AMERICAN TRANSMISSION COMPANY®

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

2018 10-Year Assessment

Preliminary Solutions

Stakeholder and Customer Presentation – May 3, 2018

Jeremy Voigt

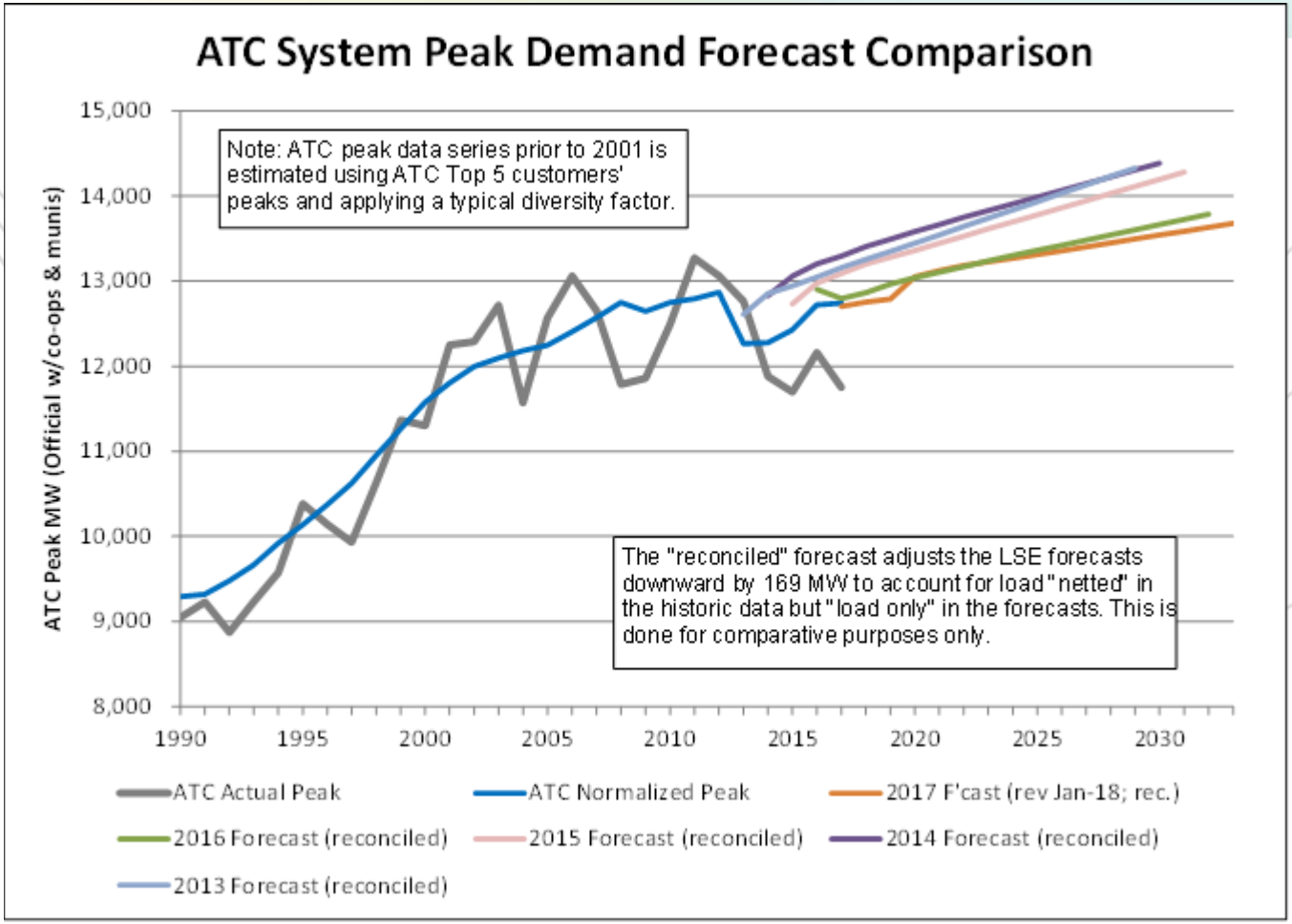
Purpose

- Address Remaining Stakeholder Questions
- Summarize Preliminary Changes to Solutions
- Solicit Input on Solutions
- Solicit Input on Public Policy Driven Solutions
- Review Next Steps

Stakeholder Questions/Comments

- In future representations of the System Peak Demand Forecasts, please include the projected growth rate used for each planning year in the caption or with labeling.
- Include more detail around need drivers for both network and asset renewal projects.

