2023 10-Year Assessment Summary

PRESENTED BY:

System Planning

November 13, 2023

Topics

- Messages
- Capital forecast
- Larger projects by zone

Highlights

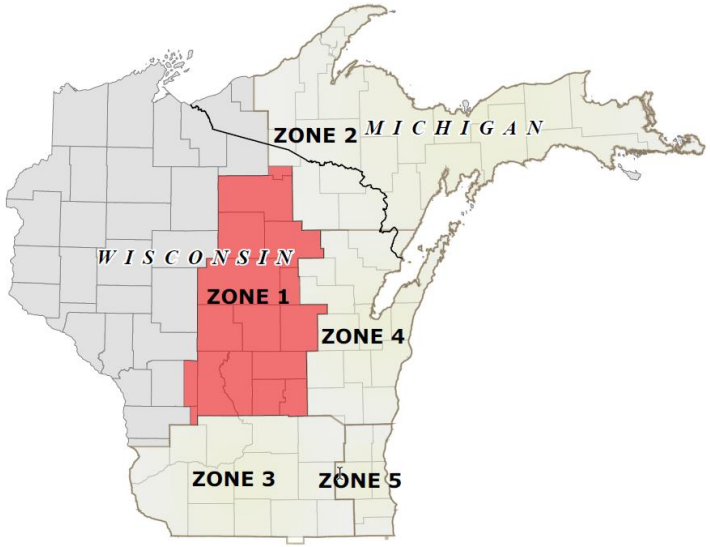
- Load forecast has similar growth rate as the 2022 Assessment
- 121 projects in our generation queue, totaling over 16.9 GW
- Continuing to see new network projects to support our customers' new generation and distribution interconnections
- New network projects are also supporting reliability and operational flexibility within ATC's footprint
- Nearly half of all projects are dedicated to maintaining and reinforcing the system and improving its resiliency

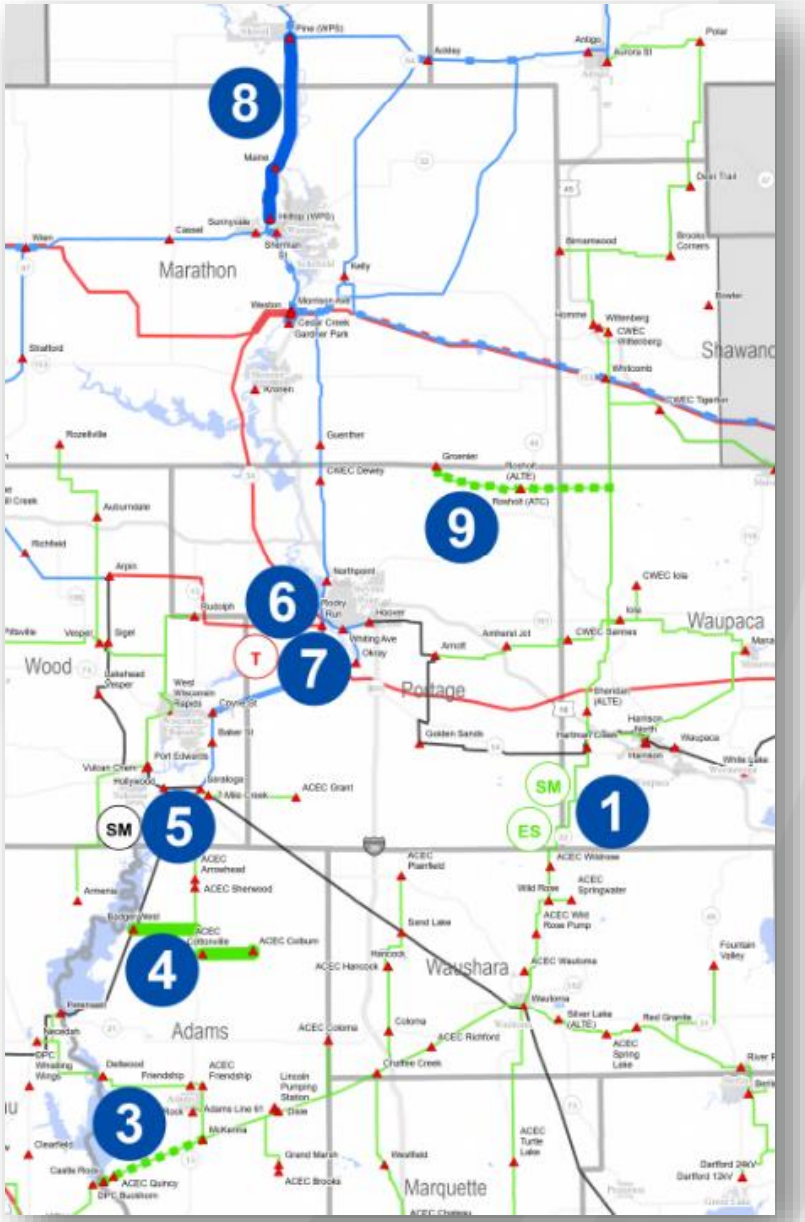
Capital Forecast (10-Year)

