



Transmission Upgrades & Future Plans

UP Energy Summit
October 6, 2010

Brett French
Senior Regional Manager
External Relations

Helping to **keep the lights on,**
businesses running and communities strong[®]



Overview

- Northern Umbrella Plan Update
- U.P. Energy Collaborative Update



Northern Umbrella Plan

Helping to **keep the lights on,**
businesses running and communities strong[®]



Northern Umbrella Plan *Update*

- A portfolio of 9 projects
- Developed in 2003 to address specific reliability and transmission capacity limitations between the U.P. and WI
- Represents an investment of ~\$550M by ATC to support and serve Michigan's U.P.
- Completed March 2010

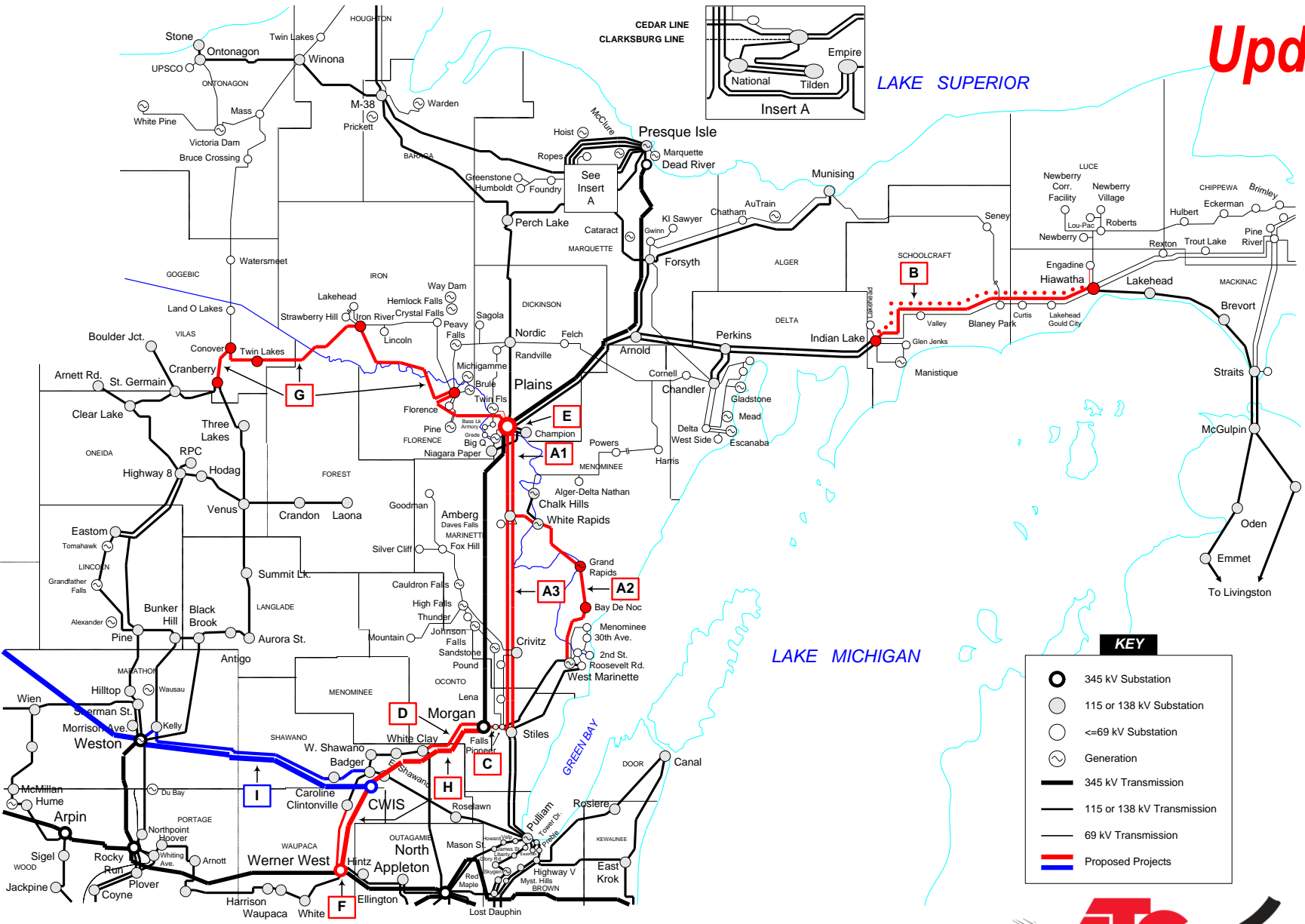
Northern Umbrella Plan *Update*

- Completed Projects:

- **A:** Plains – Stiles 138 kV Rebuild
- **B:** Indian Lake – Hiawatha 69 kV to 138 kV Rebuild
- **C:** Morgan – Stiles 138 kV Rebuild
- **D:** Morgan – White Clay 138 kV Up-rate
- **E:** Add 2nd Plains Transformer (cancelled in Feb. 2008)
- **F:** New Werner West 345/138 kV Substation
- **I:** Gardner Park – Central Wisconsin 345 kV Line
- **G:** Cranberry – Conover – Plains Project
- **H:** Morgan – Werner West 345 kV Line

Northern Umbrella Plan

Update



KEY

- 345 kV Substation
- 115 or 138 kV Substation
- <=69 kV Substation
- ⊙ Generation
- 345 kV Transmission
- 115 or 138 kV Transmission
- - - 69 kV Transmission
- Proposed Projects



Northern Umbrella Plan *Benefits*

- Considerable increase in transfer capacity between the U.P. and Wisconsin
- Greater flexibility for maintaining and managing existing assets
- Increased reliability
- Increased access to energy markets
- Increased taxable value of U.P. infrastructure



U.P. Energy Collaborative

Helping to **keep the lights on,**
businesses running and communities strong[®]





