ATC has continued to develop and refine the results of our ATC Energy Collaborative – Michigan (U.P.). In the 2009 10-Year Assessment, we identified core solution sets. In the 2010 10-Year Assessment, we are reporting on the progress of solution development as well as the preliminary results of our High Retirements Future Enhancement studies.

As the system needs analysis and solution development proceeded we found it convenient to identify four critical areas within the three original U.P. study zones due to system performance and geographical characteristics unique to those areas. These four areas are:

- Eastern area – located within the eastern U.P. study zone, and consists of the far eastern U.P. (St. Ignace and Sault Ste. Marie areas) and the lower half of the eastern U.P. to Manistique.
- Escanaba area – central Delta County in the southern part of the central U.P. study zone.
- Munising/Newberry area – located in the north eastern portion of the central and northwestern portion of the eastern U.P. study zones, from Forsyth east through Newberry to Brimley.
- Western area – defined the same as the western U.P. study zone.

Please refer to the 2009 ATC Energy Collaborative – Michigan for the details related to our 2009 studies.

Project development progress

Eastern area core solutions

The major efforts to report since our last Assessment are as follows:

1) *Straits-Pine River rebuild* – This project is being developed as a 138-kV double circuit rebuild of the two existing 69-kV circuits operating at 69 kV until further development of a potential new load in Kinross Township (Kinross). If the Kinross load materializes, additional projects would be put in place. In-service date is expected to be 2014.
2) *Pine River-Nine Mile Uprate and Asset Renewal* – This will be the project we need to put in service by 2016 if Kinross load does not appear. Kinross Load would require a 138/69-kV double-circuit rebuild of these two 69-kV circuits.
3) *Straits Flow Control* – ATC, in conjunction with ITC and MISO, is continuing planning activities to choose the appropriate flow control solution for the Eastern U.P. The current goal is to ensure that the project is in the design phase by early 2011. This project and the associated Hiawatha-Indian Lake 69- to 138-kV conversion are crucial to improving critical operating concerns in the eastern Upper Peninsula and

extreme northern Lower Peninsula of Michigan. In-service date is expected to be roughly 2014.

4) *Straits Reactors* – This relatively inexpensive project was added since the 2009 studies as a short-term way to help control high voltages at Straits and McGulpin substations. Flow control is still needed to deal with the concerns caused by relatively large power flow swings for the area's 69-kV system. In-service date is expected to be late 2010.

The complete list of core projects that we've identified and are reviewing with stakeholders are depicted in Figure UP-8C-E:

1. Uprate both Straits-McGulpin 138-kV overhead lines (E2),
2. Rebuild the Pine River-Straits 69-kV lines as 138-kV double circuit, operate at 69 kV (E4),
3. Uprate Pine River-Nine Mile 69-kV line 6923 to 167 deg F and asset renewal projects (E6, E-AR2),
4. Nine Mile-Edison Sault Hydro Asset Renewal Projects (E-AR4),
5. Power Flow Control on the Straits-McGulpin 138-kV Lines (E3 or E31),
6. Energize the second Indian Lake-Hiawatha line at 138 kV (E8), and
7. Add reactors to the tertiary windings of the Straits 138-69 kV transformers (E32).

However, if the Kinross load is confirmed then projects E4, E6, and E-AR2 will be replaced with project E23:

1. Rebuild Pine River-Straits 69-kV lines as 138-kV double circuit, rebuild Pine River-Nine Mile as 138/69-kV double circuit, add a new 138/69-kV transformer each at Pine River and Nine Mile substations (E23), and
2. Other core projects are E2, E-AR4, E3 or E31, and E8.

The earliest the Kinross load could be connected to required transmission projects would be 2014. Please refer to Zone 2 – 2015 study results and our Asset Renewal section for further details related to the above projects.

Escanaba area core solutions

Since our 2009 Assessment, we have focused on refining the core solutions in this area particularly to identify short lead-time solutions that could expedite improving service to our customers in this area. The refined list of core projects that ATC and its stakeholders have identified in the Escanaba area is shown in Solution Set D of Figure UP-8C-ESC and includes the following:

Projects in service:

1. Uprate the Escanaba area 69-kV loop lines to 167/200ºF operation (C2a), and
2. Uprate Delta-Escanaba 69-kV lines #1 & #2 to 55 MVA (C25, C26, one line non-ATC).

Near-term projects:

1. Asset Renewal Project on the Chandler 69-kV line (C-AR3),
   - Project is scheduled for completion in 2010.
2. Install a second 138/69-kV transformer at the Chandler Substation (C3), and
   - Project is in the design phase, includes providing for a 138-kV ring bus, and is scheduled to be in service in 2012.
3. Install 69-kV bus tie breaker and replace five Delta 69-kV breakers (new in 2010 analyses).
   - Breaker projects will provide greater generator stability during system disturbances, greater operating flexibility and will be in service prior to the year 2012.

Next priorities:

1. Extend the 138-kV system into the major load areas of Escanaba (C5, C6, C8), and
   - Provisional projects are moving forward with 2014 in-service dates.
2. Asset Renewal project on the 6910 69-kV line (C-AR4).
   - Provisional project is moving forward with a 2018 in-service date.

Remaining priorities:

1. Construct a new Escanaba D-T Substation (C22, non-ATC),
   - Provisional project is moving forward with a 2014 in-service date pending D-T interconnection request analyses.
1. Add a new 345/138-kV transformation at the Arnold Substation (C21).
   - We are currently considering whether to install the Arnold transformer or an alternative, the Chalk Hills – Chandler 138-kV line project. The answer is dependent on determining generation availability in the area.

Please refer to Zone 2 – 2011 study results and our Asset Renewal section for further details related to the above projects.

Munising/Newberry area core solutions

The list of core projects that ATC and its stakeholders identified in the Munising area is shown in Solution Set B of Figure UP-8C-MN and includes the following:

1. Construct a second Gwinn-Forsyth 69-kV line (C10),
   - This project is provisional in nature with a tentative 2016 in-service date. Further studies will be conducted in 2010-2011 to determine the scope and in-service date of this project.
2. Close the normally open Seney-Blaney Park 69-kV line and uprate the entire Munising-Seney-Blaney Park 69-kV (Inland) line to 167º F operation (C17),

- This project is provisional in nature and moving forward with a 2014 in-service date.

3. Asset Renewal projects on the Munising138 138-kV line (C-AR1), and
   - This project is proposed in nature and is scheduled for a 2012 in-service date.
4. Asset Renewal projects on the AuTrain, Inland, and 6952 69-kV lines (C-AR1, C-AR2, C-AR3).
   - These 69-kV projects are proposed in nature and have projected in-service dates in the 2011-2014 timeframe.