	2019	2020	2021	2022	2023
Specific Network Projects	$0.4B	$0.4B	$0.6B	$0.5B	$1.0B
Regional Multi-Value Projects	$0.2B	$0.2B	$0.2B	$0.2B	$0.1B
MISO Long Range Transmission Plan	$0.0B	$0.0B	$0.0B	$0.9B	$0.9B
Asset Renewal	$1.7B	$1.8B	$2.2B	$2.8B	$3.4B
Generation Interconnection	$0.3B	$0.2B	$0.6B	$0.6B	$0.8B
Other Capital Categories	$0.6B	$0.6B	$0.2B	$0.7B	$1.2B
Total 10-Year Capital Cost **	$2.9B/$3.6B	$2.9B/$3.5B	$3.5B/$4.2B	$5.1B/$6.2B	$6.6B/$8.1B

** = +10% / -10%, defines a range in our estimating to account for variability in project cost

Zone 1





System Solutions Key

Substation Key

- C — Capacitor Bank or Reactor
- SS — New Substation
- SM — Substation Modification
- T — Transformer
- T-D — T-D Interconnection
- TL — Transmission Line
- T-T — T-T Interconnection
- ES — Energy Storage
- G-T — G-T Interconnection

Transmission Line Key

- New Transmission Line
- Rebuilt / Reconductored Transmission Line
- Line Rating Upgrade
- Voltage Conversion
- Communication