U.P. Energy Collaborative *Objective*

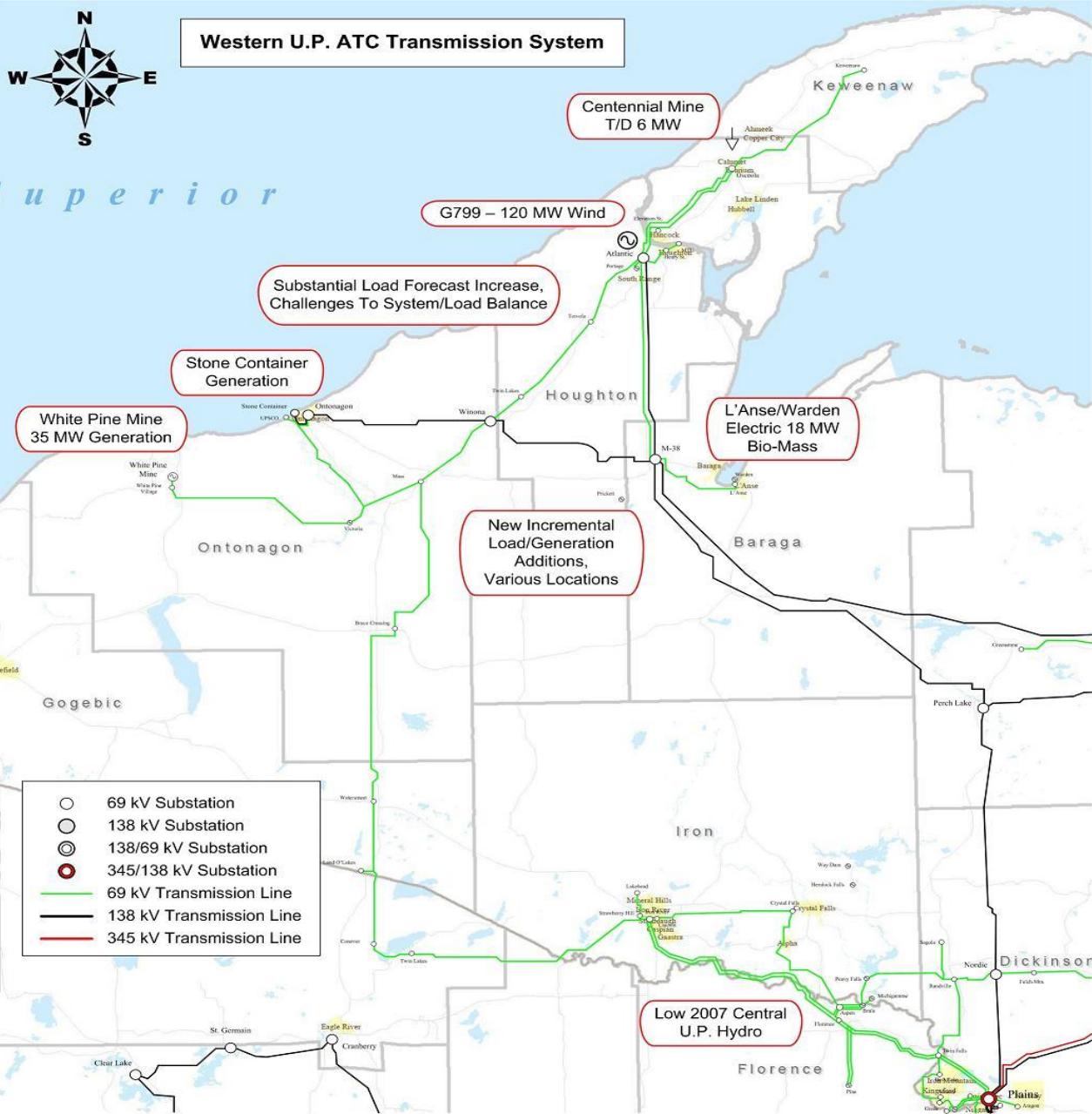
- Evaluate the needs of Michigan's Upper Peninsula considering:
 - Plausible Futures
 - Reliability
 - Economics
 - Risks

