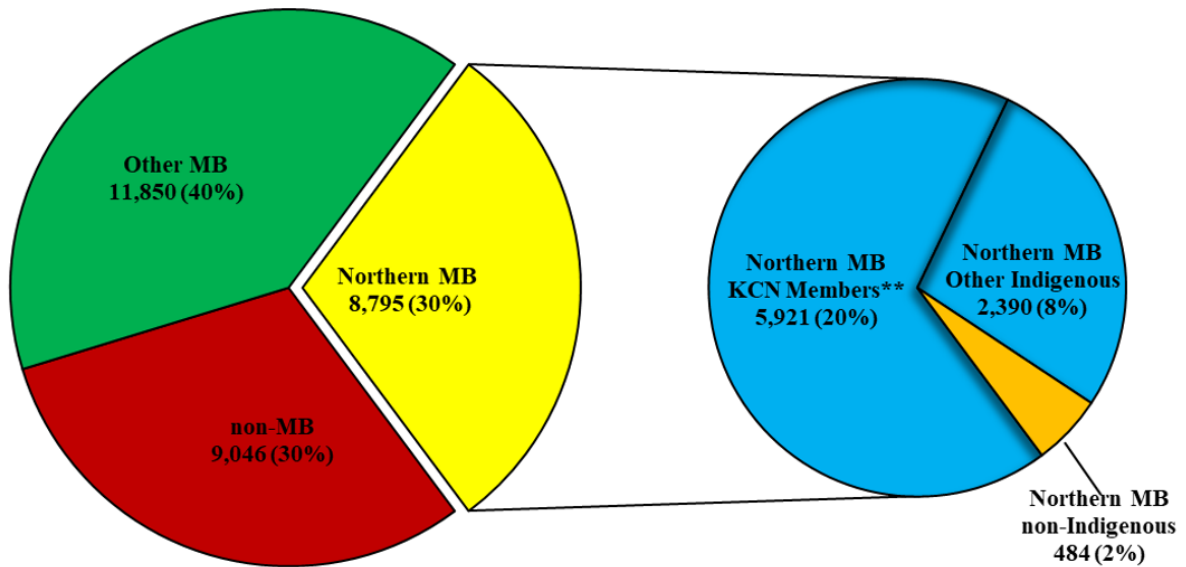


**Legend:**  
U = Unit  
ISD = In Service Date  
SW = Spillway  
U/S = Up Stream  
C/D = Cofferdam  
D/S = Downstream  
T&G = Turbine and Generator  
PH = Powerhouse  
CM = Contract Milestone  
GCC = General Civil Contract

\* This is a summary of the current plan broken down to the major component of construction and milestones.  
\* T & G Handover to MH Commissioning dates are reported from Volth Action plan schedule submission.

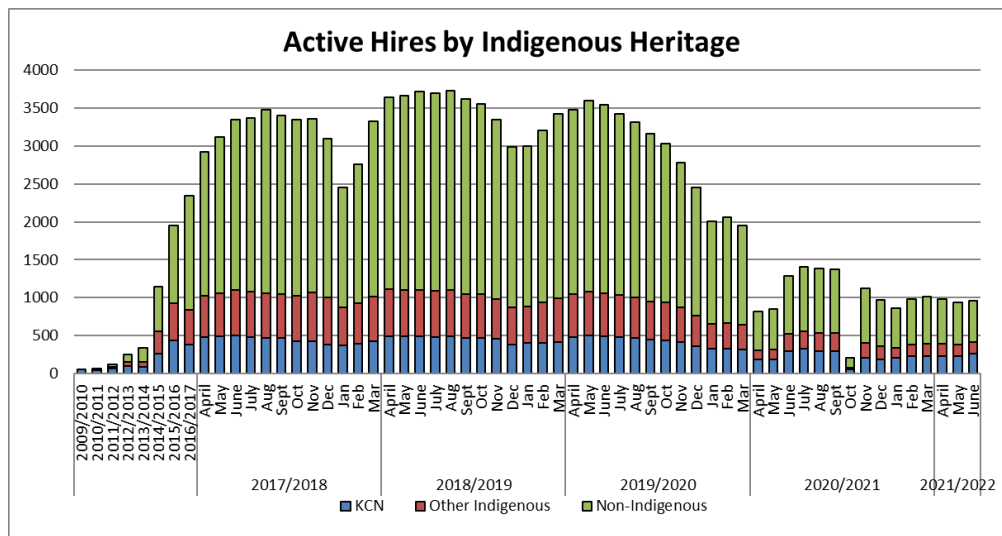
Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD). The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and major contractors, and how these components and milestones relate to river management and impoundment.

