AMERICAN TRANSMISSION COMPANY®

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

2018 10-Year Assessment
Preliminary Solutions, Revision 1

Stakeholder and Customer Presentation

Jeremy Voigt

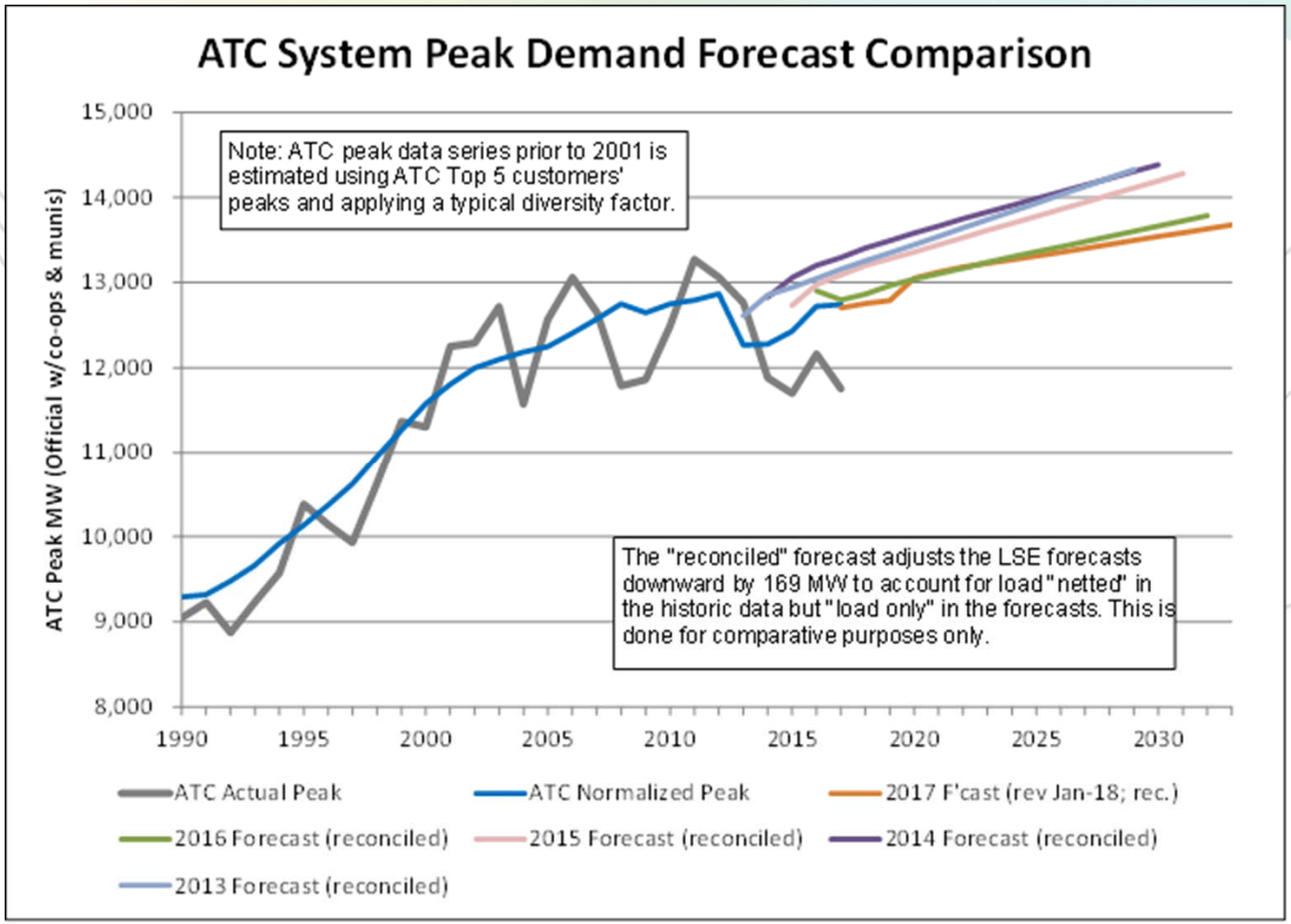
Purpose

