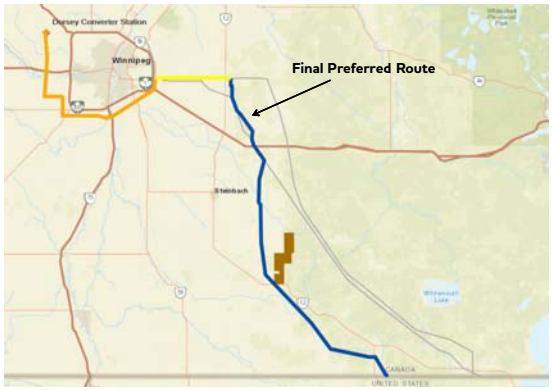
Manitoba-Minnesota Transmission Project

Clean Environment Commission Hearing

Manitoba Hydro



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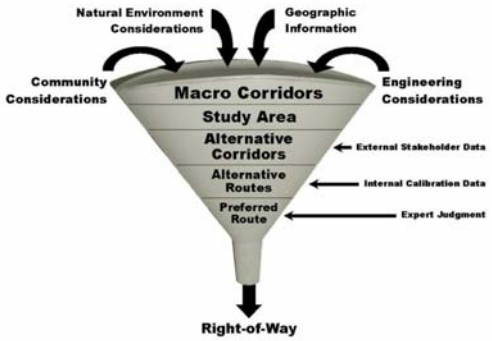

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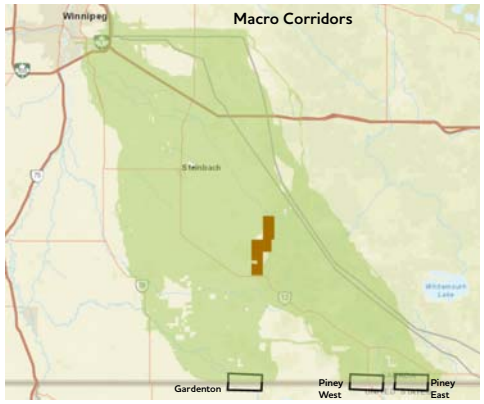
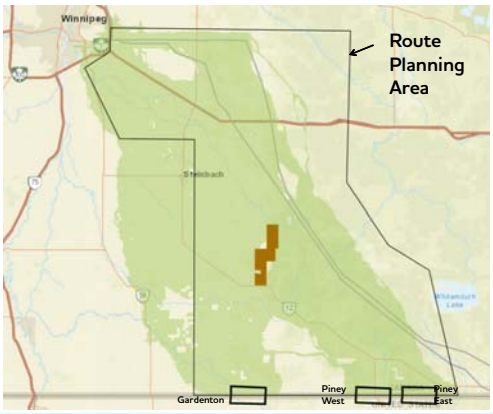
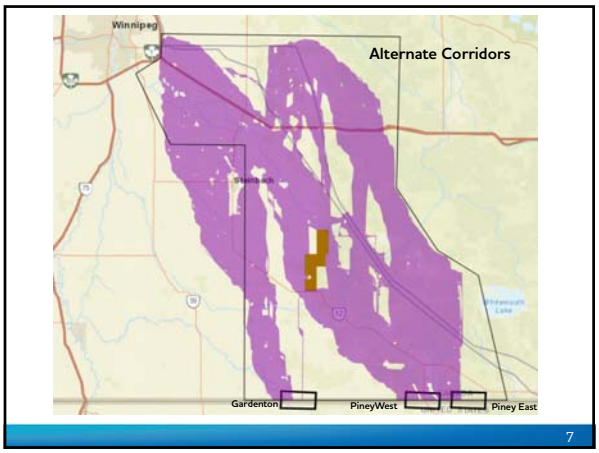
4