**Total Project Hires - as of June 30, 2021**



- At the end of June 2021, 70% of all hires (20,645) since the start of the Project have been Manitoban, and 40% of all hires (11,934) have declared as being indigenous.

**Active Hires – as of June 30, 2021**



- As of June 30, 2021, there were 956 active hires on the Keeyask Project. Of these active hires, 86% (819) are Manitobans, 44% (420) have self-declared as being Indigenous persons and 28% (267) are KCN members.

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**FINANCIAL SUMMARY**

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- Actual expenditures to the end of June 30, 2021 were \$7.7 billion.

<b>Table A - Keeyask Budget Summary (in Billions \$)</b>			
<b>Item #</b>	<b>Item</b>	<b>Current Approved Budget (2016\$)</b>	<b>Actuals to June 30, 2021</b>
1.1	Generating Station	5.948	6.128
1.2	Generation Outlet Transmission (GOT)	0.202	0.183
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	1.411
1.5	Contingency	0.578	0.000
<b>Total</b>		<b>8.726</b>	<b>7.721</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).

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## RECENT PHOTOS

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**Photo #1:** Spillway Water Passage 4 Downstream stoplog removal



**Photo #2:** Indigenous Peoples Day Activities – Hanging Prayer Flags Sport Fishing at Kettle.

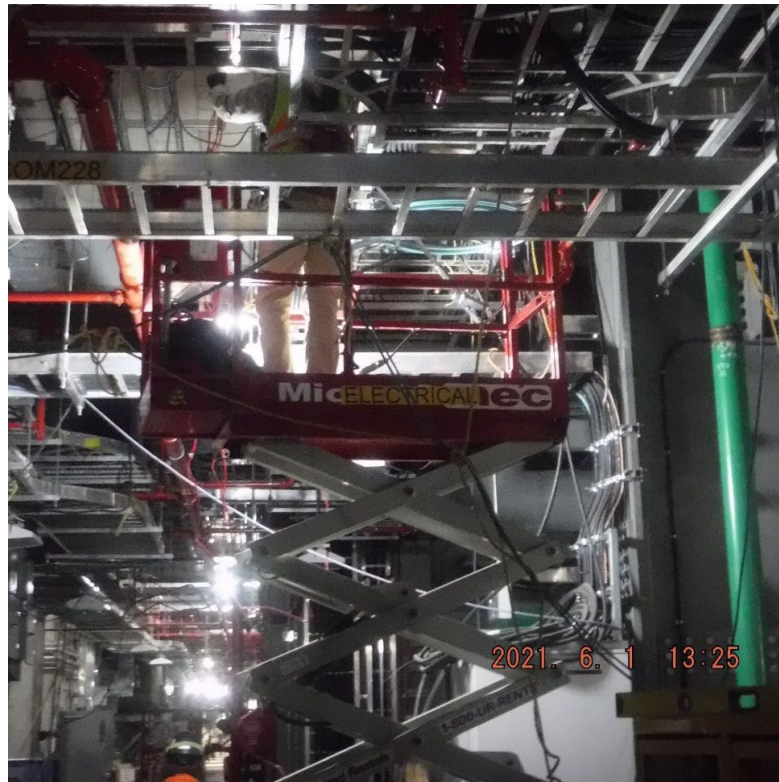




**Photo #3:** Dismantling Scaffolding in the Upstream of Unit 7 Scroll case



**Photo #4:** Mechanical Gallery Fire Alarm conduit installation.



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

## Keeyask Project Update

Q2 Update ending September 30, 2021

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## EXECUTIVE SUMMARY

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- As of September 30, 2021, the Keeyask Project is currently forecasting to meet the \$8.7B control budget and is 6 months ahead of schedule.
- Four units are online; the fourth came online on September 11, 2021. The fifth unit is going through the commissioning process and will enter service in October.
- The project schedule has been impacted by COVID-19 and although these impacts are substantial, they are being actively managed and are reflected in the schedule forecasts and budget provided in this report.