U.P. Energy Collaborative *Approach*

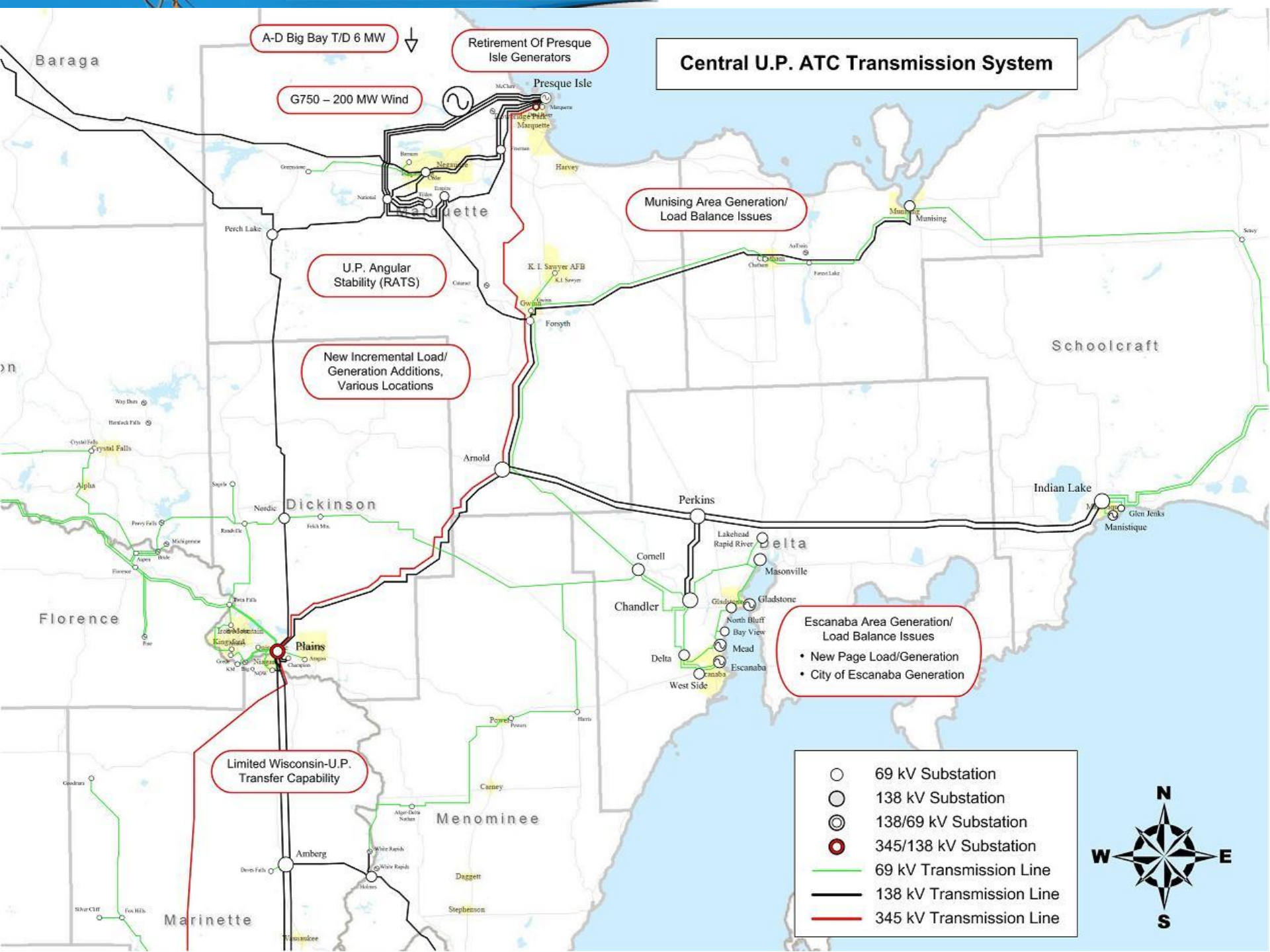
- Work closely with stakeholders
 - Develop and model “Plausible Futures”
 - Loads (scalable and point)
 - Generation (existing and new)
 - Predict future transmission needs
 - Develop/evaluate potential solutions
 - Seek feedback on potential solutions
 - Offer recommendations to Management

U.P. Energy Collaborative Outcomes

- Develop an understanding of the various “plausible futures”, projected needs and inherent risks
- Develop conceptual “solutions” that meet the intermediate (2018) and long-term (2024) needs of the U.P.
- Develop, design, permit and construct “Core Projects”