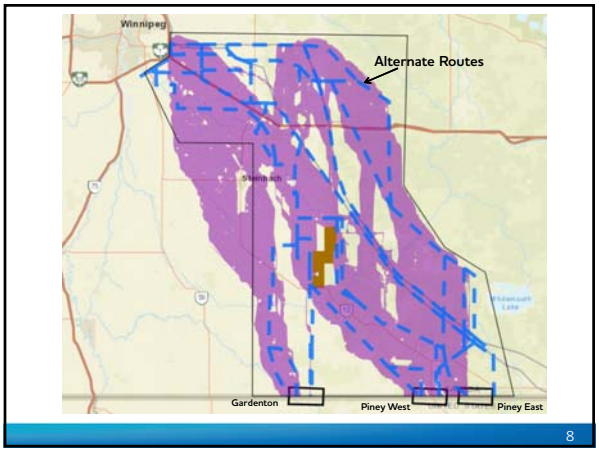

Winnipeg
Macro Corridors
Steinbach
Gardenton
Piney West
Piney East

5

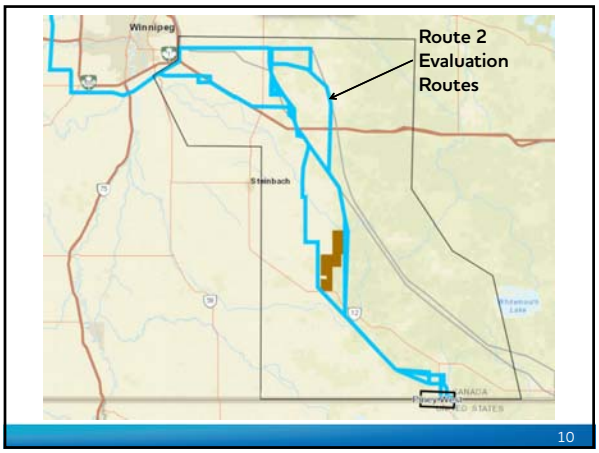

Winnipeg
Route Planning Area
Steinbach
Gardenton
Piney West
Piney East

6

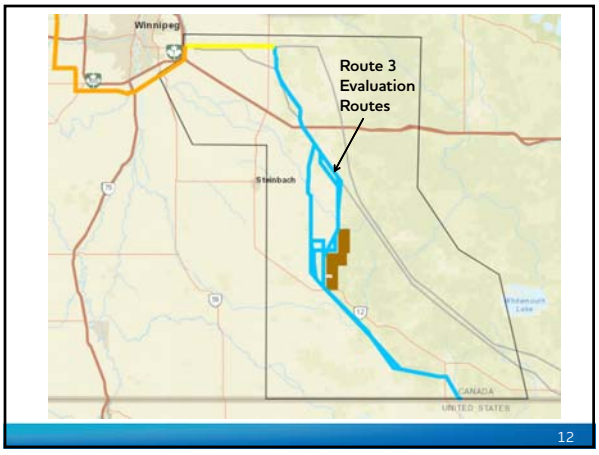

Winnipeg
Alternate Corridors
Steinbach
Gardenton
PineyWest
Piney East
7

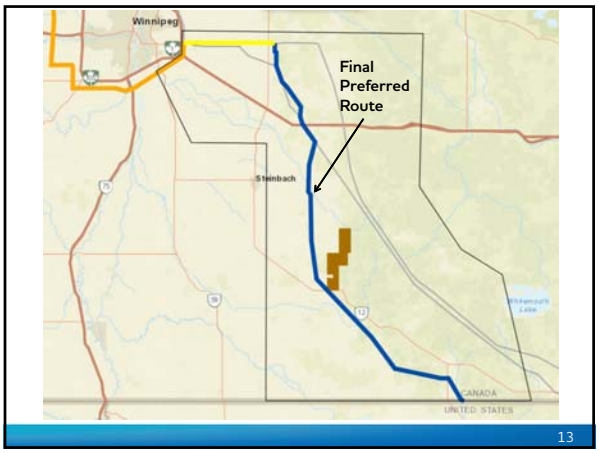

Winnipeg
Alternate Routes
Steinbach
Gardenton
Piney West
Piney East
8


Winnipeg
Preferred
border crossing
Steinbach
Route AQS
9

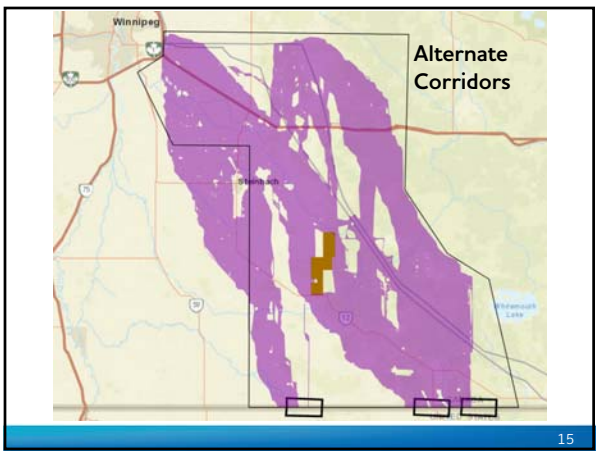

Winnipeg
Route 2
Evaluation
Routes
Steinbach
CANADA
UNITED STATES
10

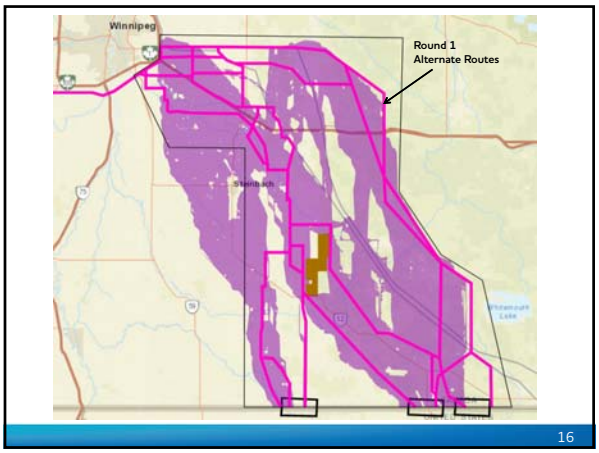

Winnipeg
Preferred
Route
Steinbach
CANADA
UNITED STATES
11

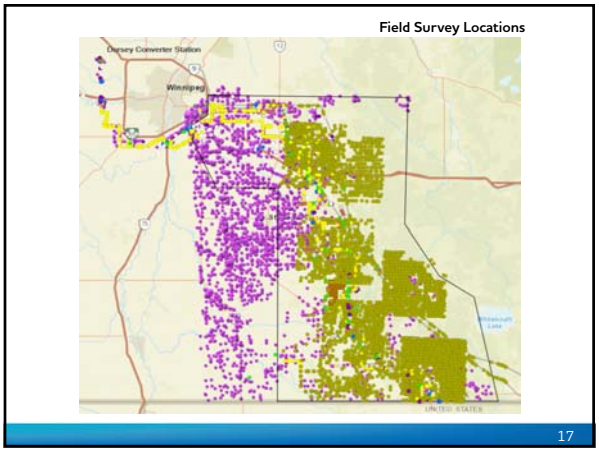

Winnipeg
Route 3
Evaluation
Routes
Steinbach
CANADA
UNITED STATES
12

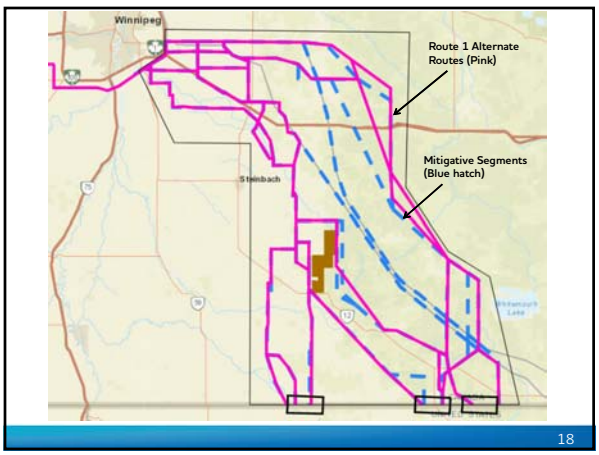

Winnipeg
Final
Preferred
Route
Steinbach
CANADA
UNITED STATES
13


Final
Preferred
Route
14


Winnipeg
Alternate
Corridors
15


Winnipeg
Round 1
Alternate Routes
Steinbach
16


Field Survey Locations
Dorsey Converter Station
Winnipeg
17


Winnipeg
Route 1 Alternate
Routes (Pink)
Mitigative Segments
(Blue hatch)
Steinbach
18

Built	Natural	Engineering
Proximity to Residences	Wildlife Habitat	Accessibility
Public Use Areas	Forests	Constructability (soil types)
Approved Subdivisions	Wetlands	Road / Rail / Highway Crossings
Land Use and Capability	Special Areas	Paralleling (Tlines / Roads)