- Actual expenditures to the end of September 30, 2021 were \$7.8 billion.
- The safety and well-being of the Keeyask workforce and local communities remains the top priority.
- The Keeyask Project has developed a comprehensive Pandemic Plan in response to COVID-19, which reduces the risk of introduction of the virus at the site, reduces spread within the site and reduces spread between the site and local communities. Manitoba Hydro continues to work closely with senior public health officials who are providing direction and guidance on the measures undertaken at the Keeyask site as well as the Keeyask Cree Nation (“KCN”) communities.
- Over the last six months, there have only been three confirmed cases of COVID-19 at Keeyask and zero presumed positive case.

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## PROJECT UPDATE

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### Background

- 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.
- 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.
- Construction of the Keeyask Generating Station commenced on July 16, 2014 after receipt of all required licenses and approvals.
- The Keeyask Project includes construction of the generating station as well as construction of supporting infrastructure. Most of the supporting infrastructure was constructed in advance of commencement of construction of the generating station under the Keeyask Infrastructure Project (“KIP”).
- The General Civil Works (“GCC”) 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 contractor 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.

### Generating Station

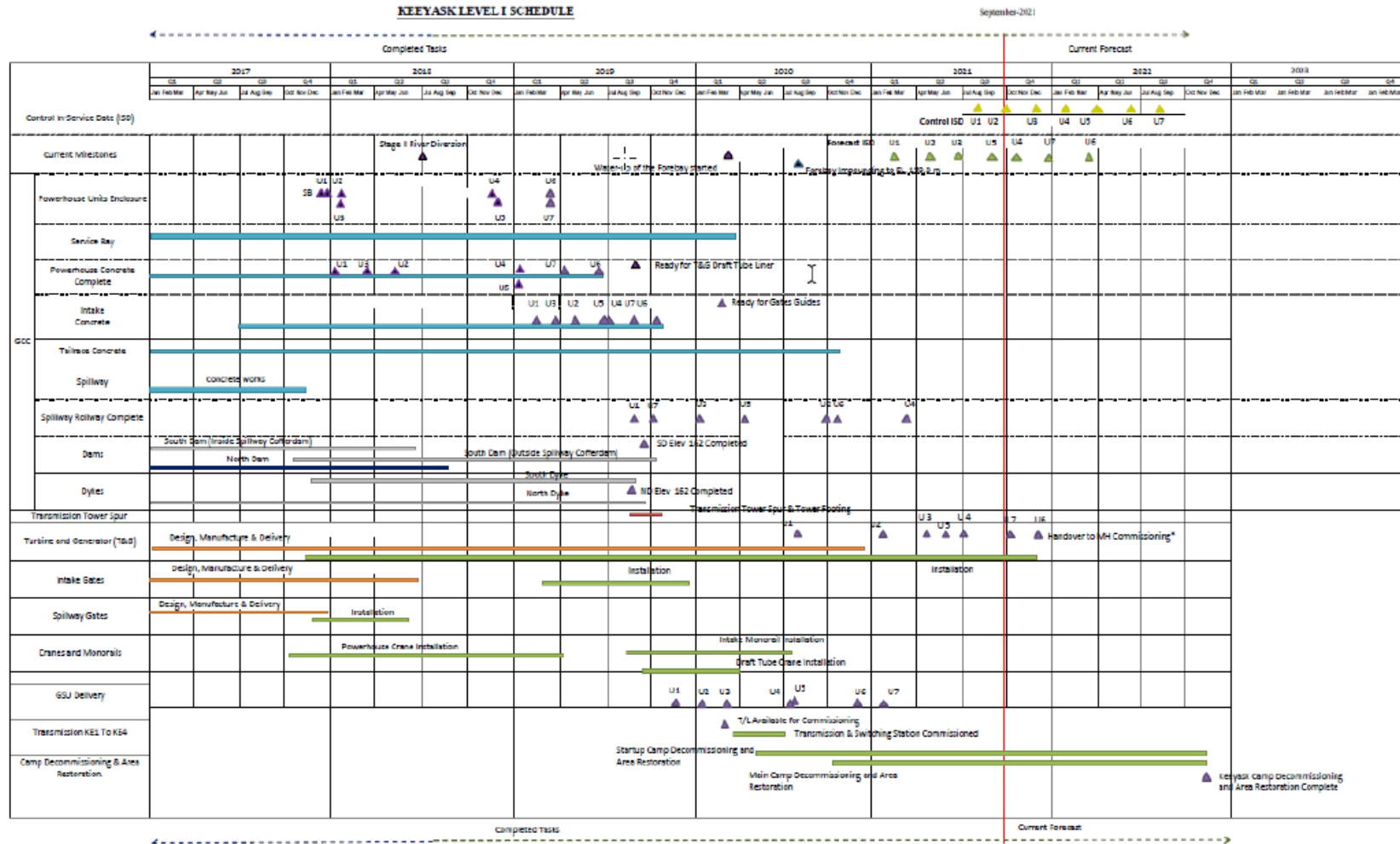
- On April 29, 2021, the second unit was brought online and is now providing power.
- On June 29, 2021, the third unit was brought online, approximately two months after being turned over for commissioning.
- On September 11, 2021, the fourth unit was brought online.
- Work on the remaining 3 units continued, and it is expected that the remaining units will come online in 2-3 month increments. The balance of plant work is continuing with the installation of electrical and mechanical systems to support the units.