Please refer to Zone 2 – 2011 study results and our Asset Renewal section for further details related to the above projects.

Western area core solutions
ATC intends to implement more detailed project development later this year or early 2011 for the western area. The refined list of core projects that ATC and its stakeholders identified in the Western area is shown in Figure UP-8C-W includes the following:

1. Uprate the M38-Atlantic 69-kV overhead line to 167º F and Minimum Asset Renewal (W13, W-AR1), and
   - This project is provisional in nature. The scope is being developed and is moving forward in the 2014 timeframe.
2. Asset Renewal of Conover – Mass 69-kV line 6530 (W-AR2).
   - This project is provisional in nature and is scheduled to be in-service in the 2018 timeframe.

Please refer to Zone 2 – 2011 study results and our Asset Renewal section for further details related to the above projects.

High Retirements Future Enhancement
In 2010, we kicked off the High Retirements #2 Future to respond to stakeholder feedback given during the Collaborative process. As part of this effort, we initiated an update to the previous High Retirements future, working with stakeholders to develop and revise our modeling assumptions to create a new 2024 model. The feedback that our stakeholders identified the following adjustments to our 2024 summer peak model:

- Increase load levels to 1.0 - 1.5% growth per year, and
- Assume very low U.P. generation.
  - Scenario 2A – 350 MW of area generation assumed retired, and
  - Scenario 2B – 500 MW of area generation assumed retired.

Our preliminary analyses indicate that our models will not solve under six critical contingencies in scenarios 2A and 2B. Therefore significant transmission and/or generation upgrades would likely be required to address either scenario. Please refer to the UP Collaborative - HR2 Needs presentation for details.

The results of our preliminary needs analyses under one non-convergent 345-kV contingency are shown in Figure UP-HR1. As shown, if 350 MW of U.P. area generation are assumed retired, the potential for widespread voltage collapse could exist under contingency conditions in the U.P. including the northern portion of Wisconsin.

We recently determined preliminary solutions to the issues identified in scenarios 2A and 2B. To address the potential issues, a series of studies was recently completed to determine the most efficient way to resolve the prospective situation(s), using several strategies:

- New 345-kV transmission lines from Northern Wisconsin into the U.P.,
- New 138-kV transmission lines traversing portions of the U.P. and northern Wisconsin,
- Synchronous condensers at various sites in the area,
- Static VAR Compensators (SVCs) at various sites in the area,
- Generation at various sites in the area, and/or
- Any combination of the above.

Please refer to the UP Collaborative - HR2 Preliminary Solutions presentation for the results of our initial screening analyses.

Conclusion
ATC will continue to develop and refine core projects identified as part of the U.P. Energy Collaborative. Results from our High Retirements #2 study may add projects for further consideration.

ATC Energy Collaborative – Michigan High Retirements #2 Future

Identification of Needs

Stakeholder Report

May 10, 2010

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Overview

- Goals and Objectives
- Process & Timeline
- Methodology
- Identification of Needs
- Solution Screening
- Next Steps

Goals and Objectives

- Respond to Feedback From the Initial Collaborative Process in 2008/09
  - System Operations Experience
  - Stakeholder Questions
- Stretch the "Plausible Bounds" we used in the High Retirements
  - Mid to Mid Upper Loads
  - Very Low UP Generation

Process and Timeline

- January – Selected High Retirements as the best existing Future to modify
- February – Outreach to Stakeholders for Feedback in setting new Bounds
- March/April – Run Power-flow cases to find System “Needs”
- May – Stakeholder Outreach to discuss “System Needs”
- July – Potential Solutions

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Needs Study Details High Retirements #2

- What System Needs emerge if about 500MW of traditionally available UP Generation is not dispatched?
  - To get to that answer ATC created an Intermediate “Sensitivity” with about 350MW not dispatched.
- Load is assumed to be at levels seen within the last 15 years
  - Equivalent to 1 to 1 ½ % load growth
- 2024 Study Year

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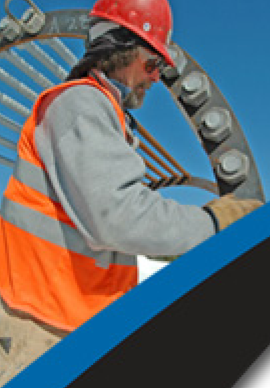

Needs Study Details

- Assumed “Core” Transmission Upgrades from the Collaborative are in service
  - Key assumption is “Flow Control” in the East UP
- Inserted 150 MVar of Synchronous Condensers when 500MW of UP Generation is not Dispatched
  - Needed to get the Power-Flow case to solve
- System Needs
  - MWs of System Line Flows
  - MVars Needed to Support System voltages