- 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

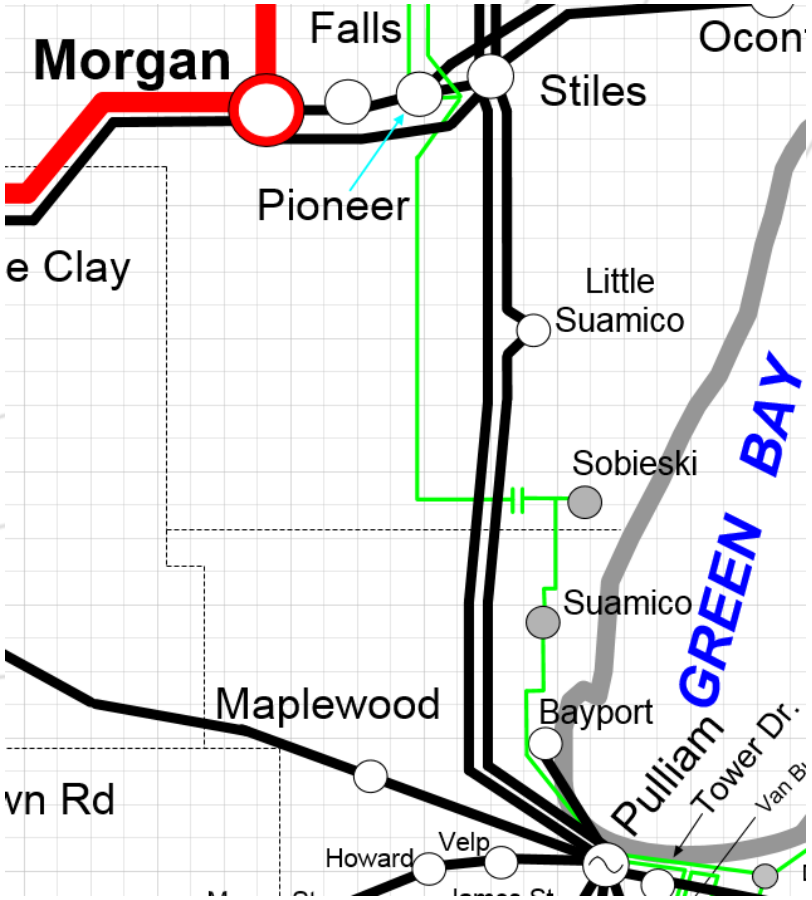
Asset Renewal Considerations

- 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

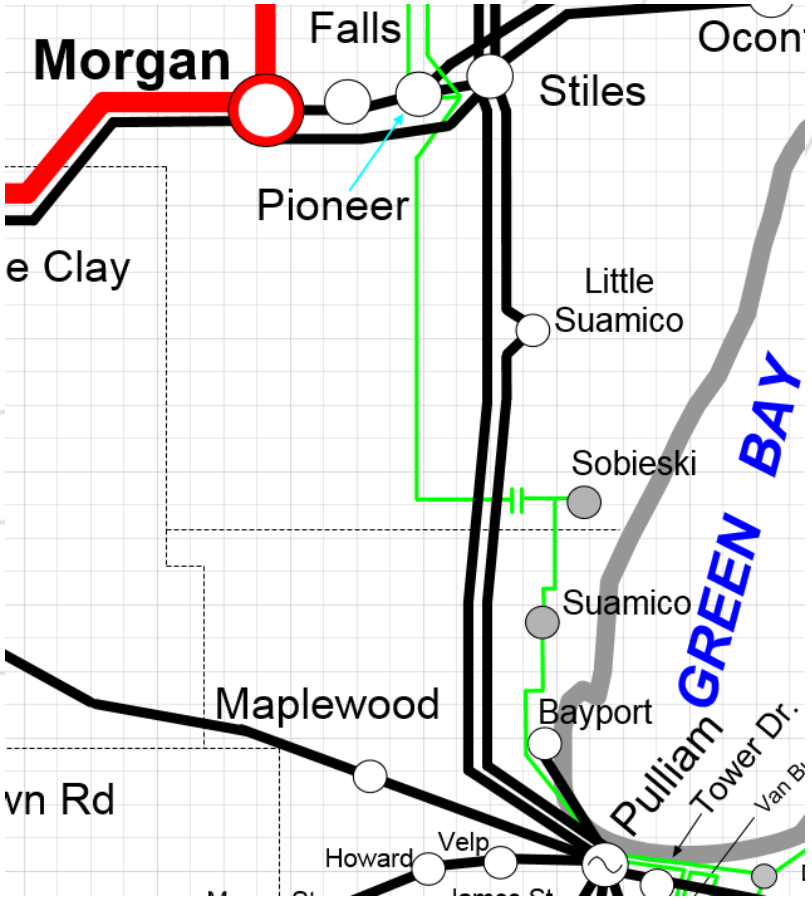
ATC and distribution provider assessed area needs

