

MANITOBA-MINNESOTA TRANSMISSION PROJECT

Clean Environment Commission Hearing



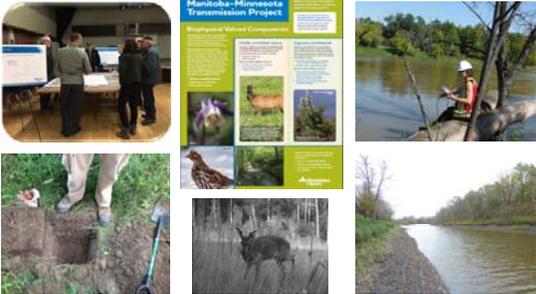
- Introduction & Project Description
- Engagement
- Routing
- Construction, Operations & Property
- Methods
- EMF
- Socio-Economic Environment
- Biophysical Environment
- Environmental Protection Program & Monitoring

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James Matthewson, Manitoba Hydro
David Swatek, Manitoba Hydro

Introduction
Project description

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Journey to today



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NFAT

- MMTP was part of the Public Utilities Board (PUB) Need For and Alternatives To (NFAT) review in 2013
- Based on the output of the public hearing the PUB recommended proceeding with requirements necessary for the construction of MMTP

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Environmental impact statement

- Based on:
 - Four rounds of public and First Nation and Metis engagement starting in June 2013
 - Two year multi-season, multi-discipline biophysical field program starting in 2014
 - Data requests and Key Person Interviews (KPIs) with government departments, organizations and stakeholders.
- Resulted in the filing of a:
 - 24 stand-alone chapter Environmental Impact Statement (EIS) in September 2015

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Provincial review process

- Public/TAC review of a Scoping Document submitted in November 2014
- Environmental Impact Statement filed September 2015
- December 2015 – Terms of Reference for CEC, updated in February 2017
- Completion of a multi-round 140 question I.R. process in April 2016
- October 2016 - confirmation that EA process was complete and that the CEC process could begin
 - "It has been determined that the concerns raised during the technical and public review of the EIS have been addressed in Manitoba Hydro's responses to the information requests or can be addressed in licensing conditions."

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CEC process

- Manitoba Hydro hosted a pre-hearing presentation to facilitate understanding of routing process
- Completion of a multi-round I.R. process with 795 I.R.s and close to 1,400 questions within the IRs from CEC and participants

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Overview of presentations

- Introduction and project description
- Engagement
- Routing
- Construction, operations and property
- Methodology/approach
- Electric and magnetic fields
- Socio-economic environment
- Biophysical environment
- Environmental Protection Program and conclusion

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Team approach

- Complex project required large team
- Variety of expertise
- Framework to manage the process

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Transparency

- Transparent decision making
 - Overview of the process
 - Documentation of meeting notes and feedback at key decision making points
- Earlier and broader engagement
 - Public Engagement Process
 - Four rounds of public engagement
 - Notification to more than 25,000 individuals
 - more than 30 open houses
 - Over 1500 people participating in the process
- First Nations and Metis Engagement
 - Shared information with 13 First Nations , the MMF and 4 Aboriginal organizations
 - Over 90 leadership meetings, community open houses/ information sessions, workshops and field visits

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Commitment to lessons learned

- Reference to learnings from past assessments in each EIS chapter describing issues raised during previous EAs and how they have been addressed
 - adding more clarity in analysis processes
 - more inclusive cumulative effects assessment
 - better integration of ATK
 - more concise, plain-language approach to writing

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Commitment to lessons learned

- 2013 CEC recommendation to “develop a more streamlined, open and transparent approach to route selection, making more use of quantitative criteria”

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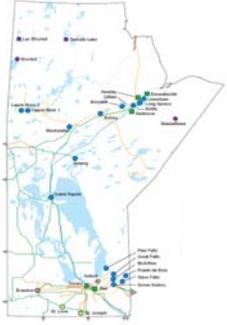
Manitoba-Minnesota Transmission Project