Load Forecast Trends



Forecast Year	Growth Rate
2017	0.44%
2016	0.39%
2015	0.68%
2014	0.68%
2013	0.75%

Summary of Preliminary Solutions

- Eliminated Solutions
  - Contingency: 7
  - Asset Renewal: 5
- Solutions identified since the 2017 TYA
  - Contingency: 4
  - T-D: 17
  - Asset Renewal: 3
- Continuing Solutions
  - Numerous

Looking for stakeholder input as we review details that follow

Cancelled Network Projects

System Addition	Previous Assessment Projected In-Service Year	Planning Zone	MISO MTEP Appendix Status	MTEP PRJiD	Cost Range or MTEP Cost (M$)
Lakota Rd to Winona 138-kV Conversion	2021	2	B	8089	100.0
Hawk SS AE DIC New 138kV Bus	2021	3	--	13741	0.88
Schofield SS AE DIC	2021	3	--	13745	0.38
Southeastern Wisconsin Northeastern Illinois Reinforcement Project	2021	5	A	8065	52.0
Winona - Atlantic 69-kV line rebuild Winona69	2024	2	--	4727	28.1
Colley Road Substation: Install 2nd 100 MVA 138/69kV transformer	2025	3	B	7585	9.9
Aviation - North Fond du Lac 138-kV rebuild G-111	2025	4	--	--	10-25

Cancelled Asset Renewal Projects

System Addition	Previous Assessment Projected In-Service Year	Planning Zone	MISO MTEP Appendix Status	MTEP PRJiD	Cost Range or MTEP Cost (M$)
North Point - Rocky Run 115kV line (T-20) Partial Rebuild	2020	1	--	--	<10
Petenwell - Saratoga 138kV line (X-43) Partial Rebuild	2020	1	--	--	<10
Coyne - Plover 115kV line (J-114) Partial Rebuild	2020	1	--	--	<10
Howard - Pulliam 138kV line (D-82) Partial Rebuild	2020	4	--	--	<10
West Wisconsin Rapids – Sigel 69kV line (Y45) Rebuild	2021	1	B	8263	18.7

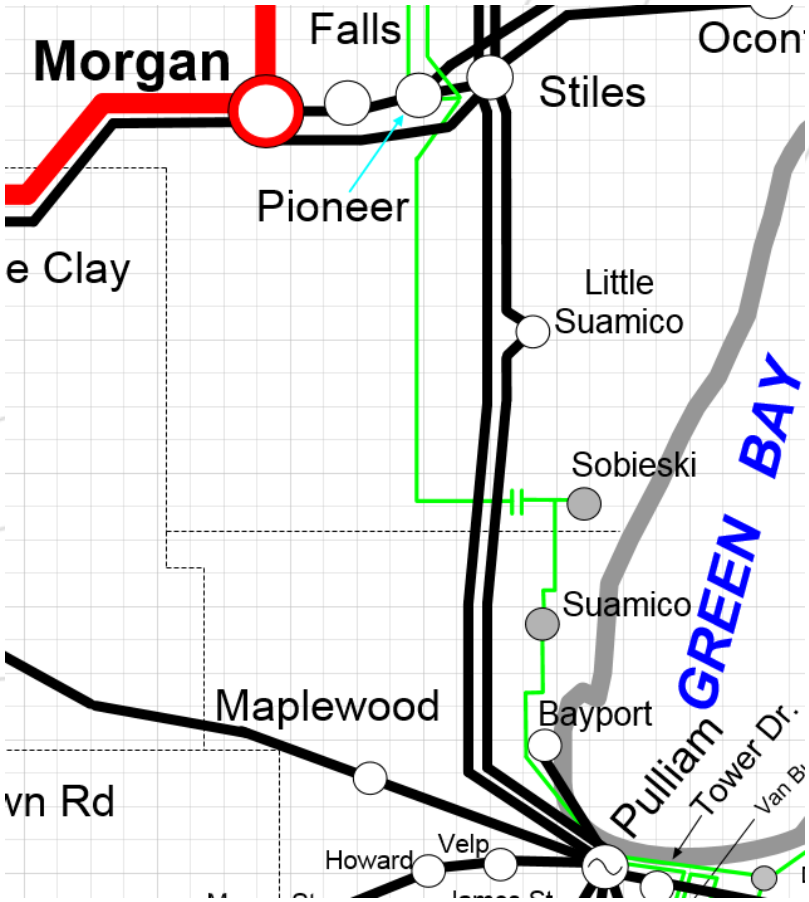
Asset Renewal Considerations

- Is the asset still needed?
  - Assess area needs
  - Obtain cross-functional and distribution provider input
  - Consider removal of lines (full/partial retirement)
- Other area needs?
- What ratings are needed?
- Invest prudently using defensible criteria