### Infrastructure

- There are no infrastructure updates for the quarter.



### Project Schedule Overview – as of September 30, 2021



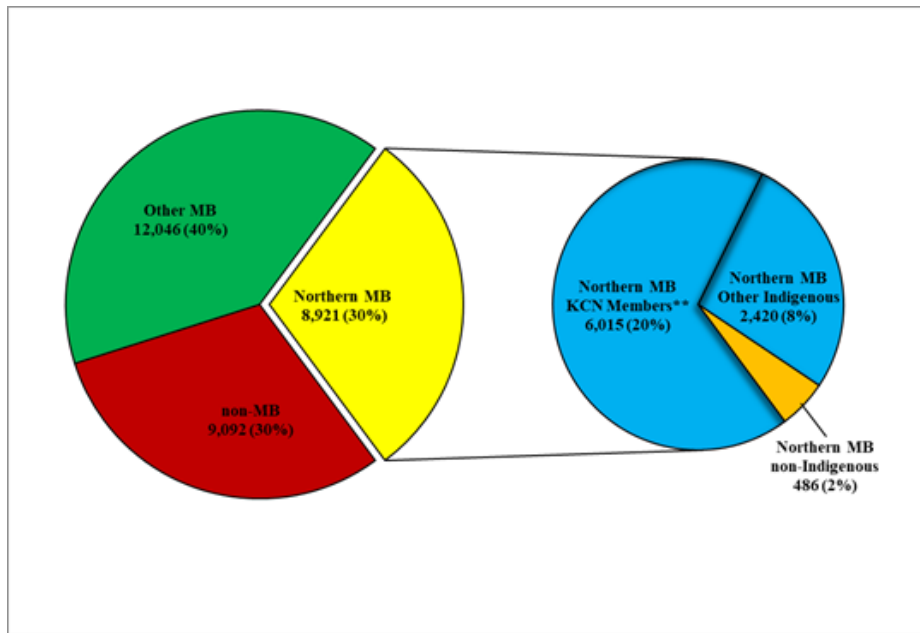
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\* This is a summary of the current plan broken down to the major component of construction and milestones.  
† T & G Handover to U14 Commissioning date are reported from Volt's Action plan schedule submission.