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



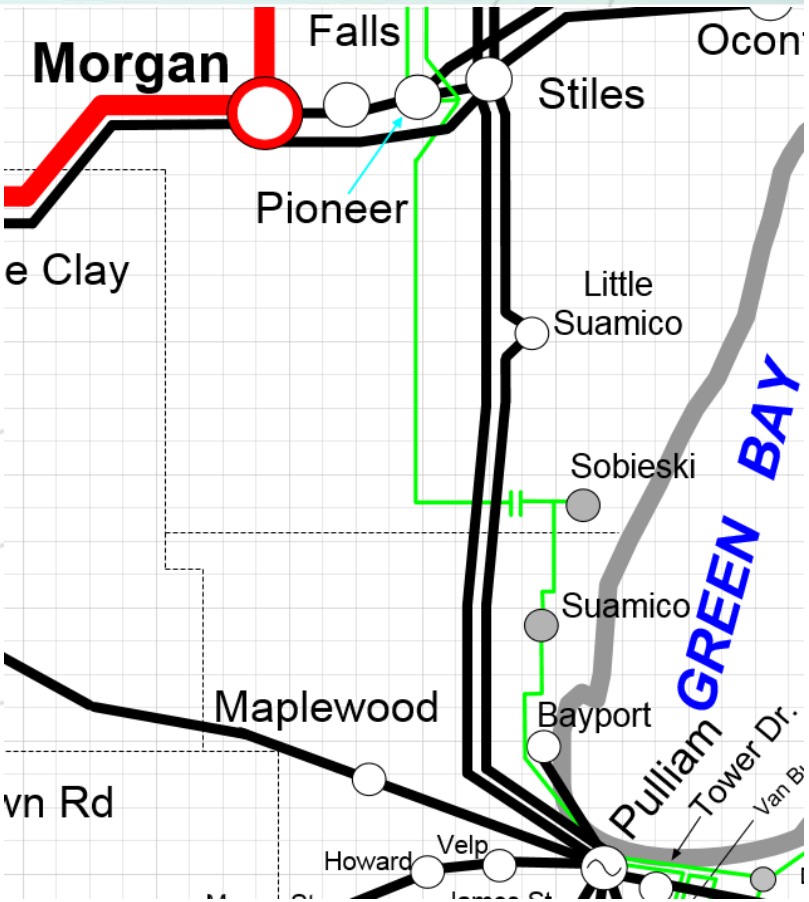
Removal Considerations : Bayport-Pioneer T-98/E-83

- 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: $42M
- Alternative #2: Rebuild Bayport-Pioneer at 138 kV: $48M
- Alternative #3: Rebuild Bayport-Pioneer as double-circuit 138 kV, string one line: $49M
- Alternative #3a: Rebuild Bayport-Pioneer as double-circuit 138 kV, string both lines: $52M
- Alternative #4: Rebuild Bayport-Suamico-Sobieski at 138 kV with new line from Sobieski to Little Suamico: $40M