Identified Area Needs : Bayport-Pioneer T-98/E-83

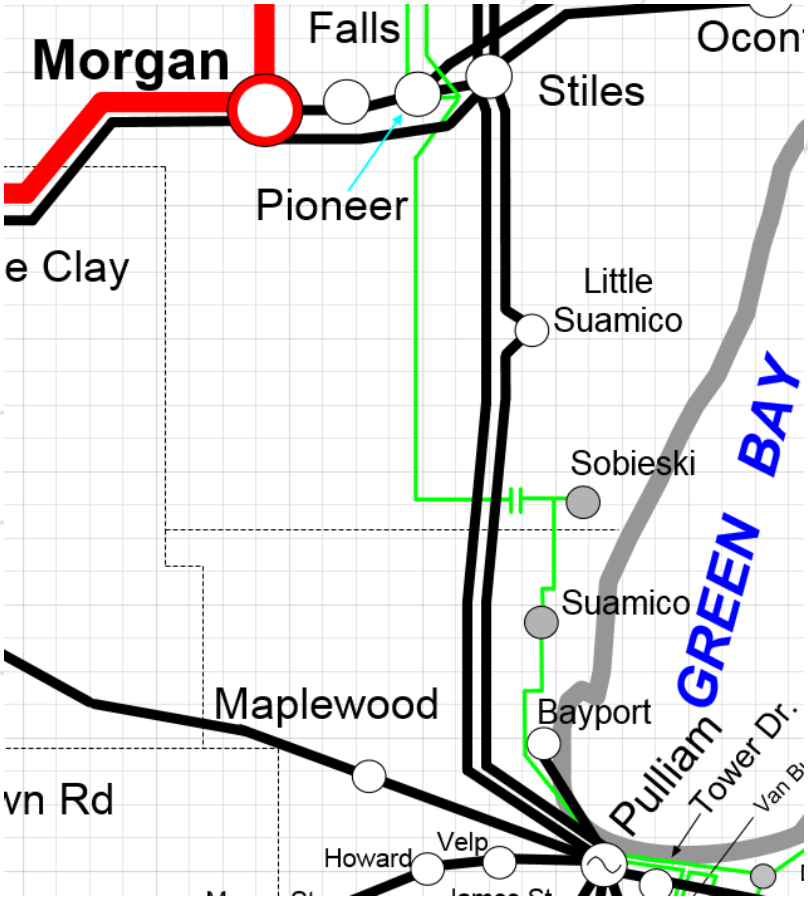
ATC and distribution provider assessed area needs

- Clearance Issues
- Condition of lines
- Bayport, Suamico and Sobieski loads
- Future asset renewal needs of Pulliam-Stiles



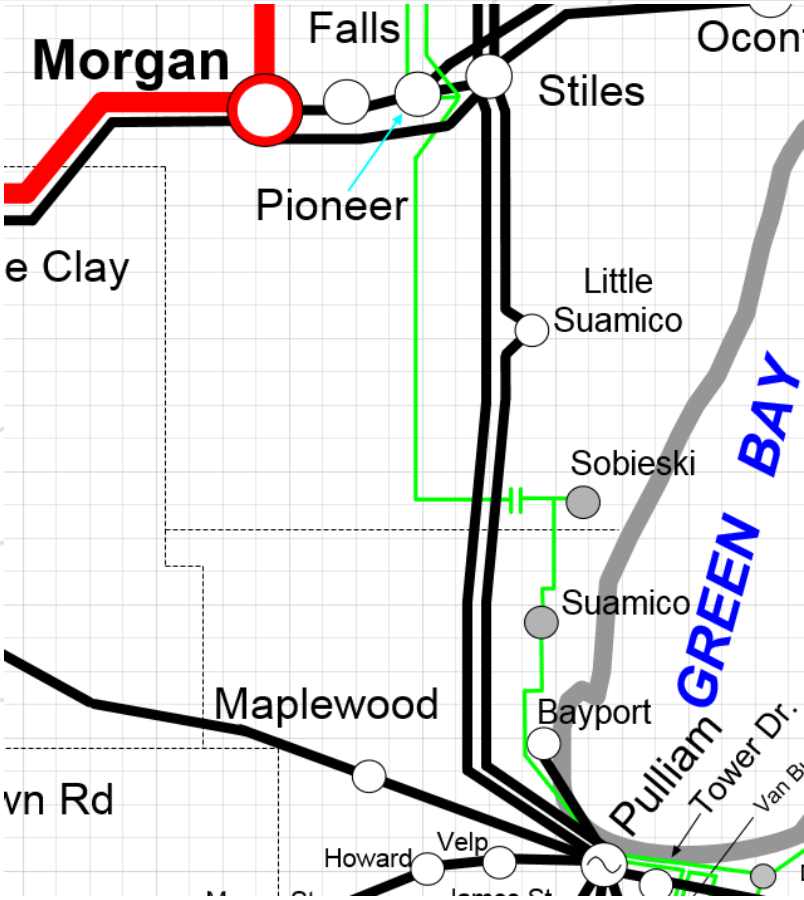
Removal Considerations : Bayport-Pioneer T-98/E-83