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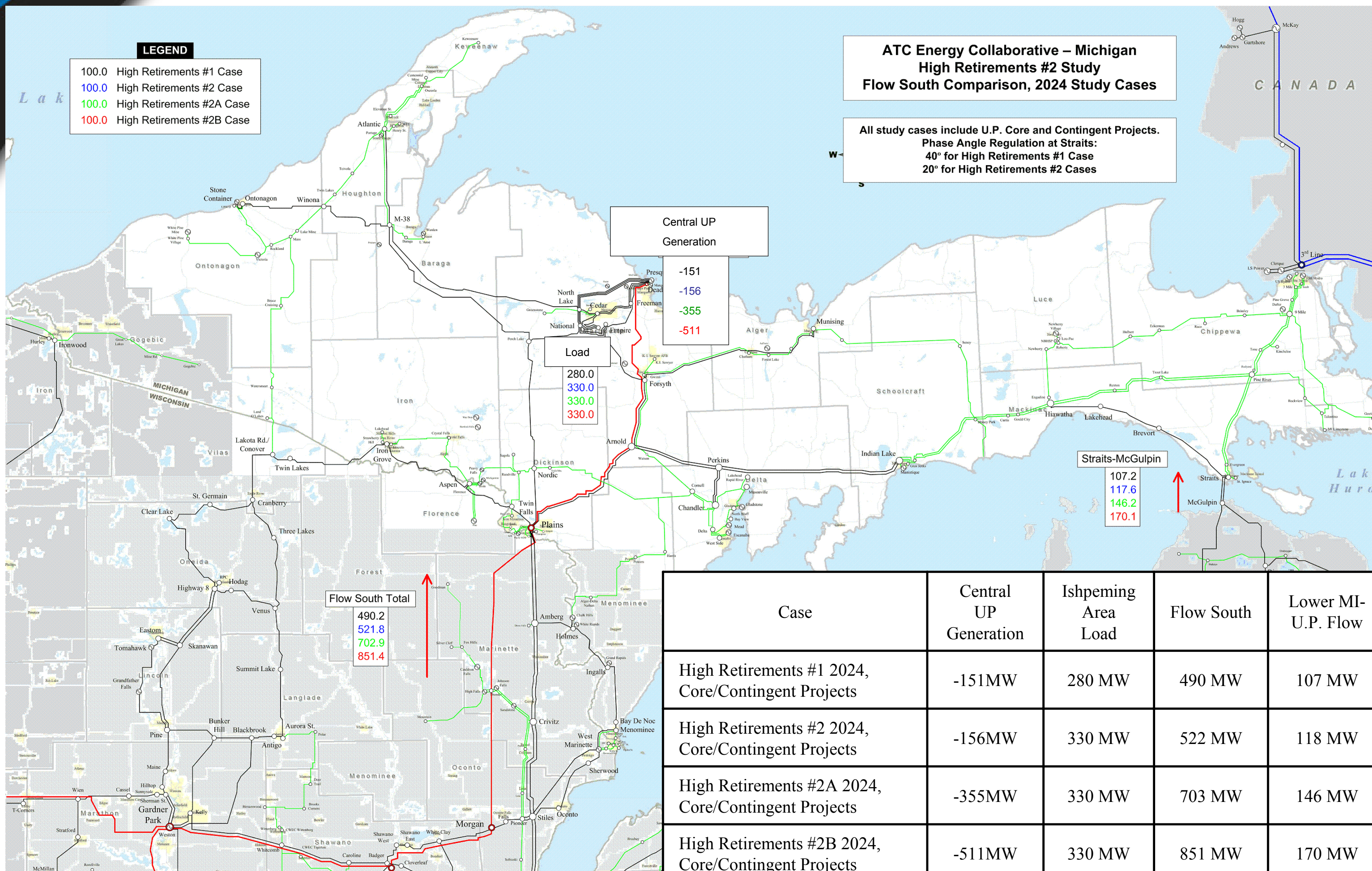
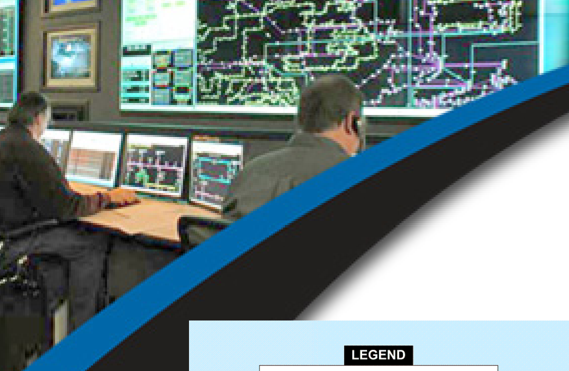
System Flows for High Retirements #2

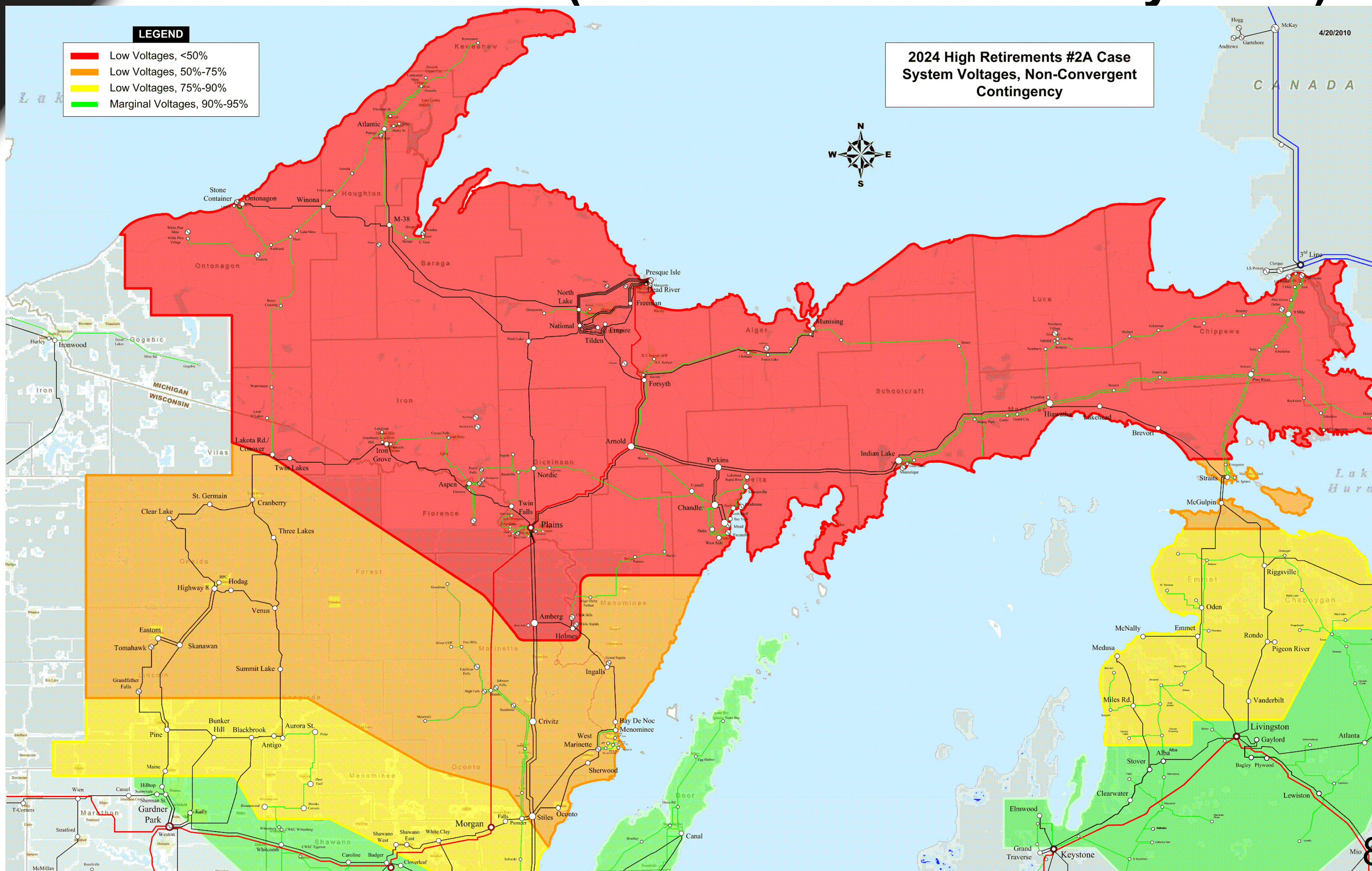


Case	Central UP Generation	Ishpeming Area Load	Flow South	Lower MI-U.P. Flow
High Retirements #1 2024, Core/Contingent Projects	-151MW	280 MW	490 MW	107 MW
High Retirements #2 2024, Core/Contingent Projects	-156MW	330 MW	522 MW	118 MW
High Retirements #2A 2024, Core/Contingent Projects	-355MW	330 MW	703 MW	146 MW
High Retirements #2B 2024, Core/Contingent Projects	-511MW	330 MW	851 MW	170 MW