Color denotes kV for both Substation and Transmission

To avoid clutter, map does not show 2026+ and some lower cost projects

Existing Transmission Lines Key

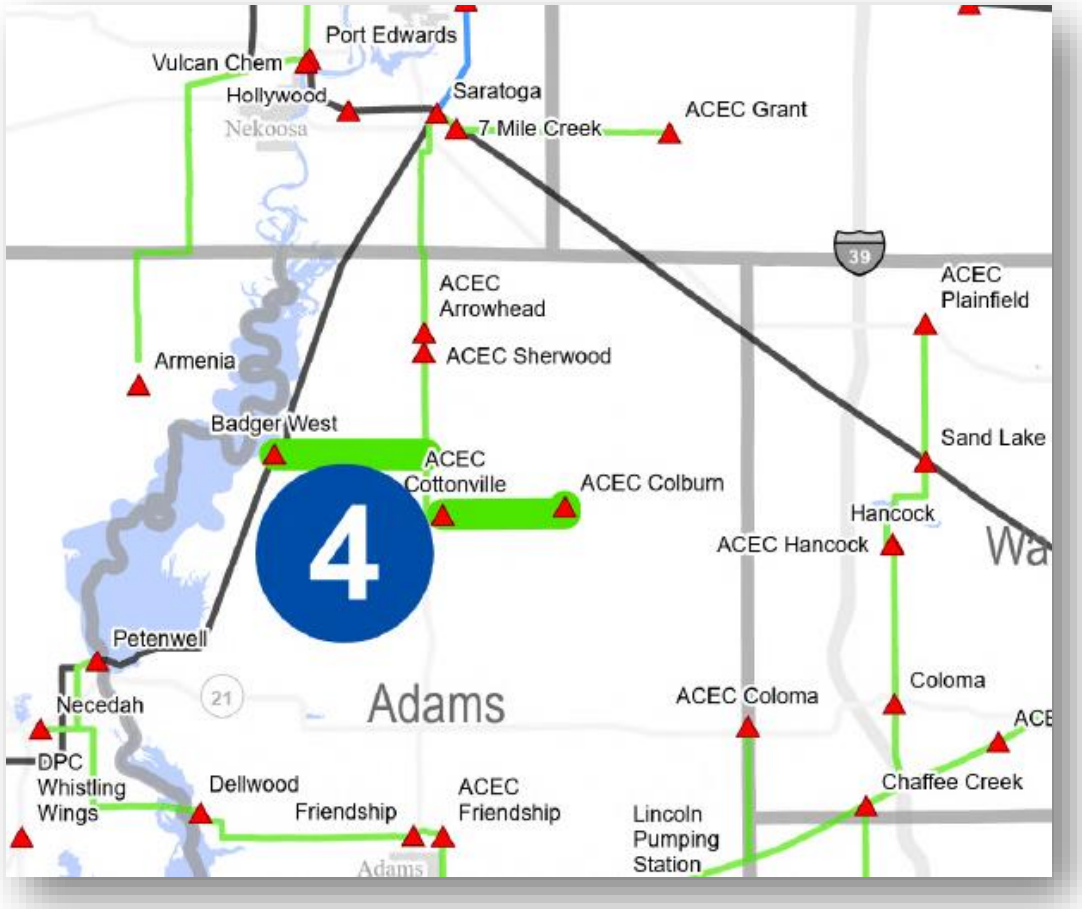
- 345 kV
- 230 kV
- 161 kV
- 138 kV
- 115 kV
- 69 kV
- Multi-Circuit - Color denotes kV
- Underground - Color denotes kV
- 345 kV Maintained by Others

Lines of proposed projects on the map are for illustrative purposes only and do not reflect actual routes. For information on project status and routes, see atc-projects.com.