Central U.P. ATC Transmission System



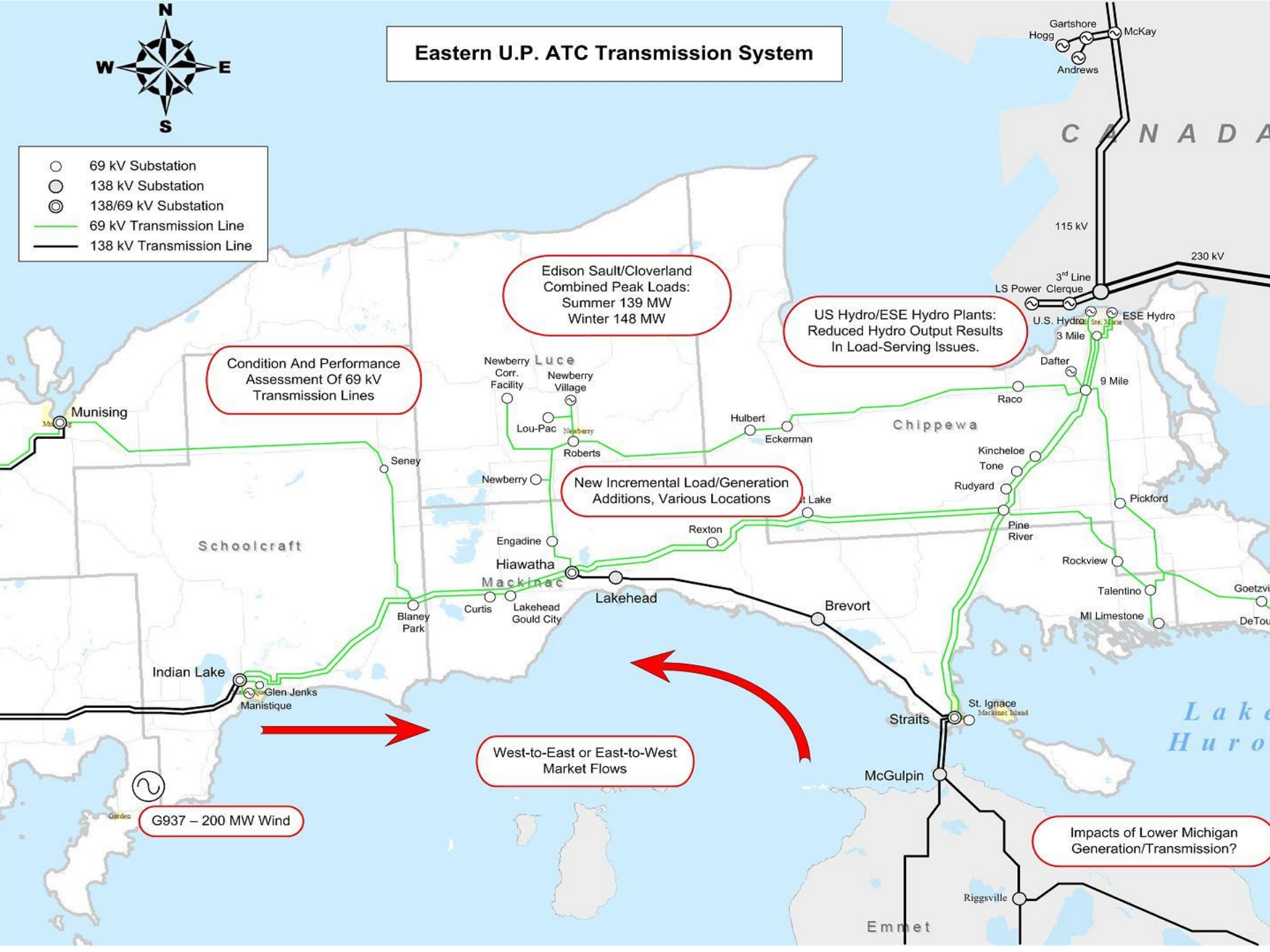
- 69 kV Substation
- 138 kV Substation
- ⊖ 138/69 kV Substation
- ⊖ 345/138 kV Substation
- 69 kV Transmission Line
- 138 kV Transmission Line
- 345 kV Transmission Line



Eastern U.P. ATC Transmission System



- 69 kV Substation
- 138 kV Substation
- ⊙ 138/69 kV Substation
- 69 kV Transmission Line
- 138 kV Transmission Line



Edison Sault/Cloverland
Combined Peak Loads:
Summer 139 MW
Winter 148 MW

US Hydro/ESE Hydro Plants:
Reduced Hydro Output Results
In Load-Serving Issues.

Condition And Performance
Assessment Of 69 kV
Transmission Lines

New Incremental Load/Generation
Additions, Various Locations

West-to-East or East-to-West
Market Flows

G937 – 200 MW Wind

Impacts of Lower Michigan
Generation/Transmission?