Range of Futures for Pulliam-Stiles area: Year 2030 – additional projects

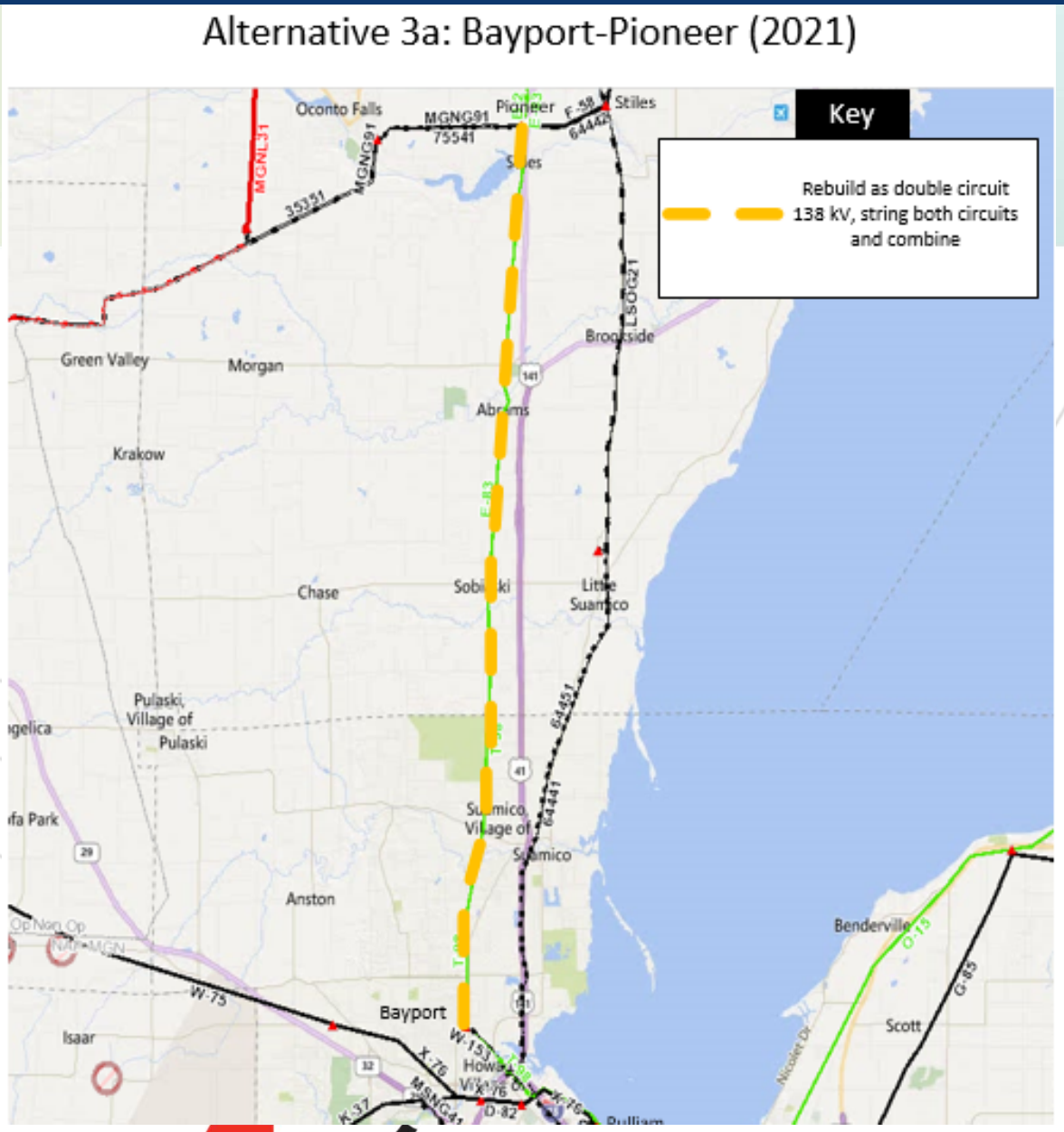
Potential Corridor Future	Alt 1 (69kV)	Alt 2 (138kV)	Alt 3 (138kV double-circuit, string one line)	Alt 3a (138kV double-circuit, string both lines)	Alt 4 (retire part of line, rebuild part at 138kV)
Two 138-kV circuits in corridor	Rebuild Pulliam-Stiles (2)	Rebuild Pulliam-Stiles (1)	String 2nd Bayport-Pioneer	Remove Pulliam-Stiles	Rebuild Pulliam-Stiles (1/2)
Three 138-kV circuits in corridor	Rebuild Pulliam-Stiles (2) & Bayport-Pioneer	Rebuild Pulliam-Stiles (2)	String 2nd Bayport-Pioneer & Rebuild Pulliam-Stiles (1)	Rebuild Pulliam-Stiles (1)	Rebuild Pulliam-Stiles (2) & Add Sobieski-Pioneer

Range of Futures for Pulliam-Stiles area: Year 2030 System: NPVs in 2017 $

Potential future	It 1 (69kV)	Alt 2 (138kV)	Alt 3 (138kV double-circuit, string one line)	Alt 3a (138kV double-circuit, string both lines)	Alt 4 (retire part of line, rebuild part at 138kV)
Two 138-kV circuits in corridor	$114M	$112M	$107M	**$103M**	$106M
Three 138-kV circuits in corridor	$125M	$121M	$123M	**$119M**	$137M

