



U.P. Energy Summit

Transmission Upgrades & Future Plans

October 26, 2011

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External Relations





Overview

- U.P. Energy Collaborative update
- Northern Plan proposal

A close-up photograph of a high-voltage electrical insulator, showing its multiple ceramic or porcelain discs and metal hardware, positioned in the upper left corner of the slide. The background is a clear blue sky with a subtle gradient.

U.P. Energy Collaborative

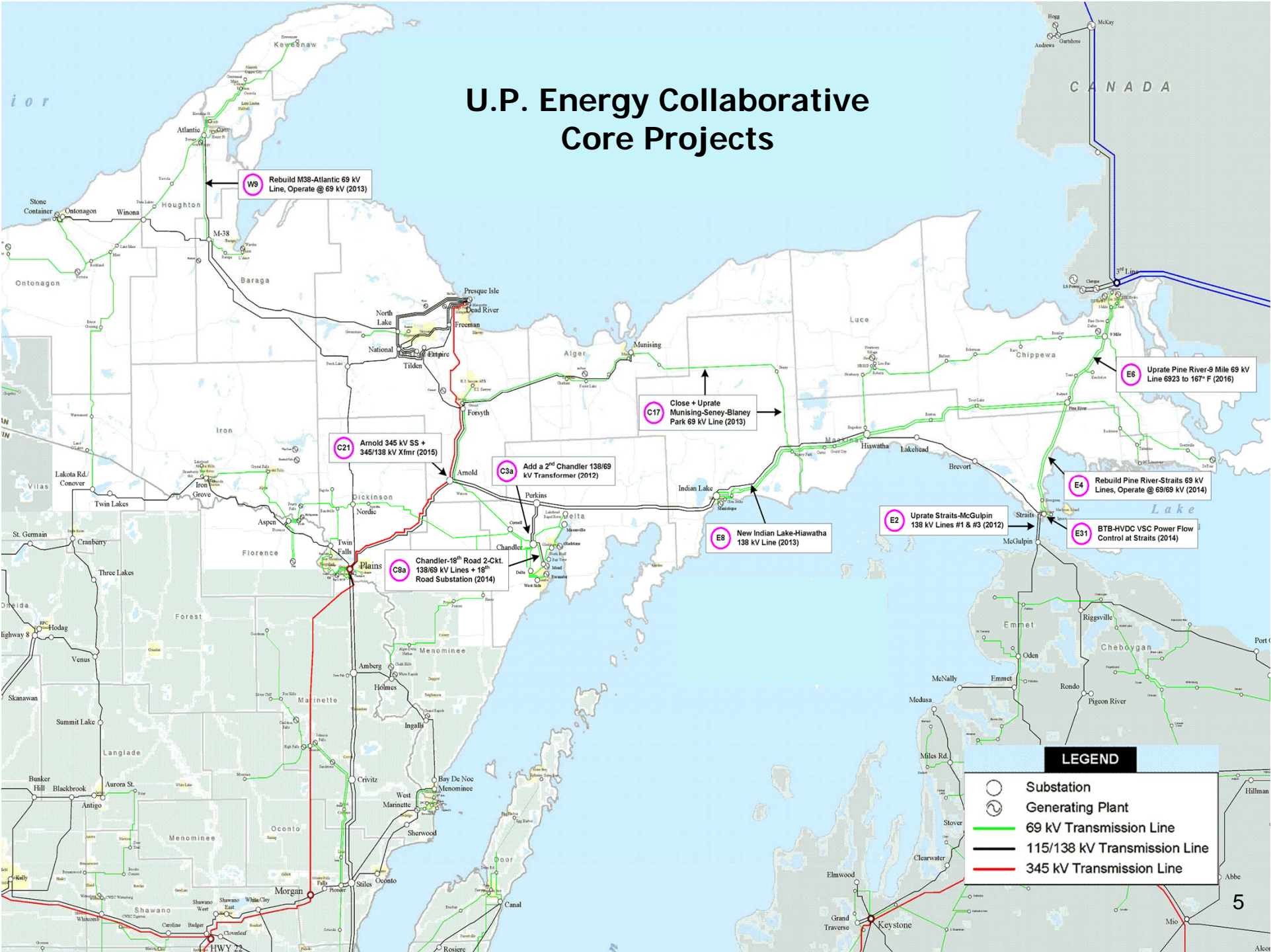




U.P. Energy Collaborative Outcomes

- Established an understanding of “plausible futures”, projected needs and risks
- Developed conceptual “solutions” that resolved the projected needs
- Selected a portfolio of “Core Projects” for design, permitting, construction and commissioning

U.P. Energy Collaborative Core Projects



LEGEND

- Substation
- Generating Plant
- 69 kV Transmission Line
- 115/138 kV Transmission Line
- 345 kV Transmission Line



U.P. Energy Collaborative Targets

- Eastern U.P. Area
 - ~\$145M*
 - Targeted ISDs: 2010 through 2016
- Escanaba Area
 - ~\$67M*
 - Targeted ISDs: 2010 through 2015
- Munising/Newberry Area
 - ~\$37M*
 - Targeted ISDs: 2011 through 2014
- Western U.P. Area
 - ~\$19M*
 - Targeted ISD: 2013

*denotes high level planning estimates



Ten Year Assessment

- Additional U.P. Energy Collaborative information can be found at:

www.atc10yearplan.com/UP_2011.shtml