Zone 1 Projects

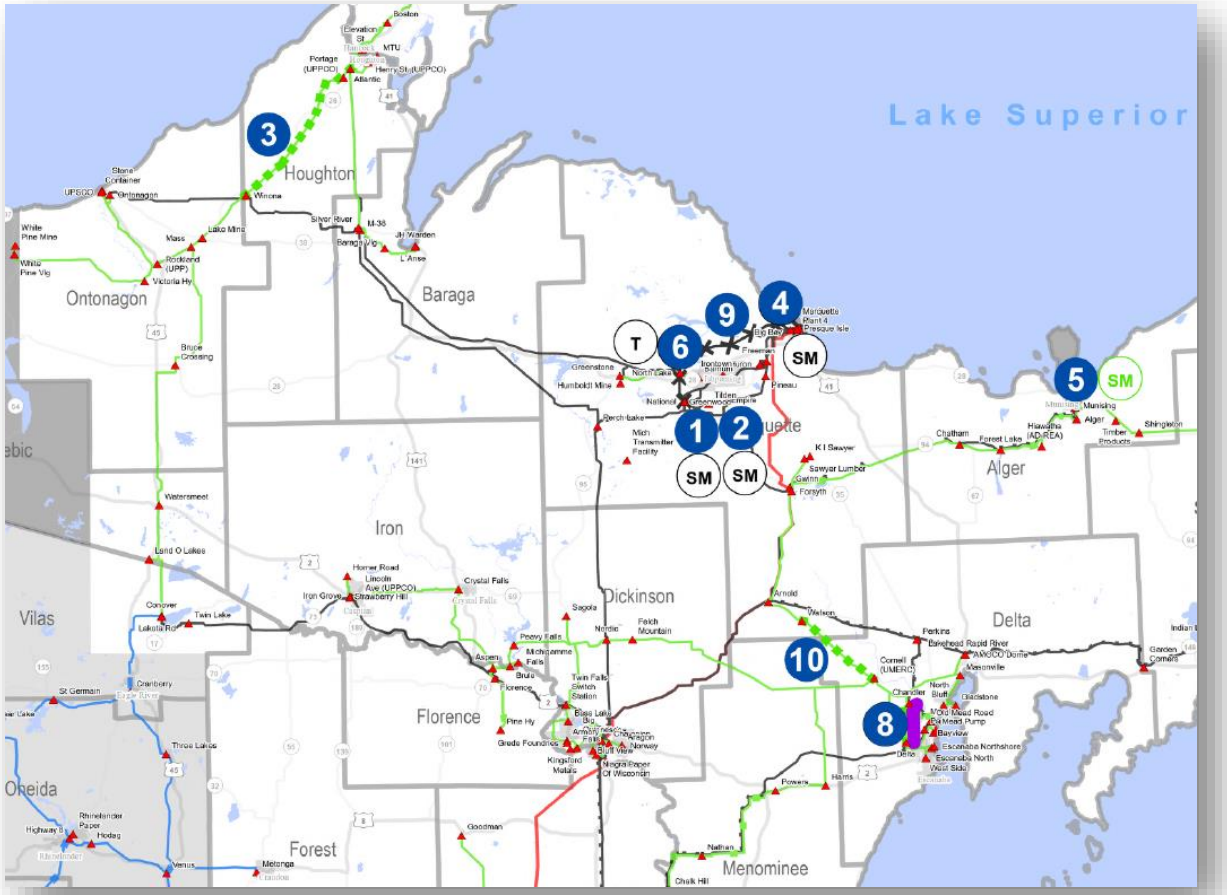
Project Description	TYA Project No.	In-Service Year	Need Driver	Status	Zone
Waupaca Area Energy Storage Project	1	2024	Operational flexibility	Planned	1
J732 Superior SS Generator Interconnection and Network Upgrades	2	2026	G-T Interconnection	Planned	1
McKenna – Castle Rock 69-kV line (Y-47), Rebuild	3	2025	Condition and Performance	Planned	1
Northern Adams County Area Network Improvement Project	4	2027	T-D Interconnection and Reliability	Planned	1
Saratoga SS Control House and Breaker Asset Renewal	5	2025	Condition and Performance	Planned	1
Rocky Run SS T1 Transformer Replacement	6	2024	Reliability	Planned	1
Rocky Run SS T2 and T4 Power Transformer Replacement	7	2027	Reliability	Proposed	1
North Central WI Reliability Project	8	2028	Reliability	Proposed	1
Groenier – Rosholt (ALTE) Tap, 69 kV (Y-71), Partial Rebuild and Rerate	9	2025	Condition and Performance	Proposed	1

Northern Adams County Area Network Improvement Project



- Scope of Work:
  - Extend a 4.2-mile line segment from Y-302 to the ACEC Colburn substation.
  - Provide a network source to Y-302 from Badger West 69 kV.
    - Install 100 MVA 138/69 kV transformer “in-series” with a new 5-mile 69 kV transmission line.
    - Install line breakers on X-43
- Estimated cost: $39.9 million.
- Challenges:
  - Construction outage planning
  - Material acquisitioning
- The project is scheduled to be in service in 2027.