- Discussed potential for partial retirement with customers
  - Identified options that would allow portions of lines to be retired
  - Grouped options into buckets for discussion with customers
- Removal options dismissed because:
  - Solutions require new lines on new rights-of-way to serve load
  - Additional land owner and environmental impact related to new rights-of-way
  - Customer and land owner impact related to moving substations away from the load center
- No Distributed Energy Resource opportunities identified by distribution provider



Alternatives Considered : Bayport-Pioneer T-98/E-83

- Alternative #1: Rebuild Bayport-Pioneer at 69 kV
- Alternative #2: Rebuild Bayport-Pioneer at 138 kV
- Alternative #3: Rebuild Bayport-Pioneer as double-circuit 138 kV, string one line
- Alternative #3a: Rebuild Bayport-Pioneer as double-circuit 138 kV, string both lines
- Alternative #4: Rebuild Bayport-Suamico-Sobieski at 138 kV with new line from Sobieski to Little Suamico



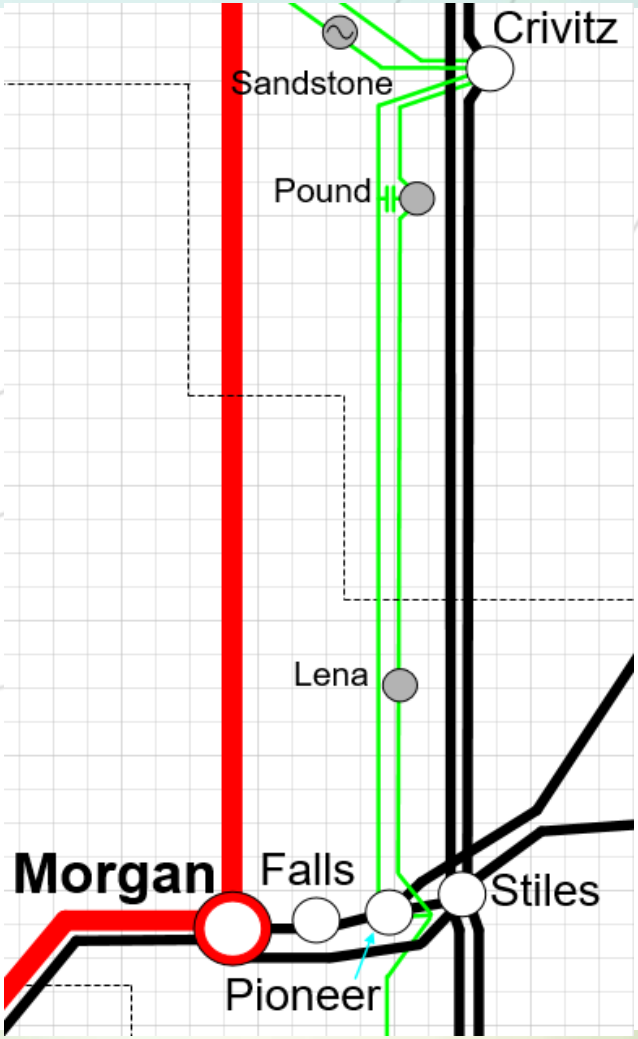
Preferred Alternative #3a T-98/E-83

- Lowest cost
- Considers future Pulliam – Stiles asset renewal
- Minimizes land owner impact