Northern Plan Proposal





Northern Plan Proposal

- ATC is developing 4 sets of projects that resolve emerging concerns in Michigan's Upper Peninsula and Northern Wisconsin
 - Reliability is Job One!
 - Load, generation and transmission are marginally in balance
 - Uneconomic dispatch of generation
 - Necessary for voltage support and scheduling of maintenance



Northern Plan Proposal

- Impact of EPA rules and regulations on “Utility” and “Behind-the-Meter” generation
 - Reduced capacity
 - Potential retirements
- Limited ability to support new economic development projects
- \$350M to \$1 Billion in new Transmission
- Submitted for inclusion in MTEP 2012
 - Appendix A (Projects 2 and 3)
 - Appendix B (Projects 1 and 4)



Northern Plan Proposal

- Initial focus:
 - New 345-kV line between Green Bay, WI and Marquette, MI areas
 - New 138-kV line between Marinette County, WI and Delta County, MI
 - ~2016 ISD (preliminary)
 - Seeking “Out-of-Cycle” review and MISO Board approval in June 2012

ATC Northern Plan Solutions Packages 1-4

Solutions Package 1

- T10 Munising-Seney-Roberts 138 kV Line
- T11 Roberts-9 Mile 138 kV Line
- T12 9 Mile-Pine River 138/69 kV Rebuild
- T13 Pine River-Straits 138/69 kV Lines
- T14 Forsyth-Munising 138 kV Rebuild

Solutions Package 4

- T1a Gardner Park-Plains 345 kV Line, 143 mi.
- T1b Plains-National 345 kV Line, 57 mi.
- T5b Green Bay 345/138 kV Xfm
- T6b Green Bay-Morgan 138 kV 1-Ckt, 23 mi.