Shelterbelts	(ASI / Proposed protected areas)	Project Costs
Cultural resources	Stream / River Crossings	Reliability
Commercial Forests	Native Grassland	

19

ALTERNATE ROUTE EVALUATION MODEL	
Criteria	**Weight**
Built	
Relocated Residences – Within ROW	27.1%
Potential Relocated Residences (100 m) – Edge of ROW	17.1%
Proximity to Residences (100-400 m) – Edge of ROW	6.4%
Proposed Developments – Within ROW	15.5%
Current Agricultural Land Use (Value) – ROW	4.4%
Land Capability for Agriculture (Value) – ROW	2.2%
Proximity to Intensive Hog Operations (acres) – ROW	3.3%
Diagonal Crossings of Agriculture Crop Land (km)	9.9%
Proximity to Buildings and Structures (100 m) – Edge of ROW	3.2%
Public Use Areas (250 m) – Edge of ROW	7.4%
Historic/Cultural Resources (250 m) – Edge of ROW	1.8%
Potential Commercial Forest (acres) – ROW	1.7%
Natural	
Natural Forests (Acres) – ROW	8.0%
Intactness	25.9%
Stream/River Crossings – Centerline	16.4%
Wetland Areas (Acres) – ROW	16.4%
Conservation and Designated Lands (Acres) - ROW	33.3%
Engineering	
Seasonal Construction and Maintenance Restrictions (Value) – ROW	16.5%
Index of Proximity to Existing 500 kV Lines	29.5%
Accessibility	16.5%
Costs[1]	33.0%
Existing Transmission Line Crossings (#)	4.5%

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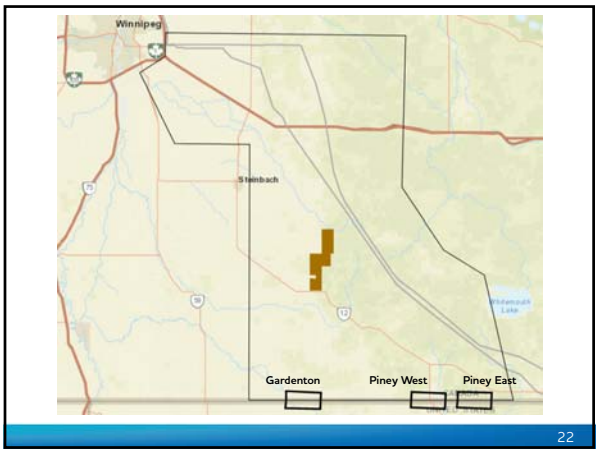
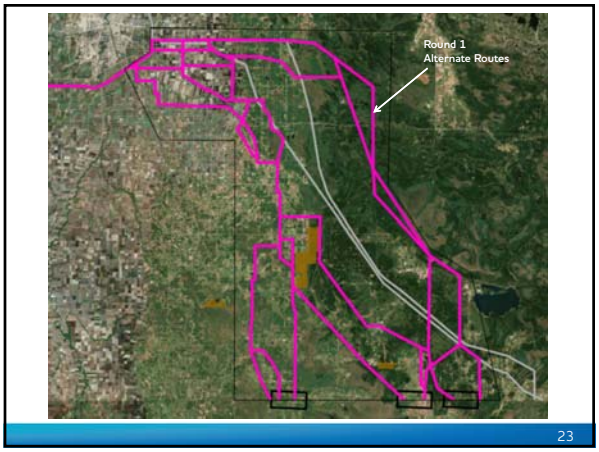
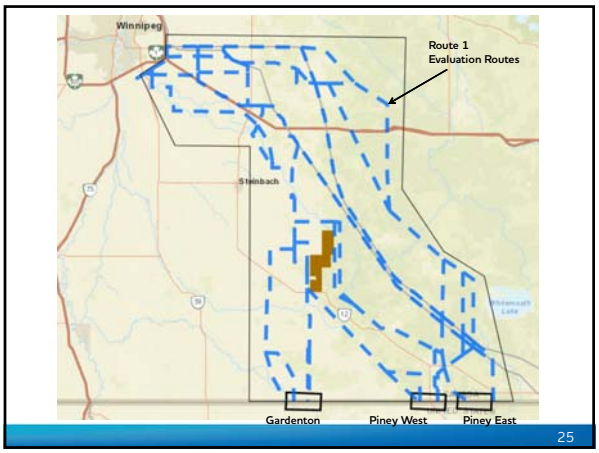
PREFERENCE DETERMINATION MODEL		
Criteria	**Percent**	**Description**
Cost	40%	Cost was based on high-level construction cost estimates used for relative comparison, defined in the alternative route evaluation criteria (values do not represent actual cost estimates for the Project).
Community	30%	Input received from the public and First Nation and Metis engagement processes.
Schedule Risks	5%	Includes consideration of the need for additional approvals, seasonality of construction, overall level of complication expected that could result in delays.
Environment (Natural)	7.5%	Consideration of the natural based statistics from the alternative route evaluation criteria, further interpretation by the Project team and additional information not captured by the criteria that can inform the relative potential effect on the natural environment of different route alternatives.
Environment (Built)	7.5%	Consideration of the built statistics from the alternative route Evaluation criteria, further interpretation by the Project team and additional information not captured by the criteria that can inform the relative potential effect on the built environment of different route alternatives.
System Reliability	10%	Proximity of the route to existing 500 kV lines. Informed by considering the statistic calculated during route evaluation (index of proximity), as well as the number of crossing points with other high voltage transmission lines