Note: Construction activities, milestones and unit In-Service-Dates (“ISDs”) reflect Manitoba Hydro’s current forecast schedule. Presently, the forecast for the unit ISDs (“Current ISD”) is ahead of the Control ISDs (Control ISD: August 2021 for first unit ISD).  
The above is a summary of Manitoba Hydro’s current plan broken down to the major component of construction and major contractors, and how these components and milestones relate to river management and impoundment.

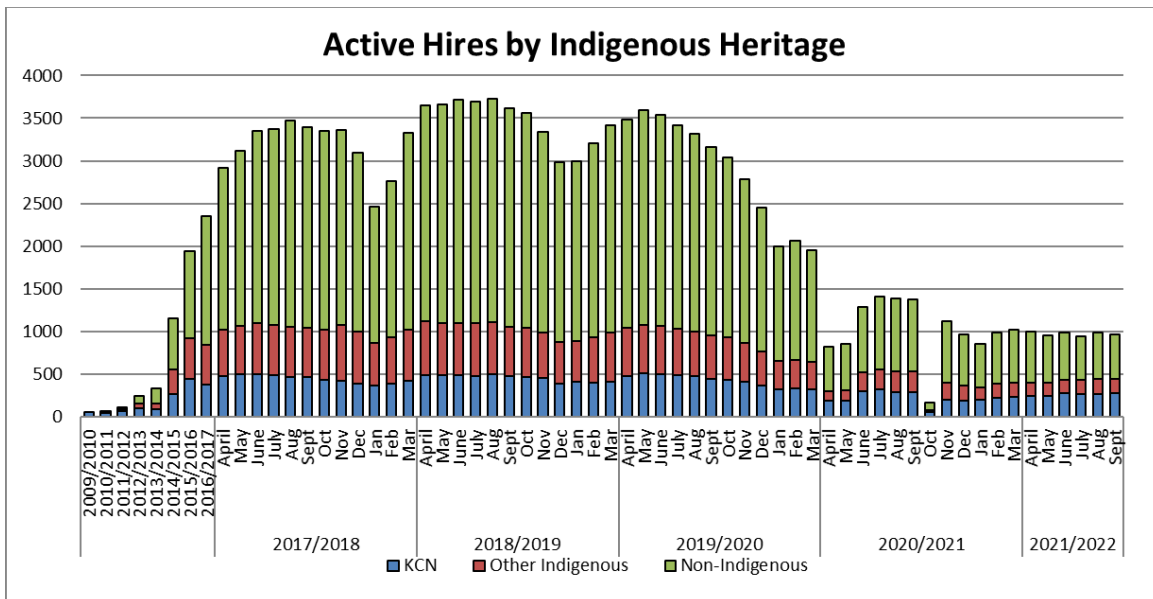


**Total Project Hires - as of September 30, 2021**



- At the end of September 2021, 70% of all hires since the start of the Project have been Manitobans, and 40% of all hires have declared as being indigenous.

**Active Hires – as of September 30, 2021**



- As of September 30, 2021, there were 966 active hires on the Keeyask Project. Of these active hires, 88% (846) are Manitobans, 46% (440) have self-declared as being Indigenous persons and 28% (274) are KCN members.

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## FINANCIAL SUMMARY

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- Actual expenditures to the end of September 30, 2021 were \$7.8 billion.

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

Item #	Item	Current Approved Budget (2016\$)	Actuals to Sept 30, 2021
1.1	Generating Station	5.948	6.172
1.2	Generation Outlet Transmission (GOT)	0.202	0.183
1.3	Escalation @ CPI	0.249	0.000
1.4	Interest (including Interest on Equity)	1.749	1.435
1.5	Contingency	0.578	0.000
	<b>Total</b>	<b>8.726</b>	<b>7.791</b>

**Table A Notes:**

1. The Escalation and Contingency Components (1.3 and 1.5) 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).

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## RECENT PHOTOS

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**Photo #1:** Unit 7 Generator Shaft installation



**Photo #2:** Unit 7 Rotor installation





**Photo #3:** First Spillway Closure Since River Diversion in August 2018



**Photo #4:** Grandmother Moon prayer flags hung



Sweat lodge Ceremony