Zone 2



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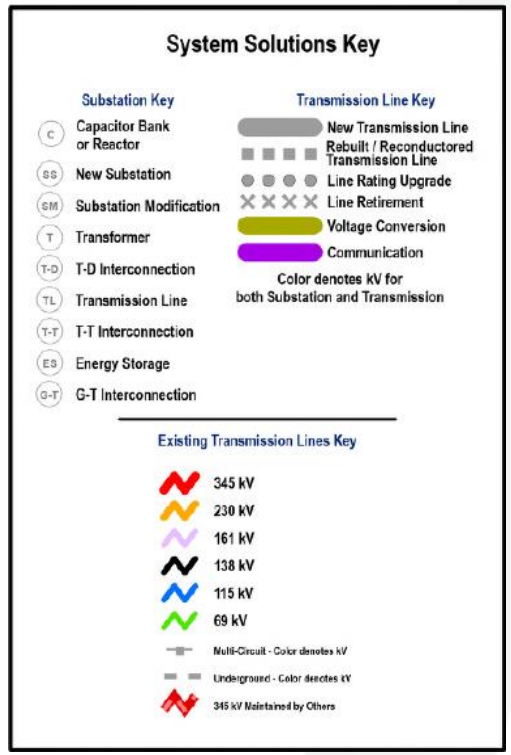
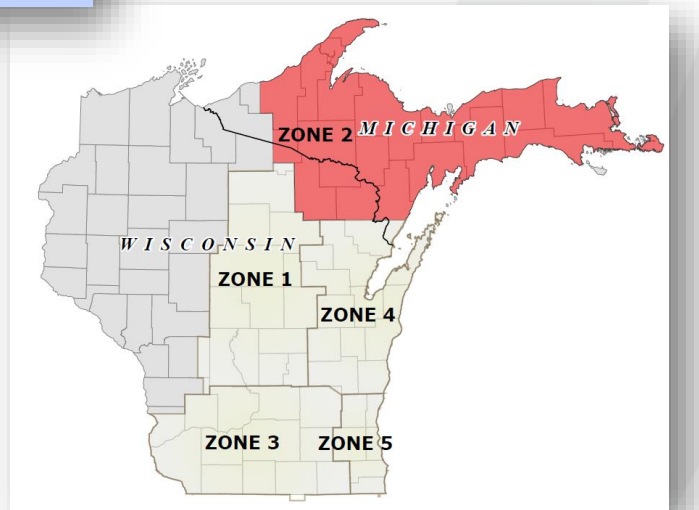
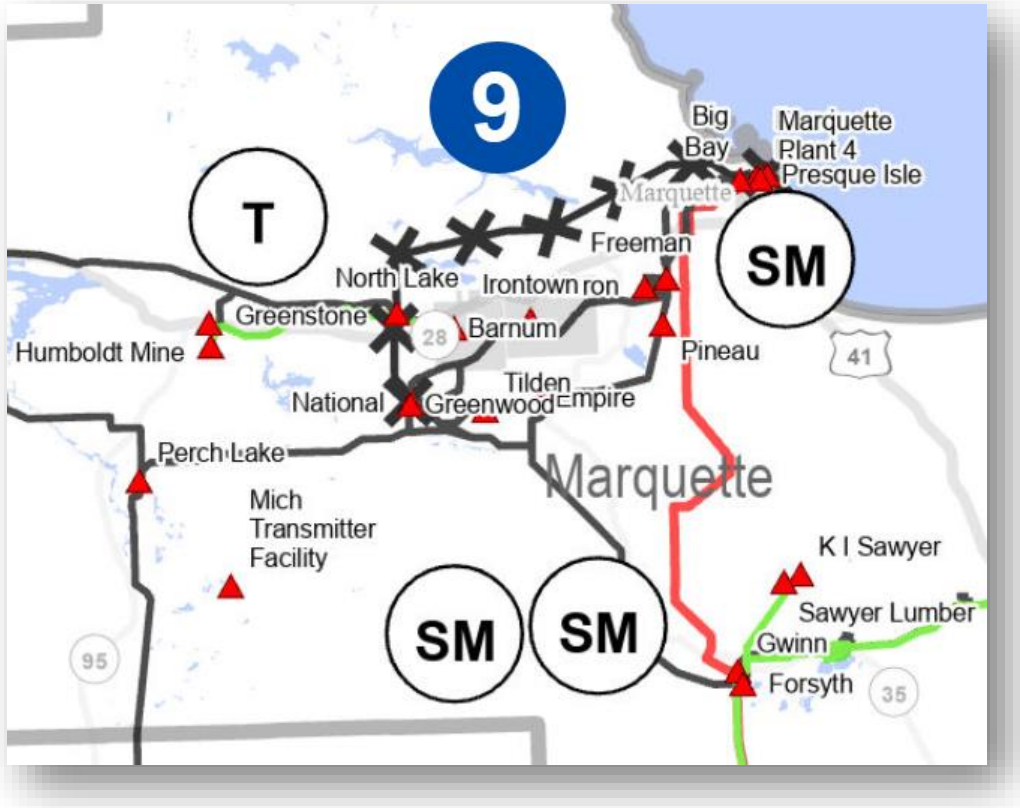