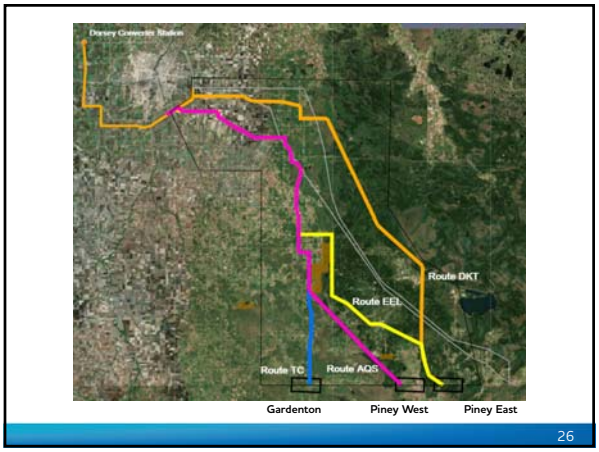
21

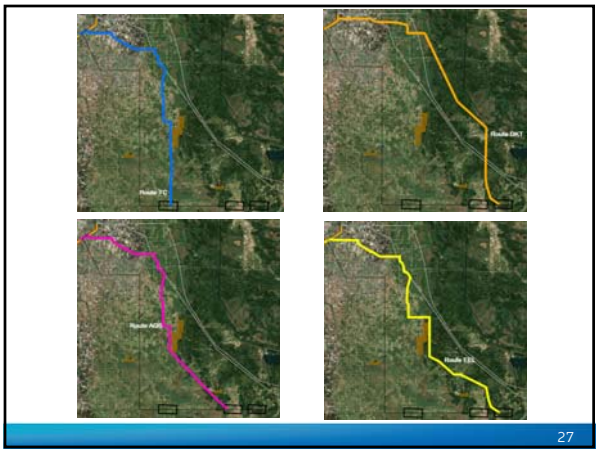

Winnipeg
Steinbach
Gardenton
Piney West
Piney East
22


Round 1
Alternate Routes
23


24


Winnipeg
Route 1
Evaluation Routes
Steinbach
Gardenton
Piney West
Piney East
25


Route DKT
Route EEL
Route TC
Route AQS
Gardenton
Piney West
Piney East
26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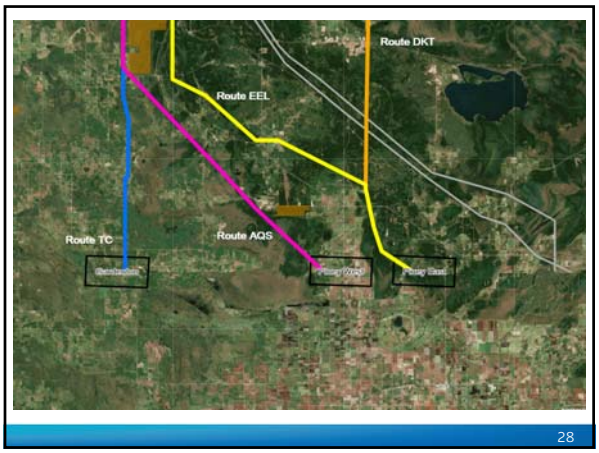
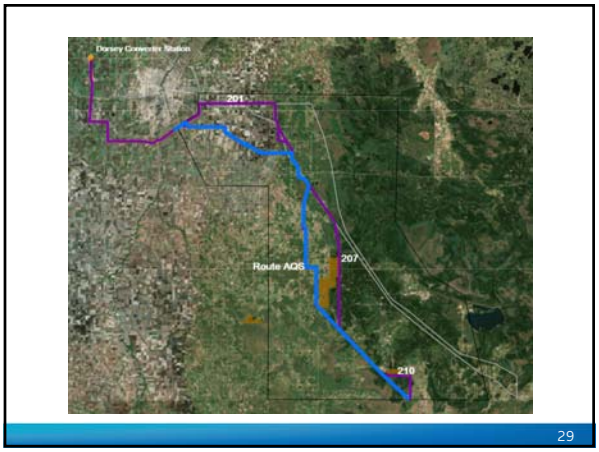
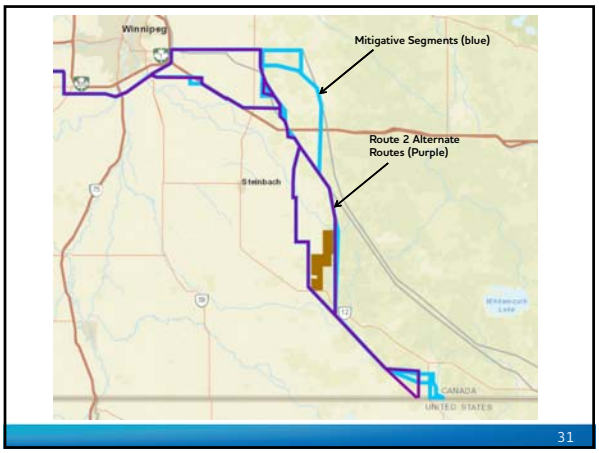
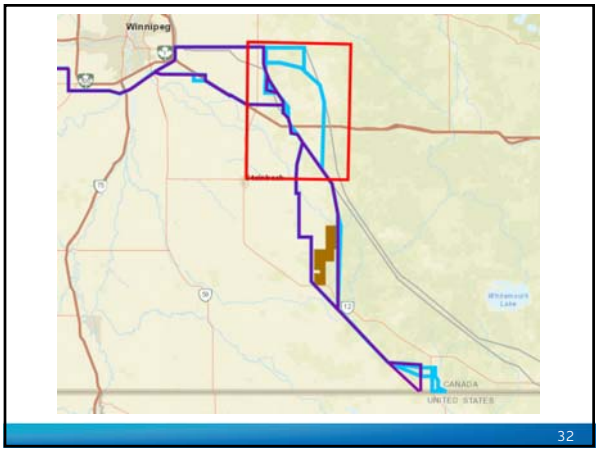