System Voltages for High Retirements #2

(Intermediate Sensitivity Case)



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Next Steps

- Review “Needs” with Stakeholders
- Solution Screening
  - Preliminary development within ATC
    - Transmission MW and MVar capabilities
  - Stakeholder involvement
    - Generation Solutions?
    - Synchronous Condenser Conversions?
    - Other Stakeholder Solution Ideas
- Determine if Solution Set Projects are Core or Contingent

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Stakeholder Participation

- Please Contact
  - Brett French at bfrench@atcllc.com
    - Or (906) 779 7902

OR

  - Ken Copp at kcopp@atcllc.com
    - Or (262) 506 6890

Questions??

- Questions Today??

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ATC Energy Collaborative – Michigan High Retirements #2 Future

Summary of Results

September 21, 2010

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

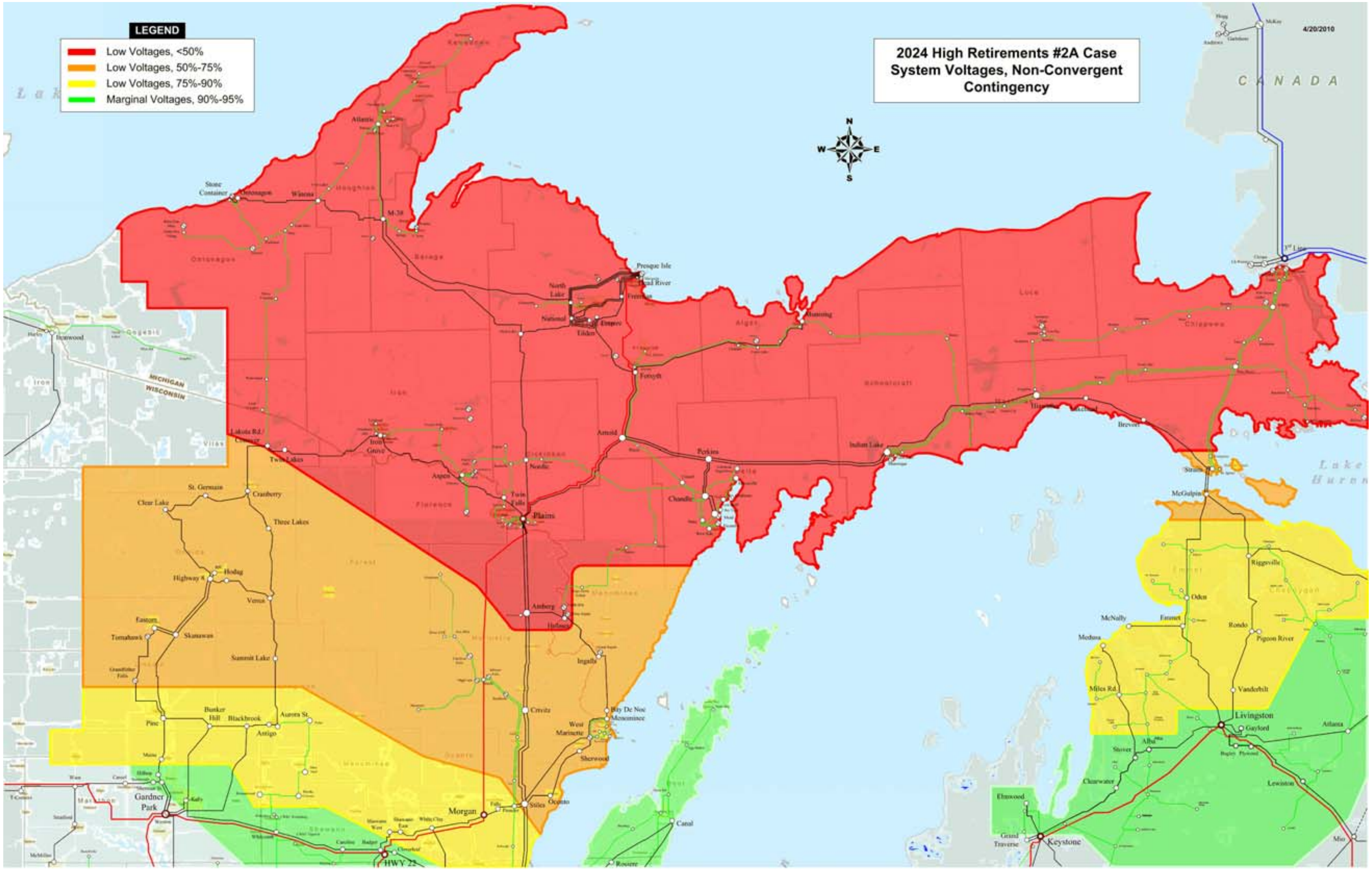
Agenda

- Background
- Needs
- Option types tested
- Other assumptions and limitations
- Contingent solutions

Background

- High Retirements future starting case
- Respond to stakeholder feedback from the Collaborative process
  - 2024 study year
  - Summer peak case
  - Increase load levels to 1.5% growth/year
  - Very low U.P. generation
    - Scenario 2A – 350 MW assumed retired
    - Scenario 2B – 500 MW assumed retired

Needs: System Voltages in Scenario 2A



Conceptual Options Studied

- 345-kV transmission
- 138-kV transmission
- 345/138-kV transmission
- Synchronous condensers
- Generation at another site
- SVC or other reactive support
- Combinations

2A Conceptual Solutions

350 MW generation retired

- Option 1 - 345-kV transmission
  - Two 345-kV lines, 160 total miles
  - $330 million capital
- Option 2 - 138-kV transmission
  - Seven 138-kV lines, 676 total miles
  - 345/138-kV transformer
  - $460 million capital
- Option 3 - Generation
  - 250 MW generation (2@100, 1@50)
  - 35 MVAR synchronous condenser
  - Uprate existing 138-kV line ($5M estimated)
  - $170 - $240 million capital
- Option 4 - Synchronous condensers
  - Did not work as a stand-alone option