Identified Area Needs : Pioneer-Crivitz E-83/B-2

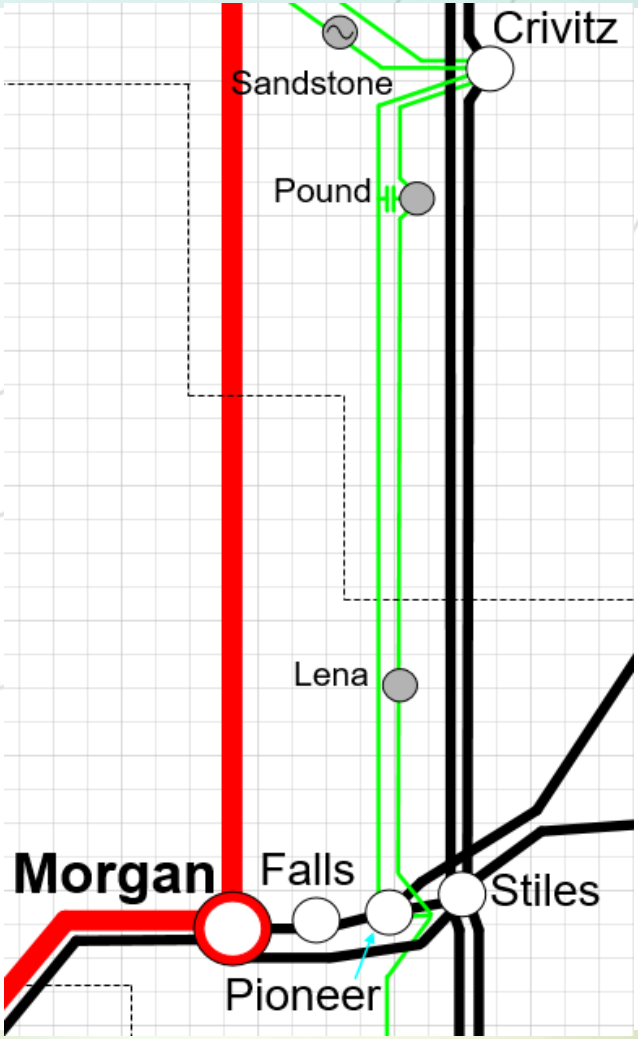
ATC and distribution provider assessed area needs

- Clearance Issues
- Condition of lines
- Outages
- Lena and Pound loads



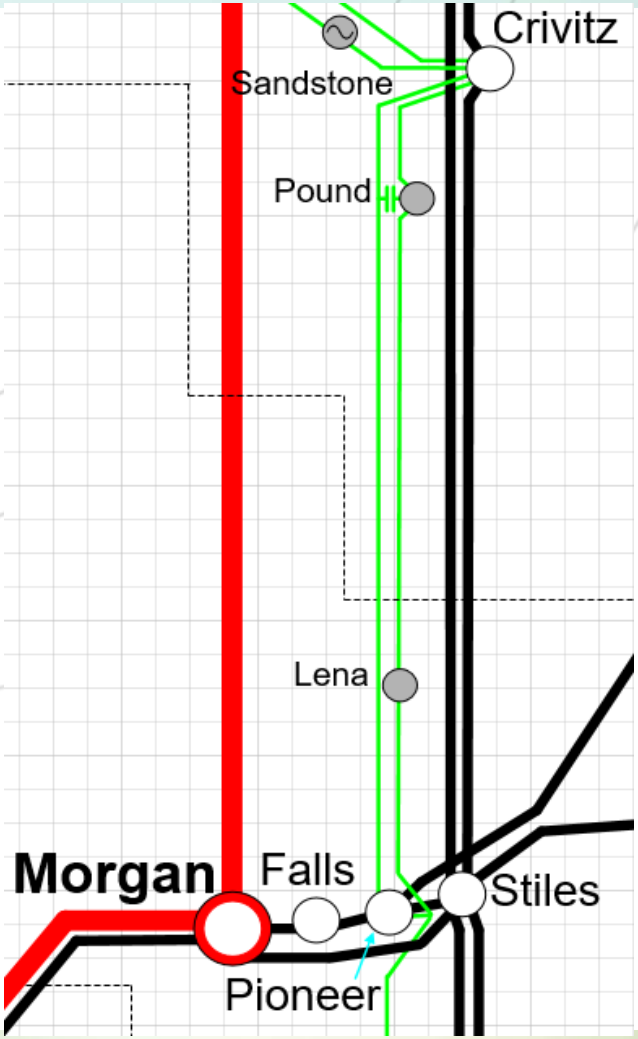
Identified Area Options : Pioneer-Crivitz E-83/B-2