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

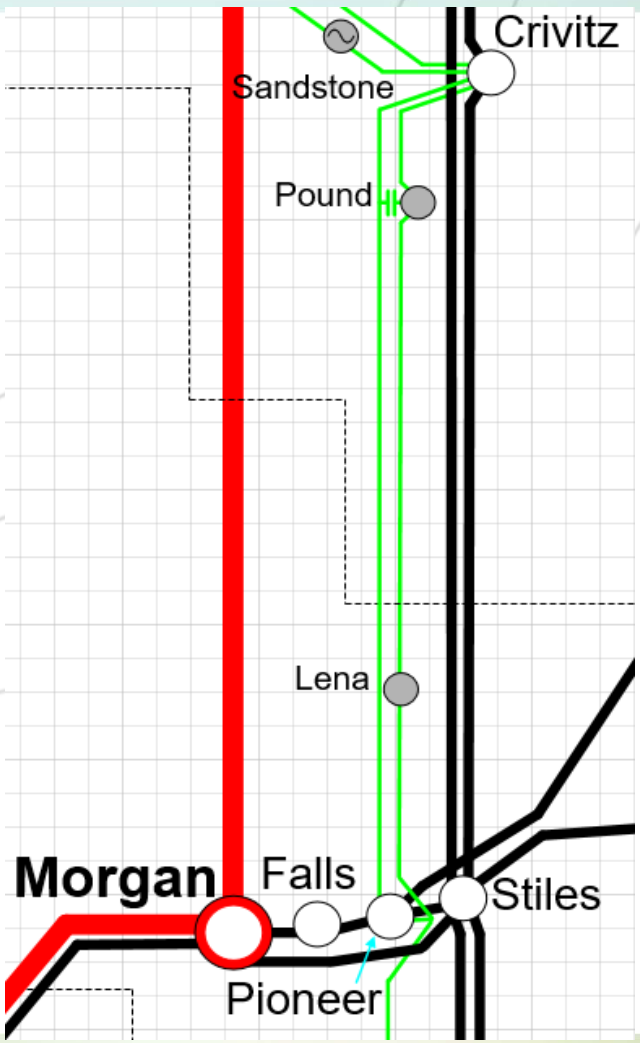
- Lowest cost
- Considers future Pulliam – Stiles asset renewal
- Minimizes land owner impact



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

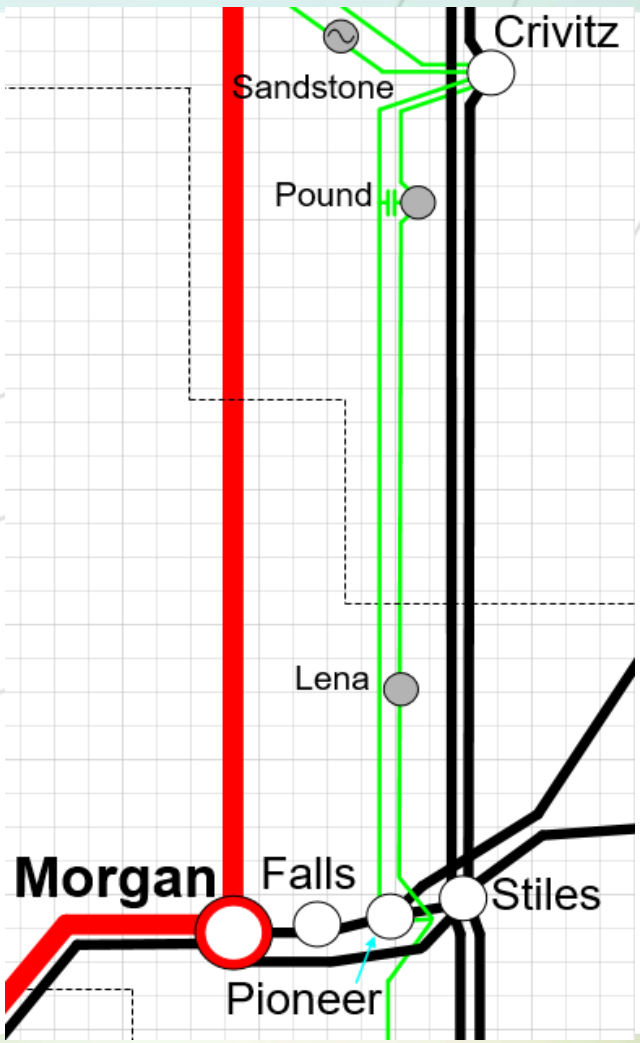
ATC and distribution provider assessed area needs