Project Overview



Manitoba Hydro system

- Hydro generating
- Thermal generating
- Diesel generating
- Wind generating
- Converter stations
- ▶ Points of interchange
- HVdc transmission
- 500-kV transmission
- 230-kV transmission
- 138-kV transmission



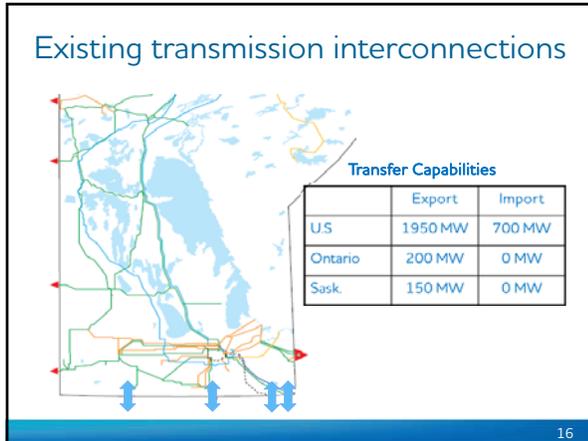
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Transmission system

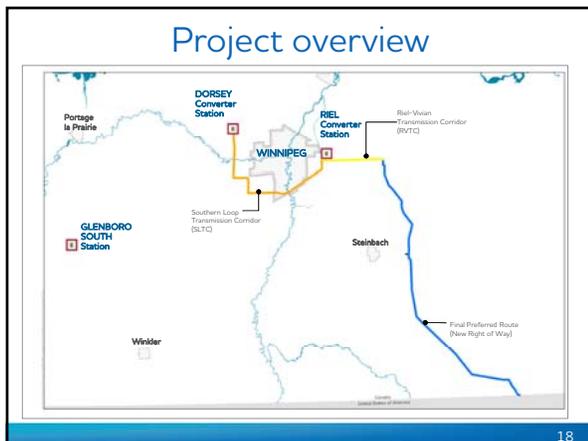
- HVdc transmission
- Bipole III
- 500-kV transmission
- 230-kV transmission
- 138-kV transmission



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- ### Project overview
- 500-kV AC Transmission Line:
 - 213km long -Dorsey Station to US border near Piney, MB
 - Station upgrades:
 - Dorsey
 - Site expansion to accommodate new line termination
 - Riel
 - Installation of 500-230-kV transformer bank and associated equipment
 - Glenboro
 - Site expansion and installation of phase shifting transformers
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Tower design - low impact

- Lattice steel tower design:
 - Long span lengths
 - Fewer towers on the right-of-way
 - Optimal tower spotting
 - Compact delta configuration
 - Electrical clearances allow for live line work

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MMTP – Transmission line overview

The map shows the transmission line route from Dorsey Station. It highlights an existing corridor of 92 km and a proposed new right-of-way of 121 km. Three tower types are illustrated: two Self Supporting Towers (one 100% and one 50%) and one Guyed Tower (50%).

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Final preferred route

Feature	Value
Length	213 km
Existing Right of Way	92 km / 43%
New Right of Way	121 km / 57%
Crown Land / Private Land	30% / 70%

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Reliability

- These two 500-kV lines will represent the sum total of Manitoba's firm import capability
- Simultaneous loss was studied as a NERC extreme event
- Proximity to the existing 500-kV transmission line was considered as mitigation
- A weather study was conducted which provided return periods of extreme events that could impact both 500-kV lines simultaneously

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Reliability

Results of weather study

- 10 km separation along the north-south section yields a 33-year return period for loss of both lines
- Consistent with Western Interconnection practice for NERC extreme events (i.e. greater than 30-yr return period)
- Predominant west-to-east tracking of tornados allows for reduced separation along east-west line sections

10 km buffer

- retained for Vivian-U.S. Border
- relaxed for Riel-Vivian Corridor

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