- Rebuild as single or double-circuit 69 kV line
- Full or partial retirement of lines
  - Developed four alternatives with distribution provider
- No Distributed Energy Resource opportunities identified by distribution provider
- Full rebuild much more expensive than full retirement



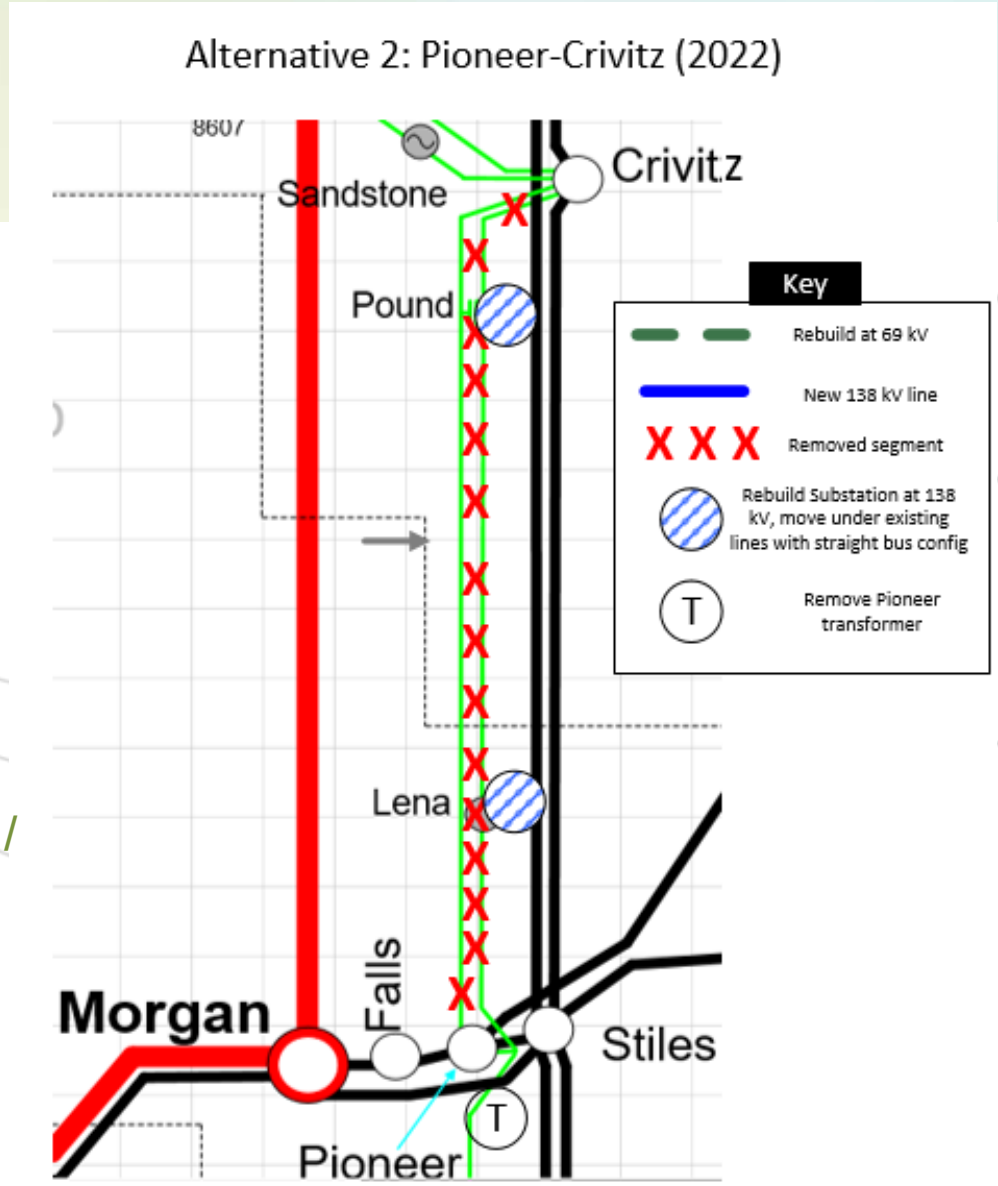
Alternatives Considered : Pioneer-Crivitz E-83/B-2