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



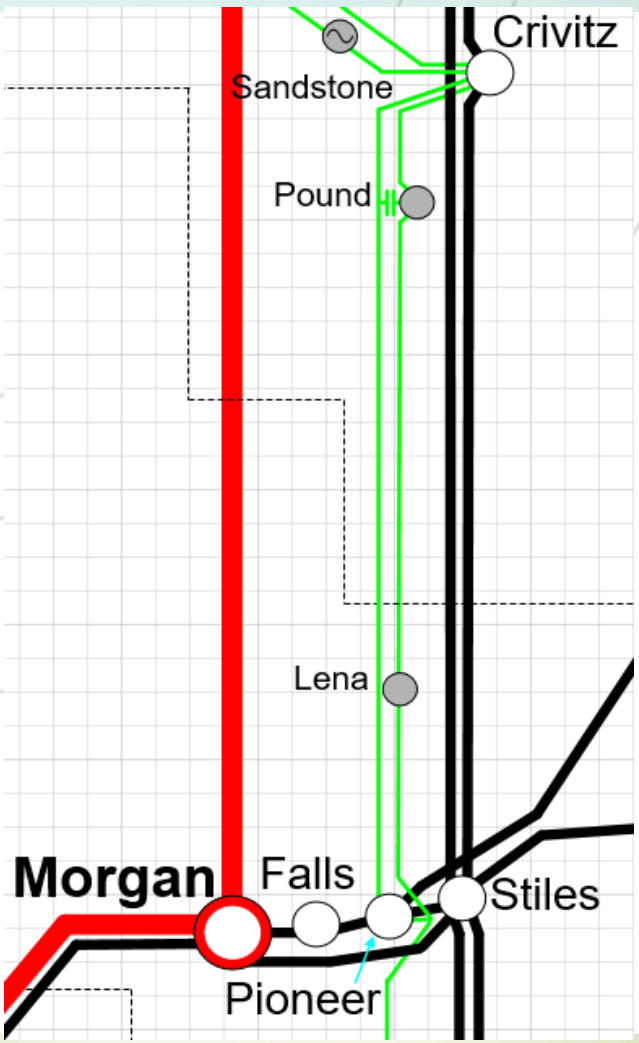
Identified Area Options : Pioneer-Crivitz E-83/B-2

- 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



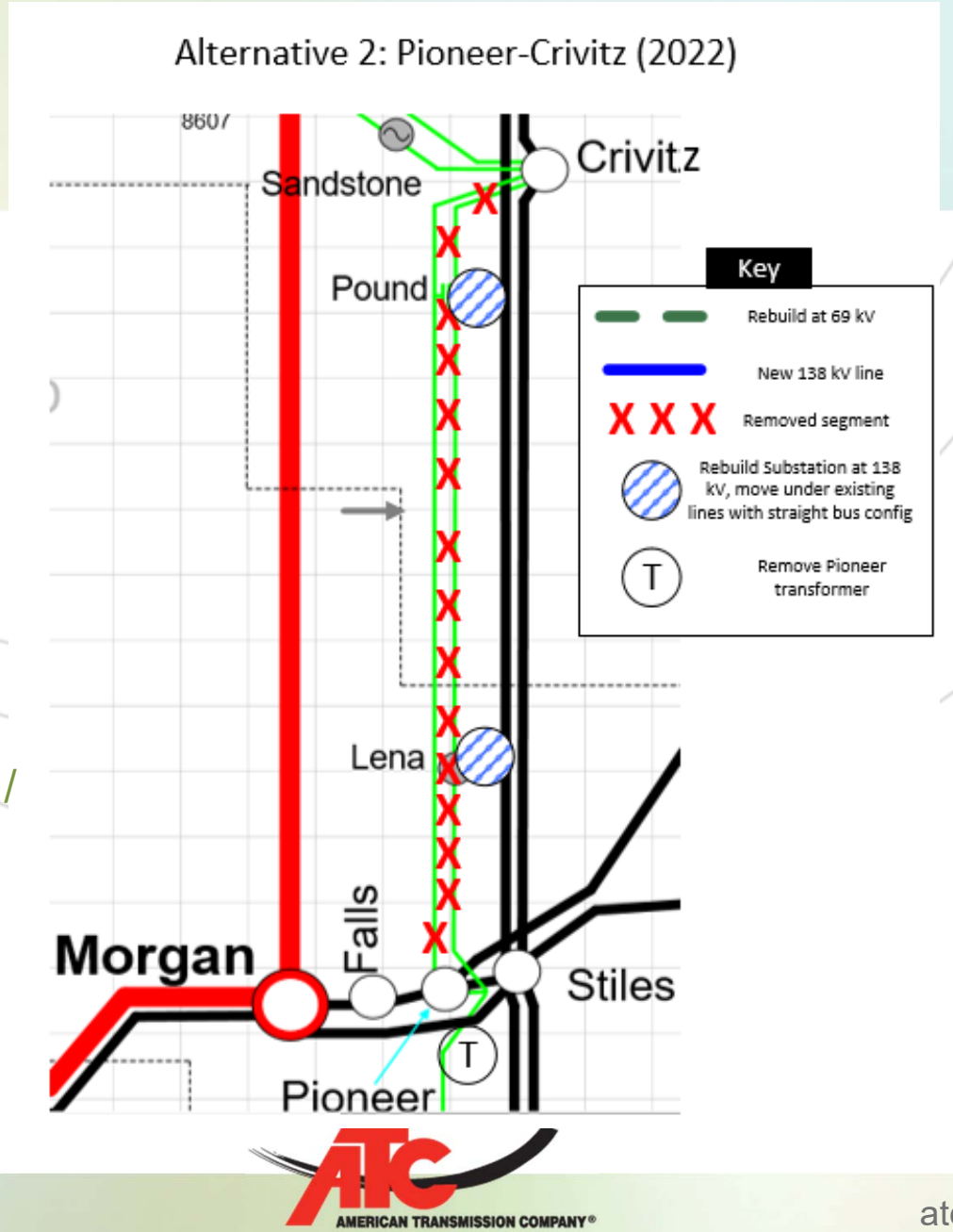
Alternatives Considered : Pioneer-Crivitz E-83/B-2