2B Conceptual Solutions

500 MW generation retired

- Option 1 - 345-kV transmission
  - Two lines, 160 miles
  - 105 MVAR synchronous condenser
  - $340 million capital
- Option 2 - 345/138-kV transmission
  - One 345-kV line, 143 miles
  - Two 138-kV lines, 113 miles
  - 345/138-kV transformer
  - 167 MVAR synchronous condenser
  - $390 million capital
- Option 3 - Generation
  - 400 MW generation (4@100 MW)
  - 167 MVAR synchronous condenser
  - 80 MVAR SVC
  - Rebuild/uprate two existing lines ($22M estimated)
  - $330 - $440 million capital

High Level Cost Assumptions

- Overhead 345 kV transmission - $2.1M / mile
- Overhead 138 kV transmission - $1.2M / mile
- 345/138 kV transformer -- $8M / unit
- Generation costs
  - $0.7M (CT) - $0.9M / MW (Combined cycle)
- SVC costs - $0.3M / MVAR
- Convert existing generating units to synchronous condensers - $3M / unit

Limitations of Screening Study

- No comparative operating cost analysis
  - Does not include forecast of operating costs and/or revenues of generators or synchronous condensers
  - Does not include maintenance costs
  - Does not include line loss savings
- Does not consider impact on existing Special Protection Systems
- Only one generator location studied
- No generator stability analysis
- No detailed voltage stability analysis
- Minimal multiple outage analysis

Study Limitation Implications

- Greater uncertainty with generation options
  - Previous G-T studies in UP indicate:
    - Additional infrastructure could be needed to support generation options
    - Stability analysis of generation options takes a long time to complete
  - Highly location-dependent
- Preliminary multiple outage analysis suggests more reactive power support needed than included in costs

- This is a contingent set of solutions as part of the overall ATC Energy Collaborative – Michigan
  - This is one of six futures studied.
- For more information
  - www.atc10yearplan.com/UP_2010.shtml
  - Ken Copp kcopp@atcllc.com (262)506-6890
  - Brett French bfrench@atcllc.com (906)779-7902