Route DKT
Route EEL
Route TC
Route AQS
28


201
Route AQS
207
210
29


30


Winnipeg
Mitigative Segments (blue)
Route 2 Alternate Routes (Purple)
Steinbach
CANADA
UNITED STATES
31


Winnipeg
CANADA
UNITED STATES
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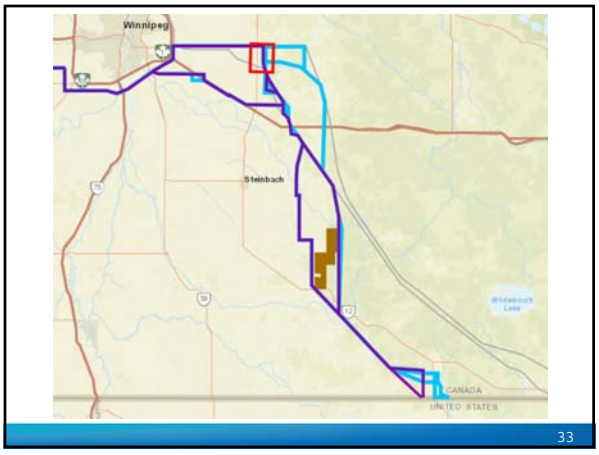
Winnipeg
Steinbach
CANADA
UNITED STATES
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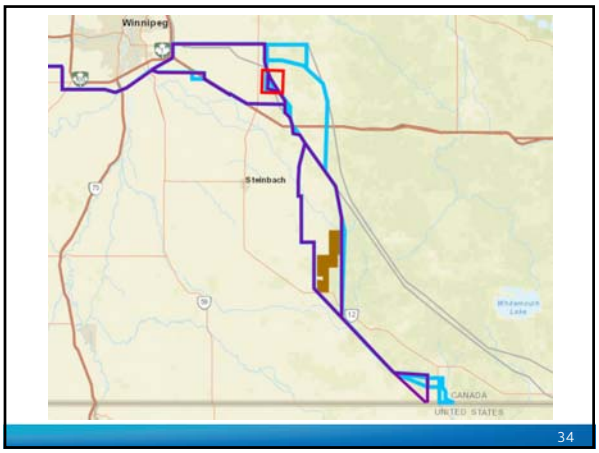
Winnipeg
Steinbach
CANADA
UNITED STATES
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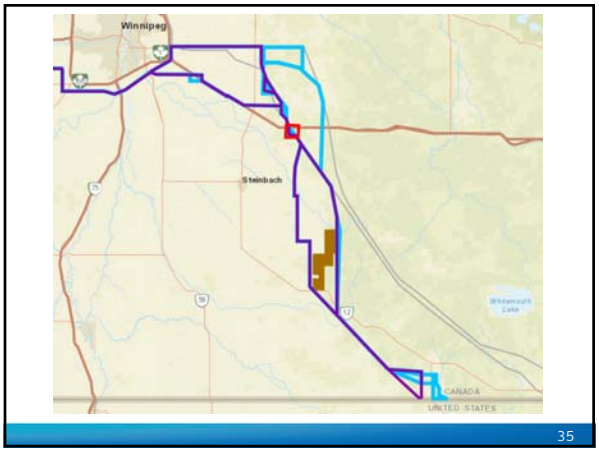
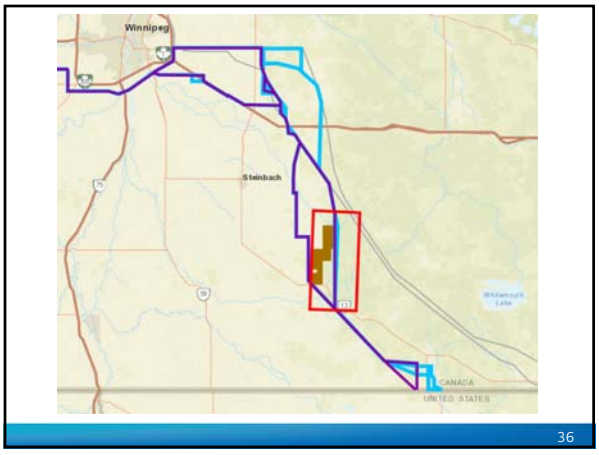
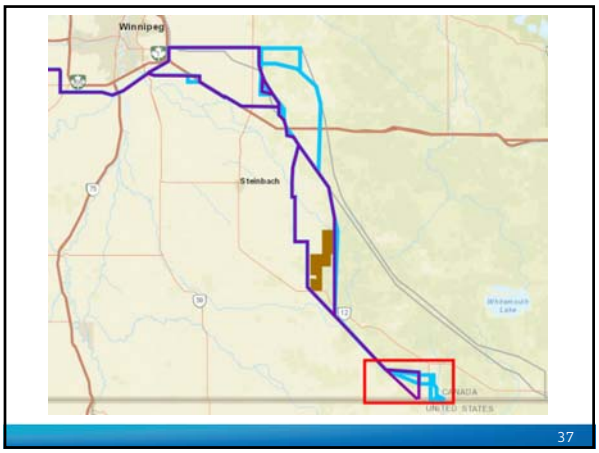
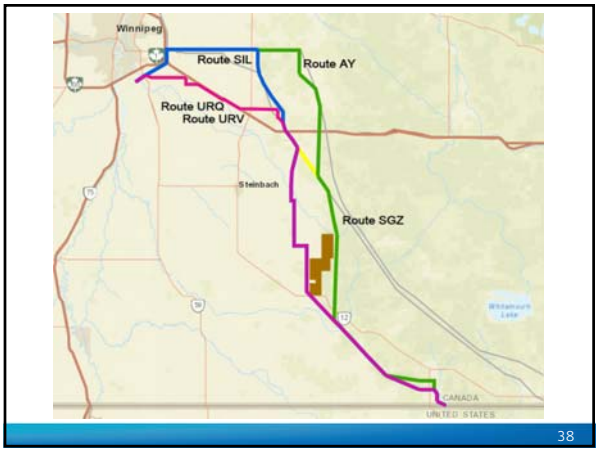
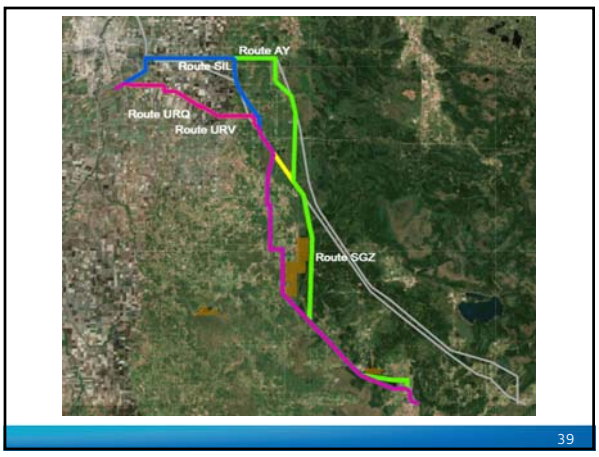
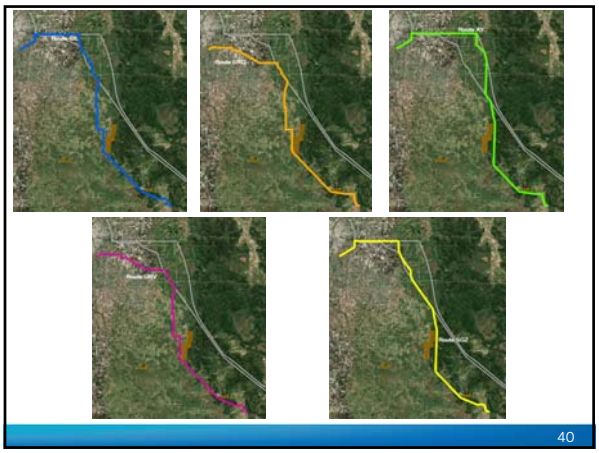

Winnipeg
Steinbach
CANADA
UNITED STATES
35


Winnipeg
Steinbach
CANADA
UNITED STATES
36


Winnipeg
Steinbach
CANADA
UNITED STATES
37


Winnipeg
Route SIL
Route AY
Route URQ
Route URV
Steinbach
Route SGZ
CANADA
UNITED STATES
38