U.P. Energy Collaborative Status

- Planning analysis nearly complete
 - Added High Retirements II future
- Reviewing/refining solutions
- Seeking management & Board approval of “Core Projects”
- Transitioning to detailed design, permitting and construction phase
 - Eastern U.P. Area
 - Escanaba Area

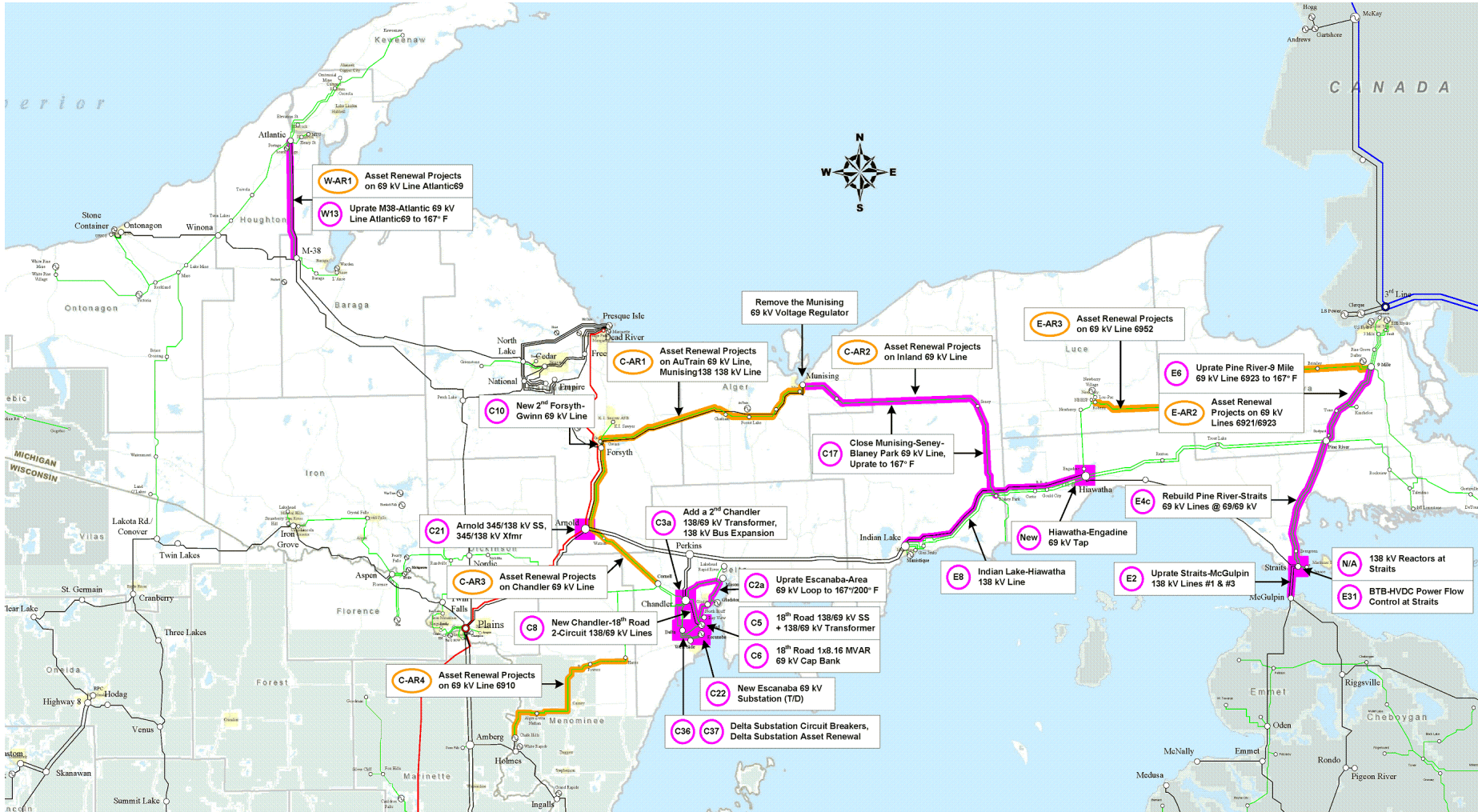
ATC Planning Definitions

	Planned	Proposed	Provisional
Status of ATC planning activities	Studies complete	Studies not complete	Studies not complete
Application for regulatory approval	Application pending or issued	None	None
Project status	Project in construction planning phase or under construction	Project identified as preferred alternative	Placeholder project; not necessarily a preferred project alternative
Project included in generation interconnection power flow models	Project included	Project not included	Project not included