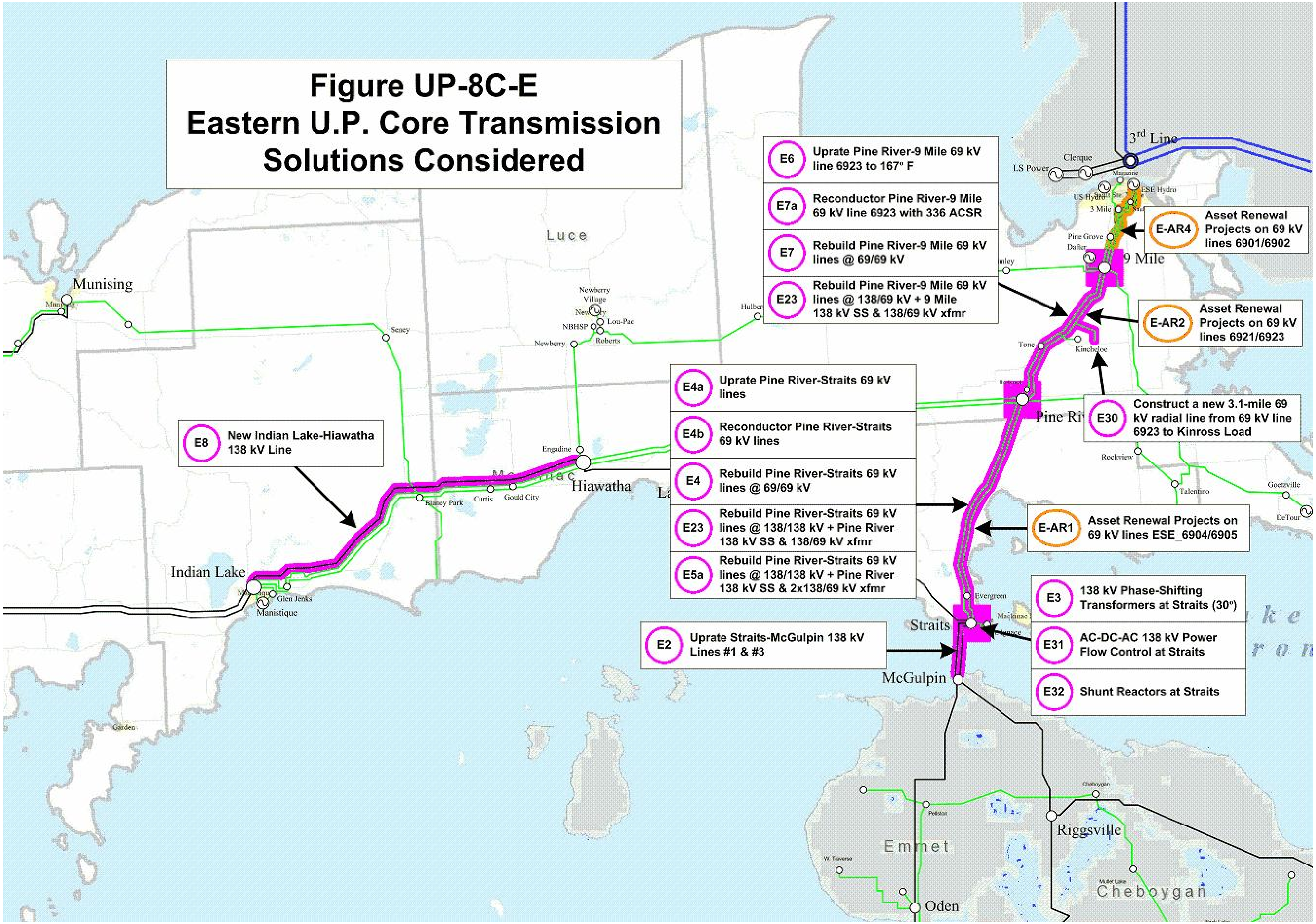


Figure UP-8C-E
Eastern U.P. Core Transmission
Solutions Considered
E6 Uprate Pine River-9 Mile 69 kV line 6923 to 167° F
E7a Reconductor Pine River-9 Mile 69 kV line 6923 with 336 ACSR
E7 Rebuild Pine River-9 Mile 69 kV lines @ 69/69 kV
E23 Rebuild Pine River-9 Mile 69 kV lines @ 138/69 kV + 9 Mile 138 kV SS & 138/69 kV xfmr
E-AR4 Asset Renewal Projects on 69 kV lines 6901/6902
E-AR2 Asset Renewal Projects on 69 kV lines 6921/6923
E30 Construct a new 3.1-mile 69 kV radial line from 69 kV line 6923 to Kinross Load
E8 New Indian Lake-Hiawatha 138 kV Line
E4a Uprate Pine River-Straits 69 kV lines
E4b Reconductor Pine River-Straits 69 kV lines
E4 Rebuild Pine River-Straits 69 kV lines @ 69/69 kV
E23 Rebuild Pine River-Straits 69 kV lines @ 138/138 kV + Pine River 138 kV SS & 138/69 kV xfmr
E5a Rebuild Pine River-Straits 69 kV lines @ 138/138 kV + Pine River 138 kV SS & 2x138/69 kV xfmr
E-AR1 Asset Renewal Projects on 69 kV lines ESE_6904/6905
E3 138 kV Phase-Shifting Transformers at Straits (30°)
E31 AC-DC-AC 138 kV Power Flow Control at Straits
E32 Shunt Reactors at Straits
E2 Uprate Straits-McGulpin 138 kV Lines #1 & #3
Luce
Munising
Seney
Newberry
Engadine
Hiawatha
Blaney Park
Curtis
Gould City
Indian Lake
Glen Jenks
Manistique
Garden
3rd Line
Clerque
LS Power
ESE Hydro
US Hydro
3 Mile
Pine Grove
9 Mile
Tone
Kincheloe
Pine River
Rockview
Talentino
Goetzville
DeTour
Evergreen
Straits
McGulpin
Riggsville
Emmet
Oden
Cheboygan

Figure UP-8C-ESC: Escanaba Area Core Transmission Solution Sets Considered

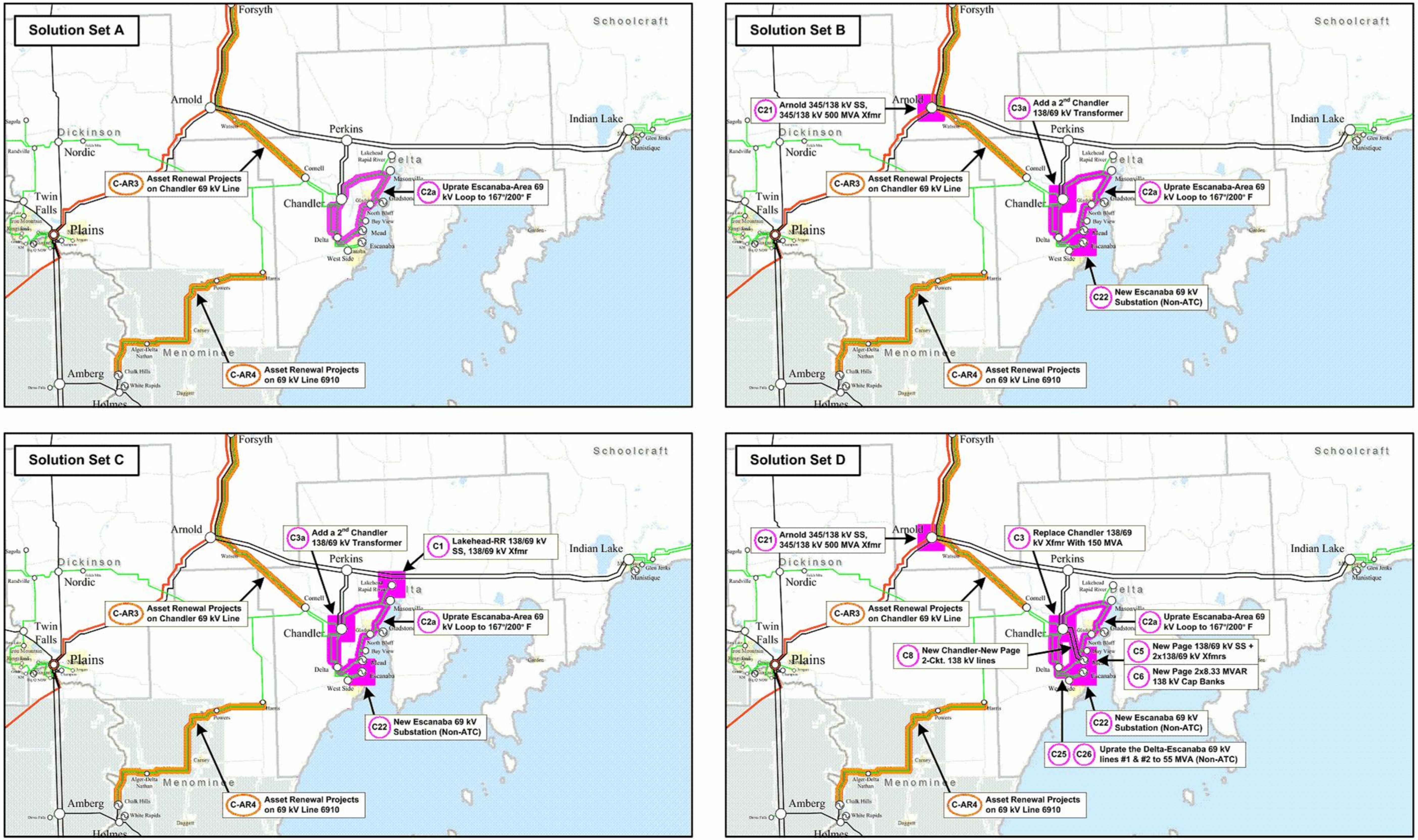
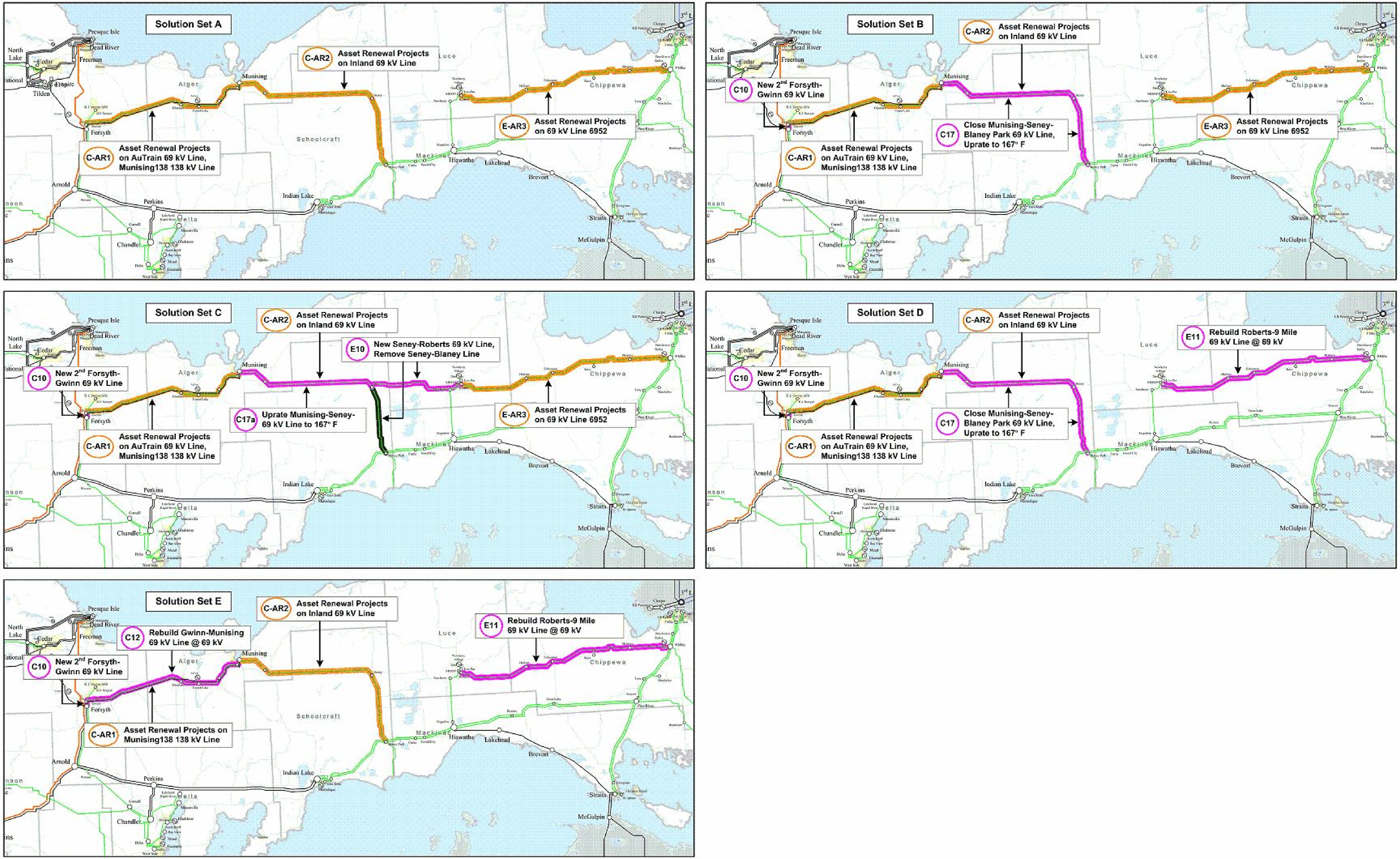