Route AY
Route SIL
Route URQ
Route URV
Route SGZ
39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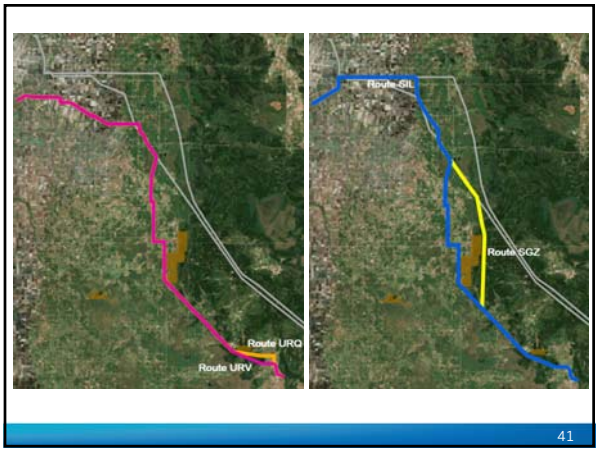
Route SIL
Route SGZ
Route URQ
Route URV
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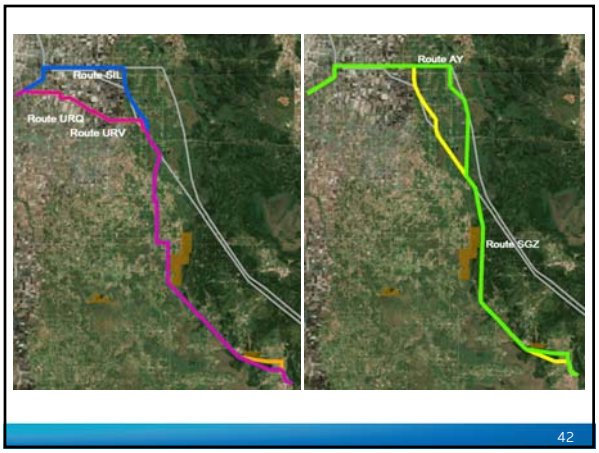
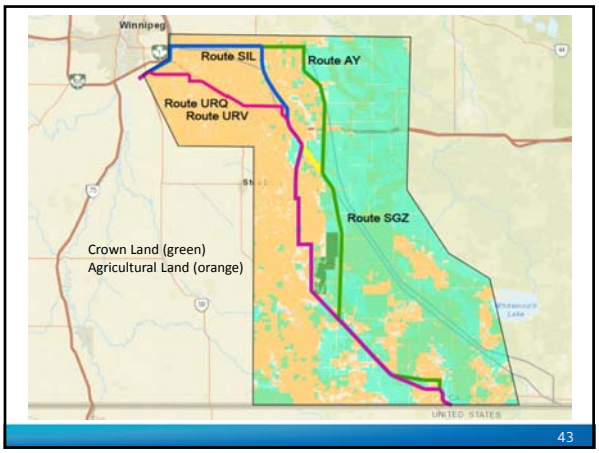
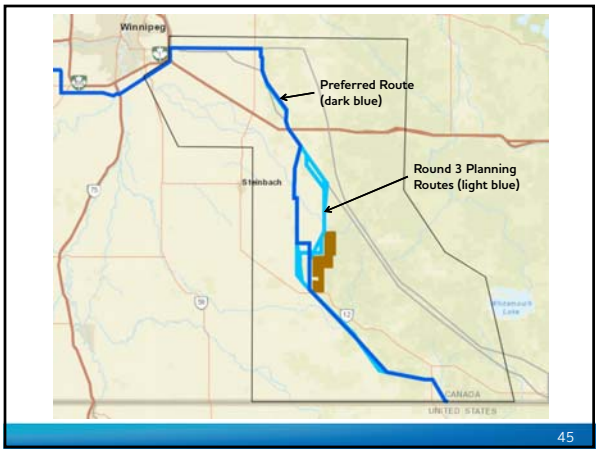
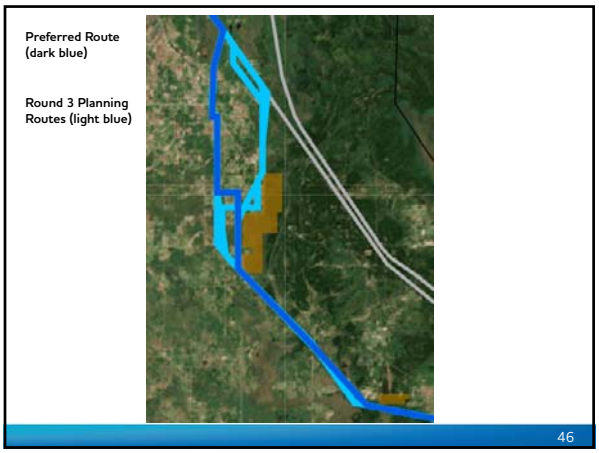
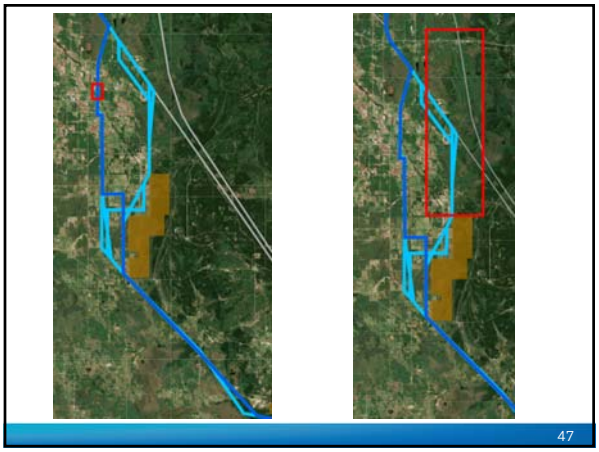

Route SIL
Route URQ
Route URV
Route AY
Route SGZ
42


Winnipeg
Route SIL
Route AY
Route URQ
Route URV
Route SGZ
Crown Land (green)
Agricultural Land (orange)
UNITED STATES
43


Winnipeg
Preferred Route
(Blue)
Steinbach
Route SIL
(yellow)
CANADA
UNITED STATES
44


Winnipeg
Preferred Route
(dark blue)
Steinbach
Round 3 Planning
Routes (light blue)
CANADA
UNITED STATES
45