- Alternative #1: Retire 69 kV lines and construct 138 kV line extensions to Lena and Pound: $26M
- Alternative #2: Retire 69 kV lines and move Lena and Pound underneath nearby 138 kV lines – Proposed: $20M
- Alternative #3: Rebuild Pioneer-Lena and Crivitz-Pound double-circuit 69 kV lines: $33M
- Alternative #4: Rebuild Pound-Crivitz double-circuit 69 kV lines, relocate Lena underneath nearby 138 kV line: $29M



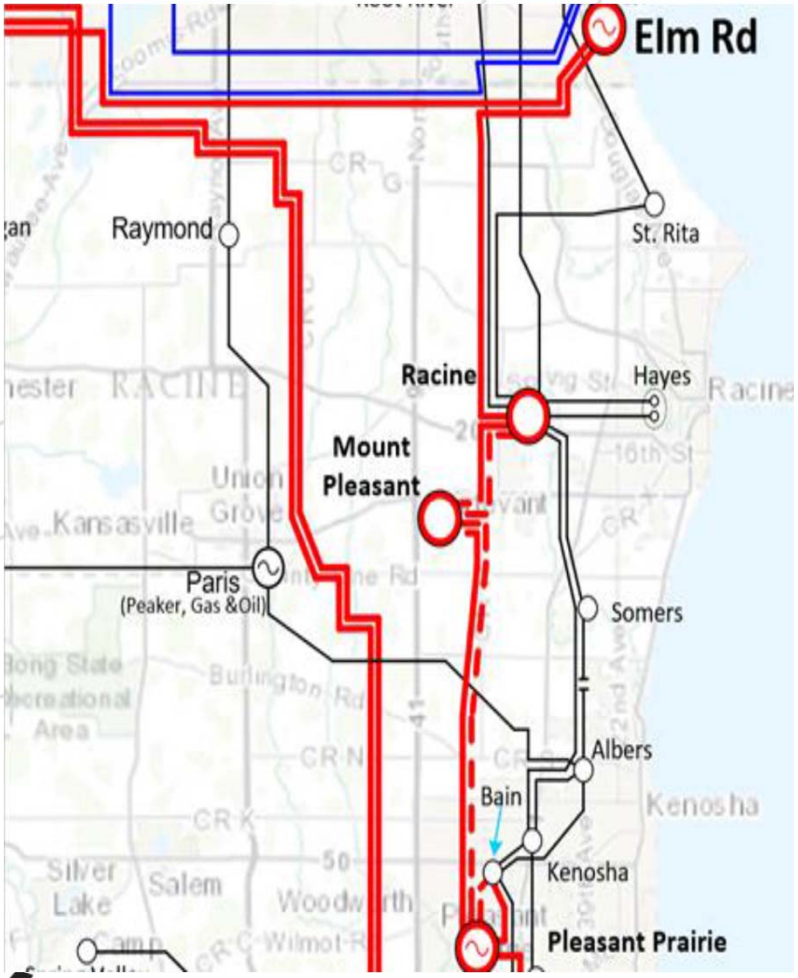
Preferred Alternative #2 E-83/B-2

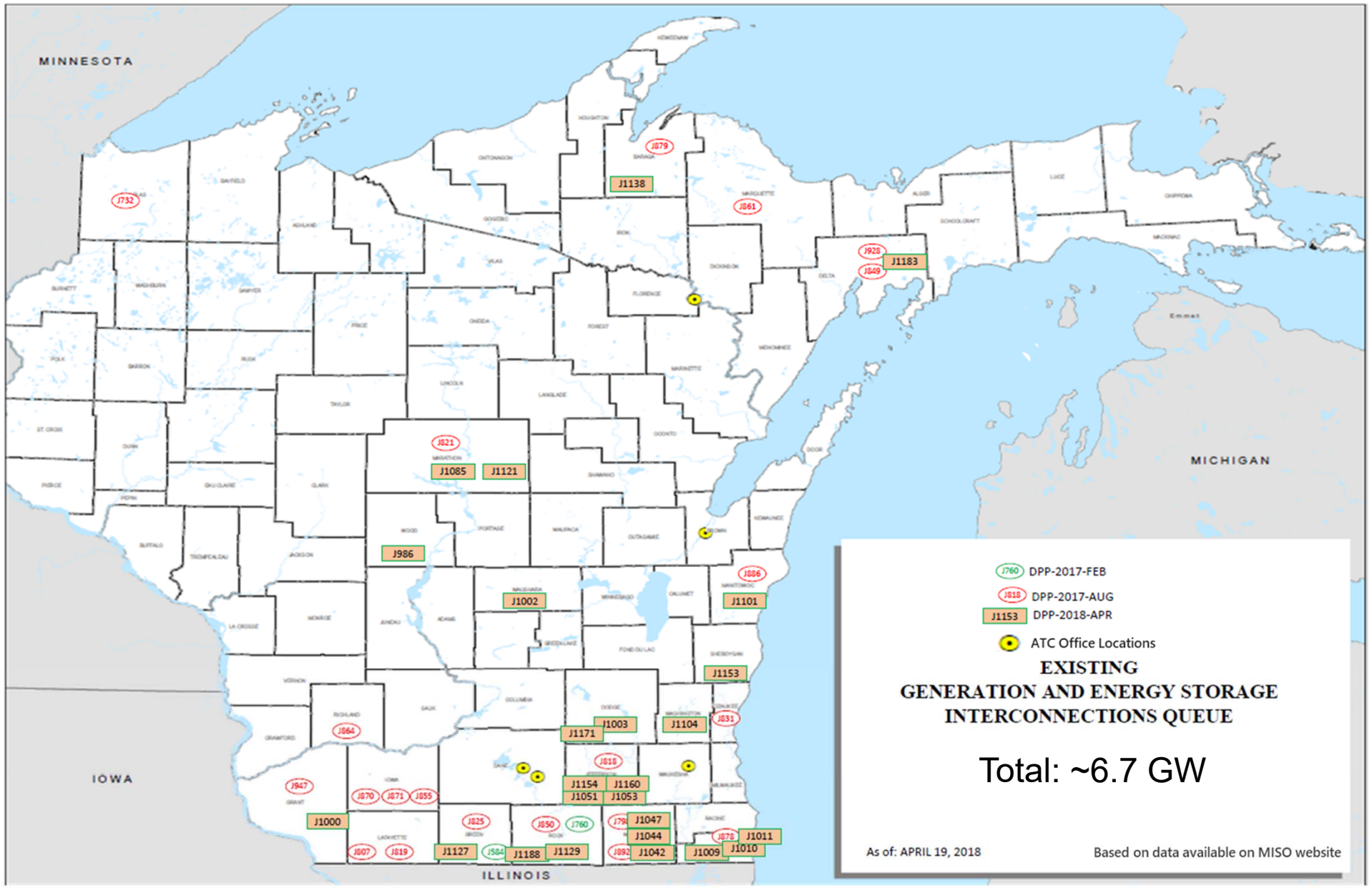
- Lowest cost
- Least land owner / environmental impact



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
J732
J879
J1138
J861
J928
J849
J1183
J821
J1085
J1121
J986
J886
J1002
J1101
J1153
J664
J1171
J1003
J1104
J831
J818
J947
J870
J871
J855
J1154
J1160
J1051
J1053
J1000
J825
J850
J760
J1047
J1044
J878
J1011
J1010
J807
J819
J1127
J584
J1188
J1129
J892
J1042
J1009
J760 DPP-2017-FEB
J818 DPP-2017-AUG
J1153 DPP-2018-APR
ATC Office Locations
EXISTING
GENERATION AND ENERGY STORAGE
INTERCONNECTIONS QUEUE
Total: ~6.7 GW
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

Jeremy Voigt

Phone: 262-832-8742

Email: jvoigt@atcllc.com