Figure UP-8C-MN: Munising/Newberry Area Core Transmission Solution Sets Considered



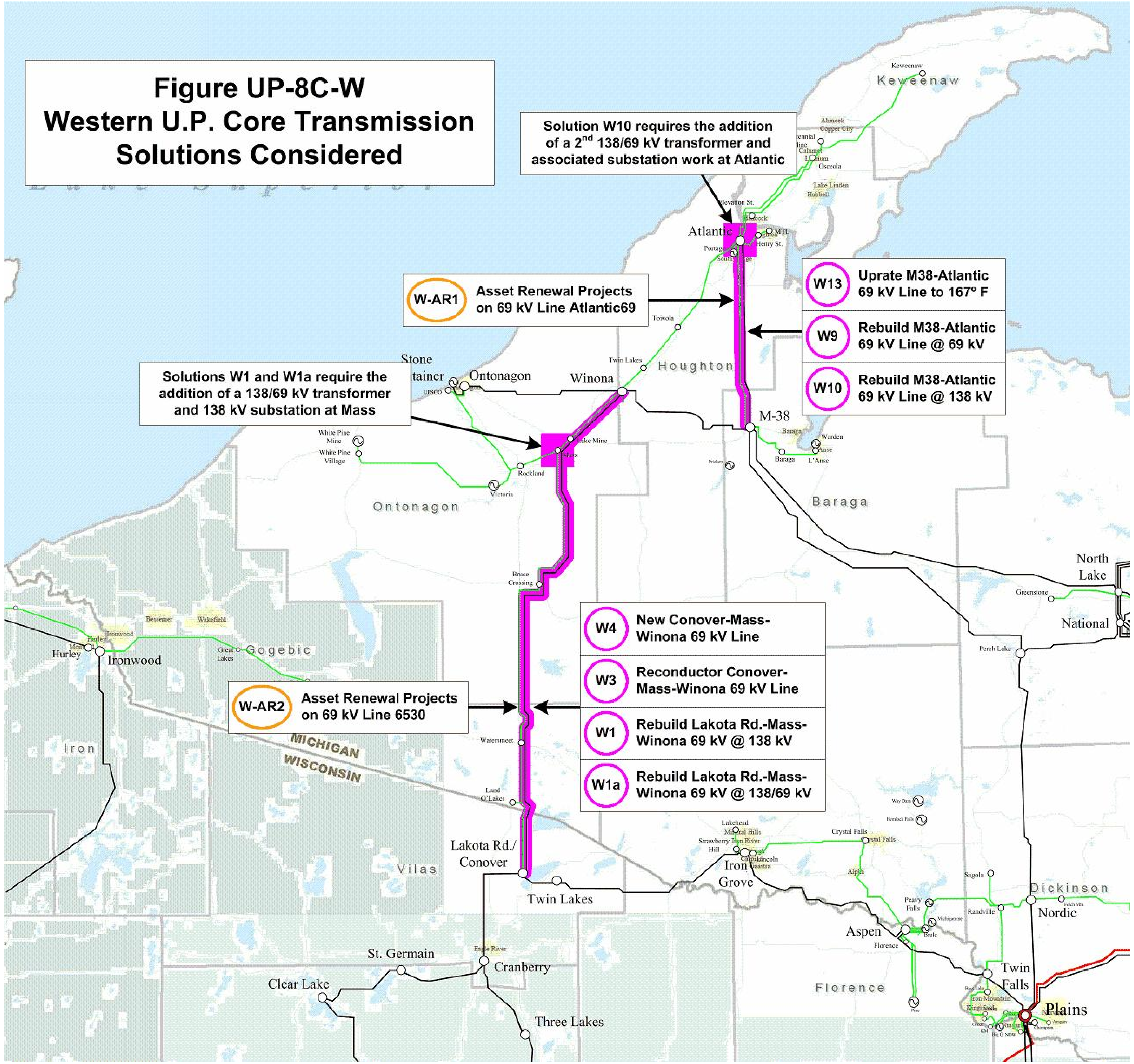


Figure UP-8C-W
Western U.P. Core Transmission
Solutions Considered
Solution W10 requires the addition of a 2nd 138/69 kV transformer and associated substation work at Atlantic
W-AR1 Asset Renewal Projects on 69 kV Line Atlantic69
W13 Uprate M38-Atlantic 69 kV Line to 167º F
W9 Rebuild M38-Atlantic 69 kV Line @ 69 kV
W10 Rebuild M38-Atlantic 69 kV Line @ 138 kV
Solutions W1 and W1a require the addition of a 138/69 kV transformer and 138 kV substation at Mass
W4 New Conover-Mass-Winona 69 kV Line
W3 Reconductor Conover-Mass-Winona 69 kV Line
W1 Rebuild Lakota Rd.-Mass-Winona 69 kV @ 138 kV
W1a Rebuild Lakota Rd.-Mass-Winona 69 kV @ 138/69 kV
W-AR2 Asset Renewal Projects on 69 kV Line 6530
Keweenaw
Atlantic
Houghton
Winona
Ontonagon
M-38
Baraga
Ironwood
Hurley
Gogebic
Iron
MICHIGAN
WISCONSIN
Lakota Rd./
Conover
Vilas
Twin Lakes
Iron
Grove
Aspen
Florence
Dickinson
Nordic
Twin
Falls
Plains
North
Lake
National
St. Germain
Clear Lake
Cranberry
Three Lakes