Solutions Package 2

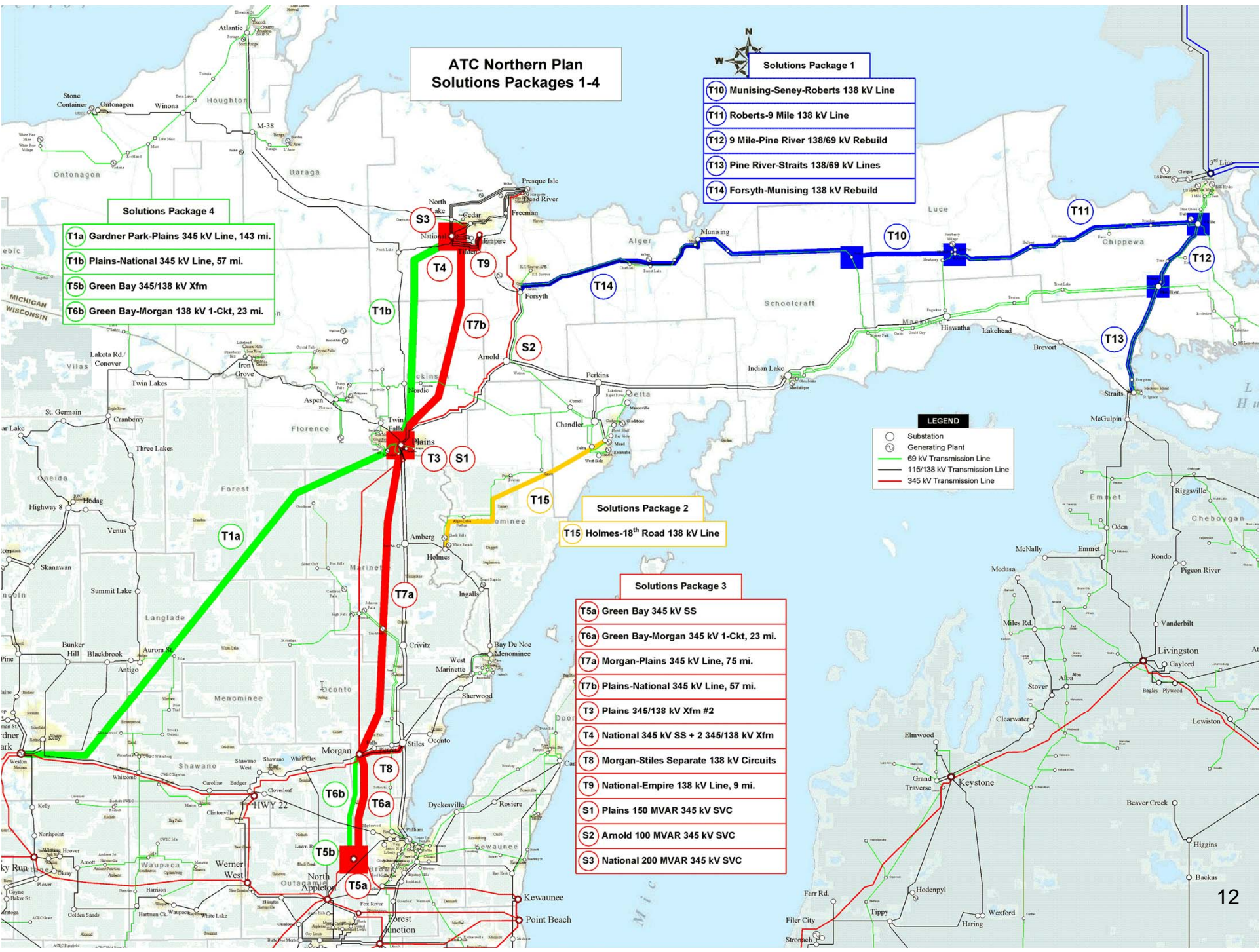
- T15 Holmes-18th Road 138 kV Line

Solutions Package 3

- T5a Green Bay 345 kV SS
- T6a Green Bay-Morgan 345 kV 1-Ckt, 23 mi.
- T7a Morgan-Plains 345 kV Line, 75 mi.
- T7b Plains-National 345 kV Line, 57 mi.
- T3 Plains 345/138 kV Xfm #2
- T4 National 345 kV SS + 2 345/138 kV Xfm
- T8 Morgan-Stiles Separate 138 kV Circuits
- T9 National-Empire 138 kV Line, 9 mi.
- S1 Plains 150 MVAR 345 kV SVC
- S2 Arnold 100 MVAR 345 kV SVC
- S3 National 200 MVAR 345 kV SVC

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Northern Plan Proposal

- Additional projects being proposed beyond 2016:
 - New 345-kV line from Wausau, WI to Marquette County
 - Reinforcements to the 138-kV network between Marquette County and the Eastern U.P.
 - ~2018 ISD (preliminary)