- Alternative #1: Retire 69 kV lines and construct 138 kV line extensions to Lena and Pound
- Alternative #2: Retire 69 kV lines and move Lena and Pound underneath nearby 138 kV lines - Proposed
- Alternative #3: Rebuild Pioneer-Lena and Crivitz-Pound double-circuit 69 kV lines
- Alternative #4: Rebuild Pound-Crivitz double-circuit 69 kV lines, relocate Lena underneath nearby 138 kV line



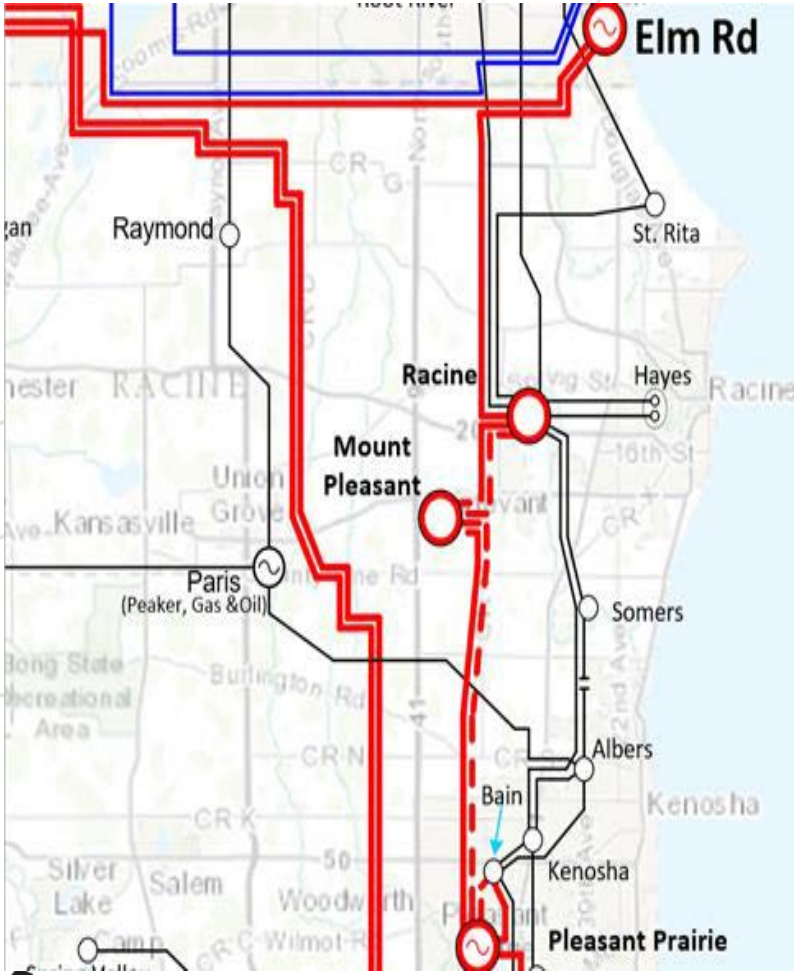
Preferred Alternative #2 E-83/B-2

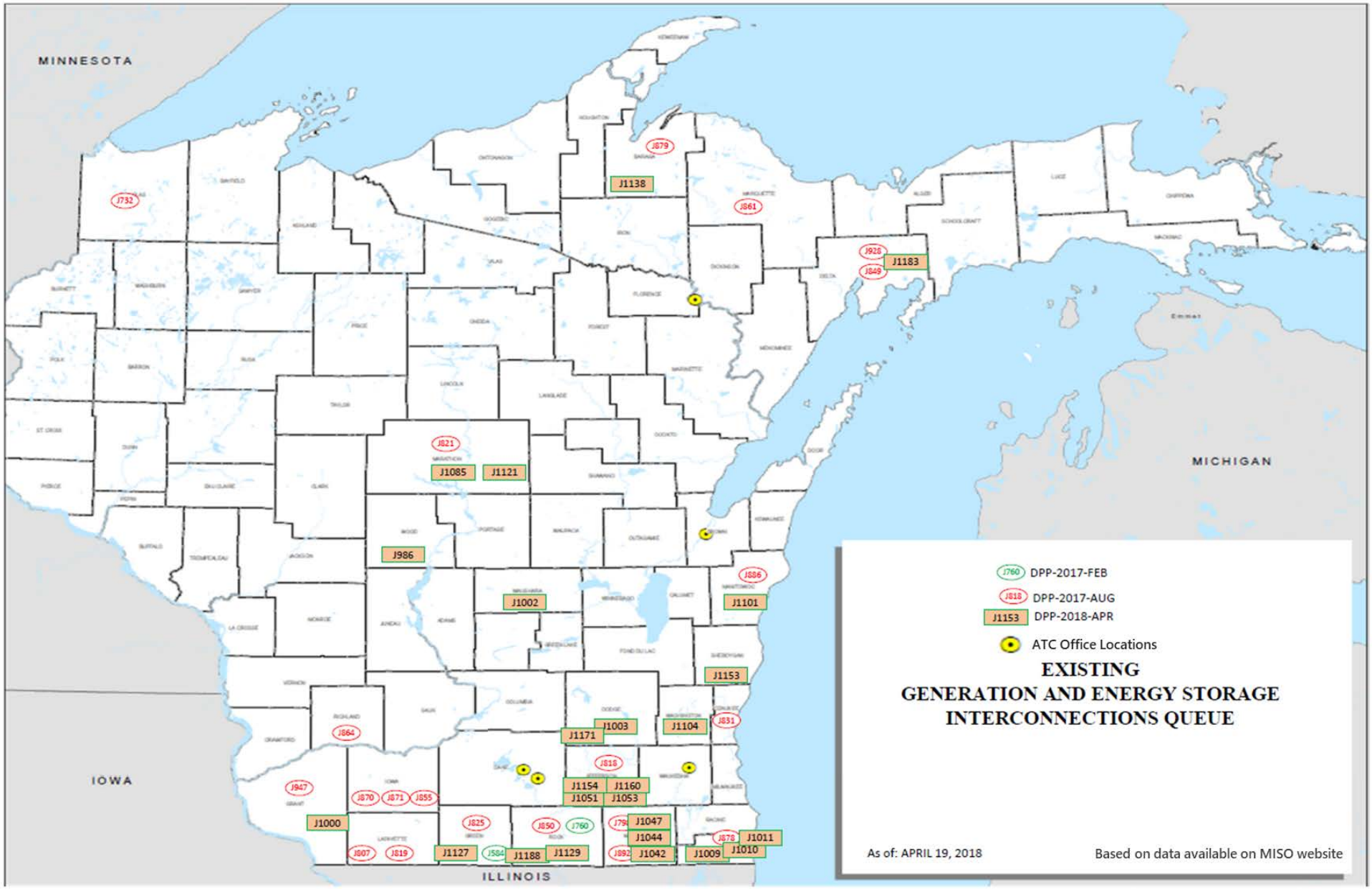
- Lowest cost
- Least land owner / environmental impact



Mount Pleasant Tech Interconnection Project

- New 2019 T-D interconnection project
  - 230 MW load addition at Foxconn
  - Add a second 345 kV line between Racine and Pleasant Prairie 345 kV substations
  - Loop both the existing and the second Racine – Pleasant Prairie 345 kV lines into a new Mount Pleasant 345/138 kV substation
  - Estimated cost of $117 million
- MISO reviewed and presented its recommendation at West TSTF on 1/25/2018 and at PAC on 2/14/2018
  - Including in MTEP18 Appendix A




MINNESOTA
MICHIGAN
IOWA
ILLINOIS
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J1121
J986
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J1002
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J1009
J1042
J1127
J584
J1188
J1129
J807
J819
J760 DPP-2017-FEB
J818 DPP-2017-AUG
J1153 DPP-2018-APR
ATC Office Locations
EXISTING
GENERATION AND ENERGY STORAGE
INTERCONNECTIONS QUEUE
As of: APRIL 19, 2018
Based on data available on MISO website

Continuing Solutions

- See Preliminary Network & Asset Renewal Tables

Public Policy Requirements – Comments?

- Any public policy driven solutions that may not be covered by the Assessment process?

Assessment Status

- Completed
  - Requested load forecast from LDCs
  - Sent final load forecast back to LDCs
  - Process and assumptions meeting
  - Preliminary needs meeting

- Next Steps
  - Solutions comments - due May 25
  - Finish cost estimates - June
  - Finish sensitivity studies - May
  - Complete multiple outage study - June
  - Draft study write-up - July
  - ATC review/approval - August
  - 2018 Assessment publication - September

Questions?

For more information, please contact

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