Preferred Route
(dark blue)
Round 3 Planning
Routes (light blue)
46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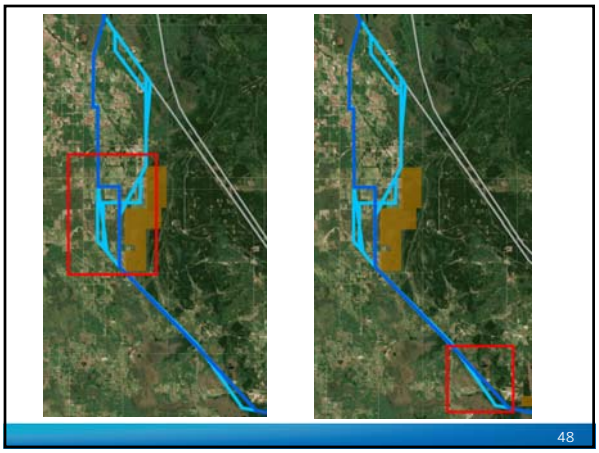
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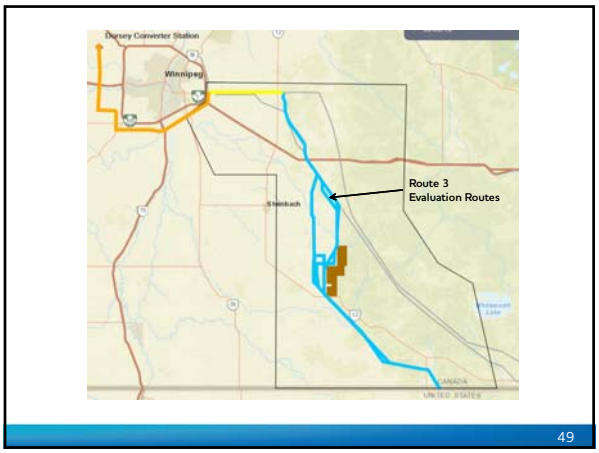
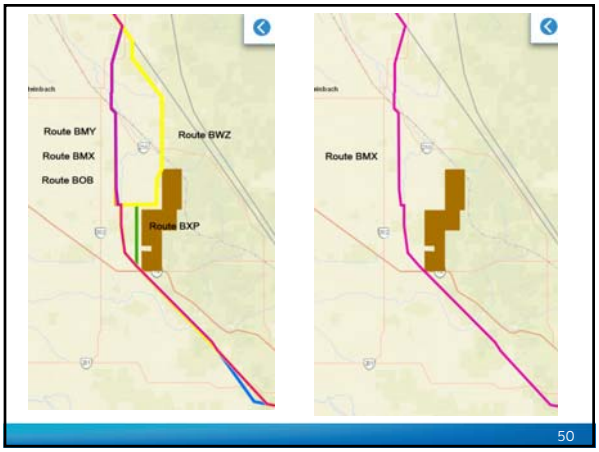
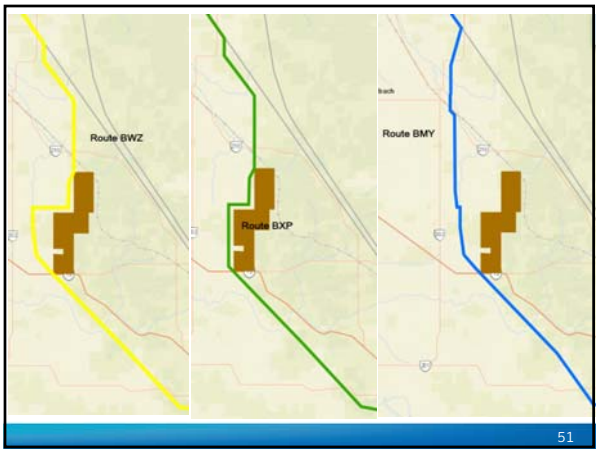

Dorsey Converter Station
Winnipeg
Steinbach
Route 3
Evaluation Routes
CANADA
UNITED STATES
49


Route BMY
Route BMX
Route BOB
Route BWZ
Route BXP
Route BMX
50


Route BWZ
Route BXP
Route BMY
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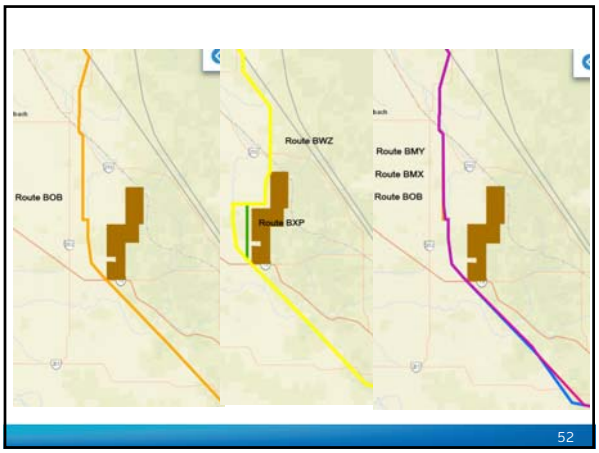
Route BOB
Route BWZ
Route BXP
Route BMY
Route BMX
Route BOB
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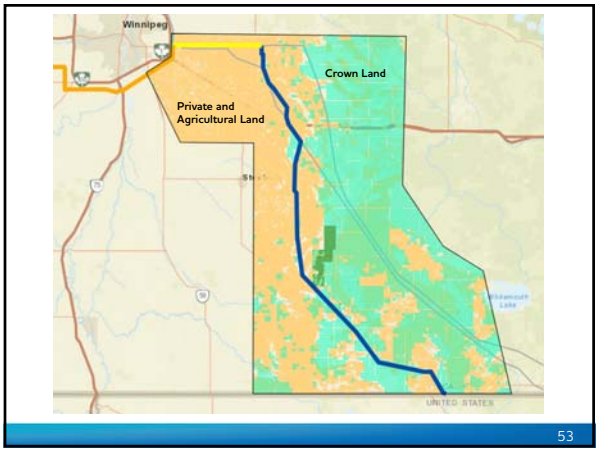
Winnipeg
Crown Land
Private and
Agricultural Land
UNITED STATES
53