U.P. Energy Collaborative Core Projects



U.P. Energy Collaborative Core Projects



U.P. Energy Collaborative

Eastern U.P. Area

Core Project Name	U.P. Energy Collaborative Reference Code	Target ISD	Status
Eastern U.P. Area			
Straits Reactors	N/A	2010	In-service
Straits – McGulpin uprate (overhead)	E2	2011	Planned
Straits – Pine River line rebuild	E4c	2014	Planned
Straits – HVDC flow control	E31	2014	Provisional
Indian Lake – Hiawatha 138 kV Line	E8	2014	Provisional
Pine River – Nine Mile uprate	E6	2016	Provisional
Pine River – Nine Mile asset renewal	E-AR2	2016	Provisional

U.P. Energy Collaborative Escanaba Area

Core Project Name	U.P. Energy Collaborative Reference Code	Target ISD	Status
Escanaba Area			
Uprate Escanaba 69 kV Loop	C2a	2010	In-service
Chandler Line insulator replacements	C-AR3	2010	Planned
Chandler SS second transformer	C3a	2011	Proposed
Chandler SS Ring Bus	C3a	2012	Proposed
Delta SS breakers	C36	2012	Proposed
Delta SS asset renewal	C37	2012	Proposed
18 th Road 138/69 kV substation	C5	2014	Provisional
18 th Road Capacitor Bank	C6	2014	Provisional
Chandler – 18 th Road 138/69 kV line	C8	2014	Provisional
Breaker/Relay/Cap Bank replacements	New	Varied	Varied
Chalk Hills – Powers line asset renewal	C-AR4	2020*	Provisional

*Target ISD is tentative

U.P. Energy Collaborative

Munising/Newberry Area

Core Project Name	U.P. Energy Collaborative Reference Code	Target ISD	Status
Munising/Newberry Area			
Nine Mile – Roberts asset renewal	E-AR3	2012*	Planned
Hiawatha – Engadine 69 kV Tap	New	2012*	Provisional
Munising Line asset renewal	C-AR1	2012*	Provisional
AuTrain Line asset renewal	C-AR1	2013*	Provisional
Inland Line uprate	C17	2014*	Provisional
Inland Line asset renewal	C-AR2	2014*	Provisional
Gwinn – Forsyth 69 kV line (new line)	C10	2016*	Provisional

* Target ISDs are tentative

U.P. Energy Collaborative

Western U.P.

Core Project Name	U.P. Energy Collaborative Reference Code	Target ISD	Status
West Area			
M38 – Atlantic Line uprate	W13	2013	Provisional
M38 – Atlantic asset renewal	W-AR1	2013	Provisional



U.P. Energy Collaborative *Preliminary Targets*

- Eastern U.P. Area
 - ~\$145M*
 - Targeted ISDs: 2010 through 2016
- Escanaba Area
 - ~\$44M*
 - Targeted ISDs: 2010 through 2020
- Munising/Newberry Area
 - ~\$42M*
 - Targeted ISDs: 2012 through 2016
- Western U.P. Area
 - ~\$20M*
 - Targeted ISD: 2013

**Denotes high level planning estimates*



U.P. Energy Collaborative

Next Steps

- Continue to solicit feedback from stakeholders regarding solutions
- Continue efforts to evaluate non-transmission alternatives
- Refine solution sets, as necessary to incorporate feedback
- Design, permit and construct projects

Questions