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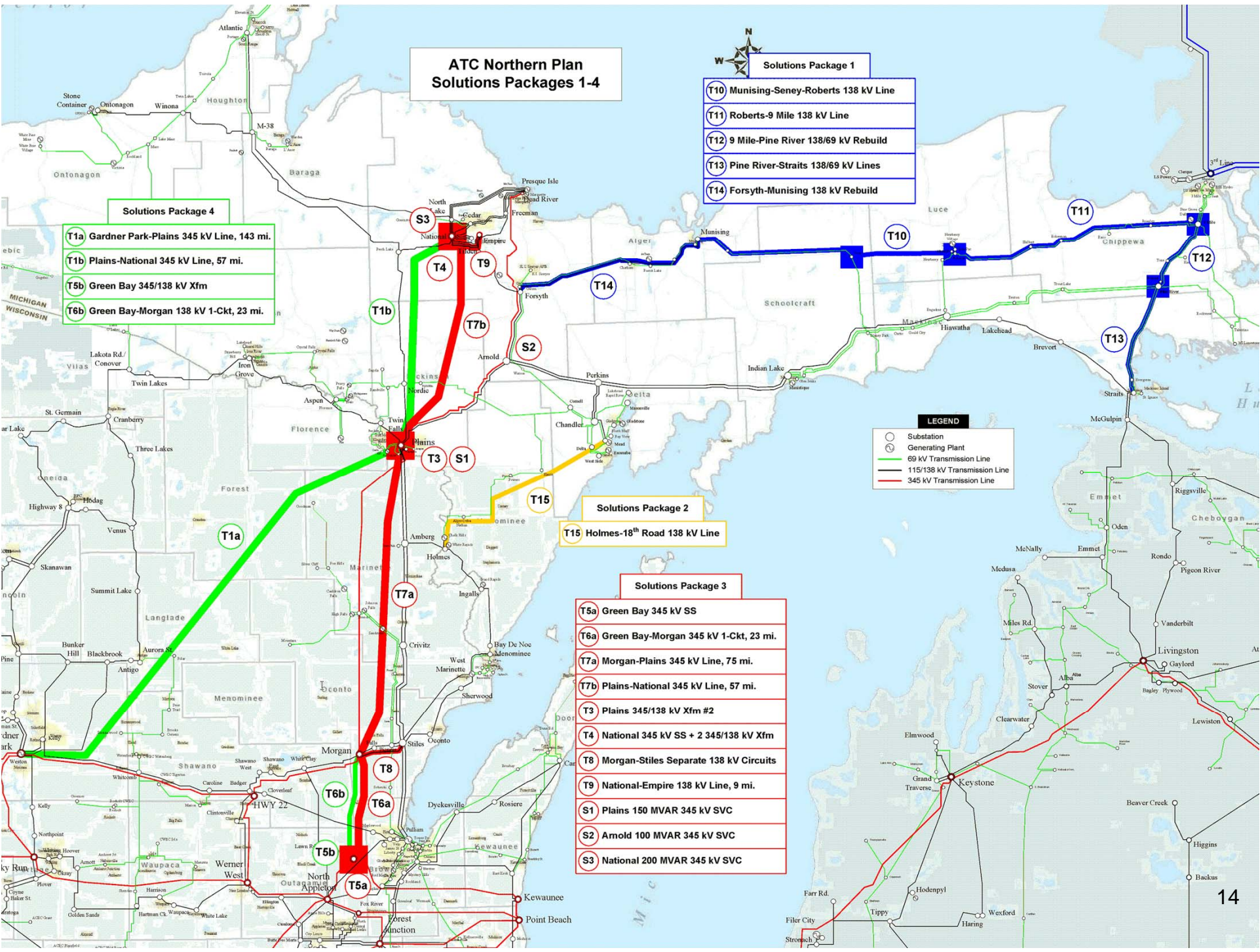
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Questions