Figure UP-HR1

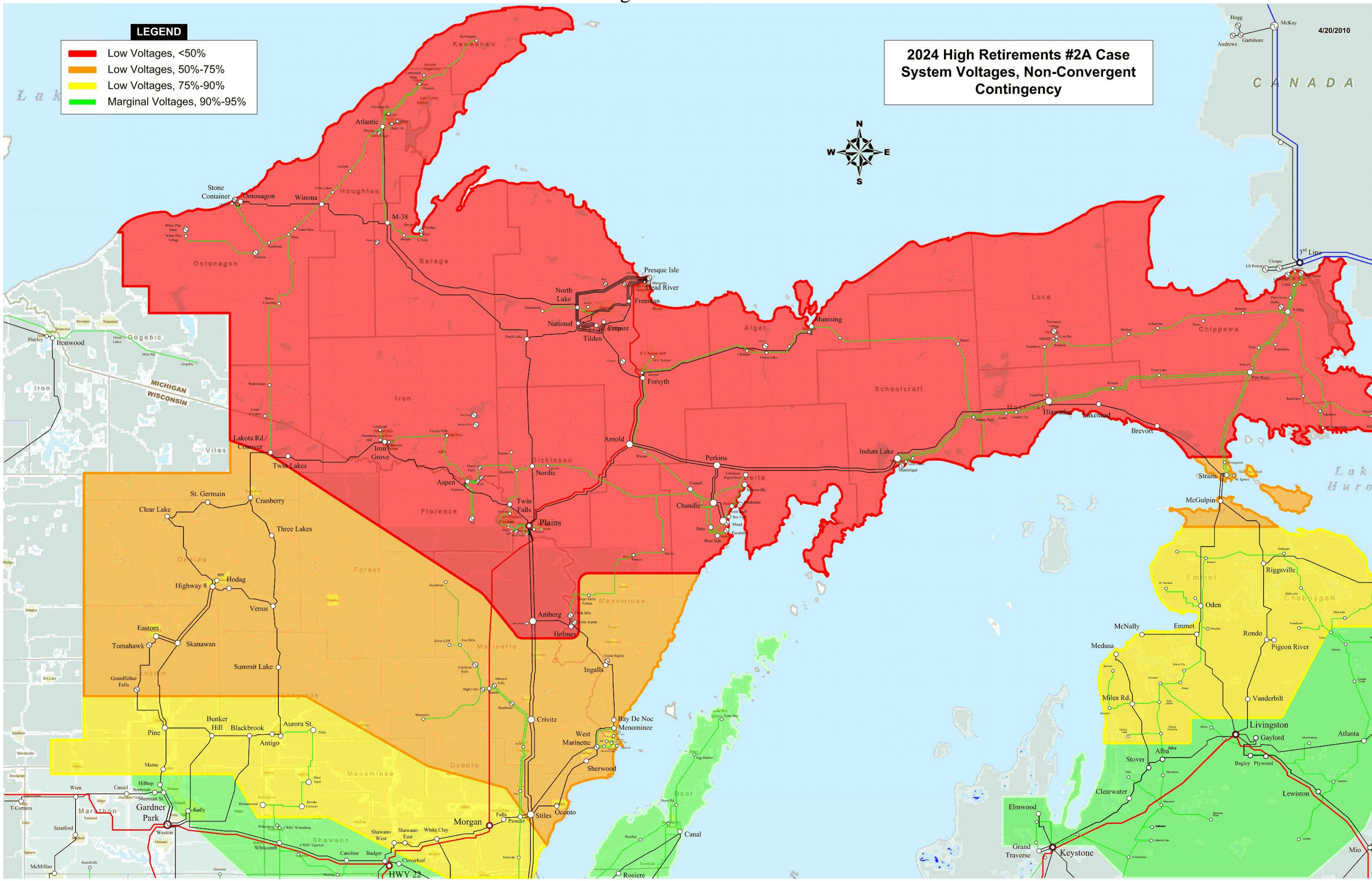


Table UP-1
ATC Energy Collaborative - MI
Projects Status

Core Project Name	Collab Code	Current Target ISD	Status
East Area			
Straits Reactors	New	2010	In-service
Straits-McGulpin uprate overhead section	E2	2010	Planned
Straits-Pine R (6904/5) rebld 138, op 69	E4c	2014	Planned
Flow control	E31	2014	Provisional
Indian Lake-Hiawatha 138 kV Line	E8	2014	Provisional
Pine R-Nine Mile (lines 6921,3) uprate and asset renewal	E6, EAR-2	2016	Provisional
Escanaba Area			
Uprate Escanaba Loop 69 kV lines	C2a	2010	In-service
Chandler Line insulator replacements	C-AR3	2010	Planned
Chandler 138-69 kV second transformer and ring bus	C3a	2011 for trans-former, 2012 for ring bus	Proposed
Delta sub breakers, stability, asset renewal	C36, C37	2012	Proposed
Chandler-18th Rd 138/69 double circuit line and 18th Rd 138-69 substation and capacitor bank	C5,6,8	2014	Provisional
Breaker/Relay/Cap bank replacements for asset renewal	New	various	various
6910, Chalk Hills-Powers asset renewal	C-AR4	2020?	Provisional
Munising/Newberry Area			
6952 (Nine Mile-Roberts) asset renewal	E-AR3	2012?	Planned
Hiawatha-Engadine 69 kV line	New	2012	Provisional
Munising138 Line asset renewal	C-AR1	2012?	Provisional
Autrain Line asset renewal	C-AR1	2013?	Provisional
Inland Line uprate and Asset renewal	C17, C-AR2	2014	Provisional
New Gwinn-Forsyth 69 line	C10	2016	Provisional
West Area			
Atlantic 69 (M38-Altlantic) uprate and asset renewal	W13, W-AR1	2013	Provisional