Zone 2 Projects

Project Description	TYA Project No.	In-Service Year	Need Driver	Status	Zone
Tilden SS, Control House Replacement and Breaker & Relay Asset Renewal	1	2024	Condition and Performance	Planned	2
Empire SS, Control House Replacement and Breaker & Relay Asset Renewal	2	2024	Condition and Performance	Planned	2
Winona – Atlantic 69-kV (Winona69), rebuild	3	2024	Reliability	Planned	2
Marquette County Reactive Power Project	4	2024	Reliability	Planned	2
Munising Area Reactive Power Project	5	2025	Reliability	Planned	2
North Lake SS, Transformer Asset Renewal	6	2025	Condition and Performance	Planned	2
Pine River – Mich Limestone Loading Dock 69 kV (ESE_6906), Rebuild	7	2027	Condition and Performance	Planned	2
Chandler – Delta 69 kV (Delta1), Rebuild and OPGW	8	2026	Condition and Performance	Planned	2
Perch Lake – National 138kV (468) Partial Retirement Project	9	2025	Reliability	Planned	2
Cornell Tap – Watson Tap 69kV (Chandler), Partial Rebuild	10	2026	Condition and Performance	Proposed	2

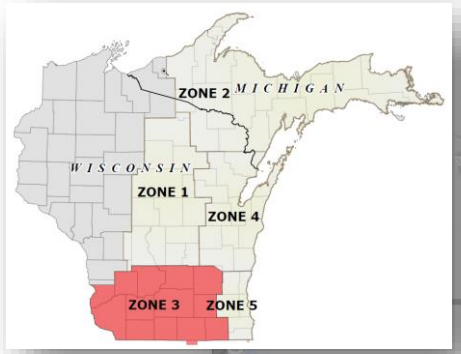
Perch Lake – National 138kV (468) Partial Retirement Project

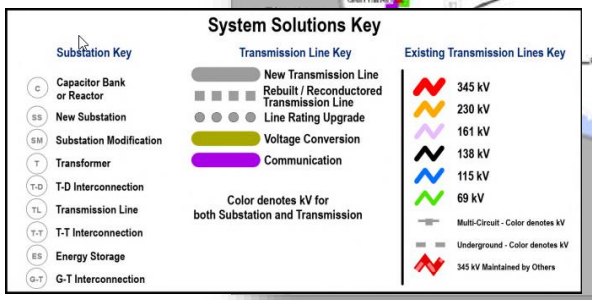


Scope of Work:

- Reconfigure Perch Lake – Presque Isle (468), 138kV line
  - Terminate line into National SS, establishing new Perch Lake – National line. Install new 138kV breaker terminal.
  - Retire remaining 23 miles of 138kV transmission line from National – Presque Isle
  - Perform Perch lake asset renewal
- Estimated cost: $10.4 million.
- Construction
  - New line termination scheduled in Q3 2025.
  - Line retirement to be flexible with target date of Dec 2027
- Challenges:
  - Material acquisitioning
- The project is scheduled to be in service in 2025

Zone 3



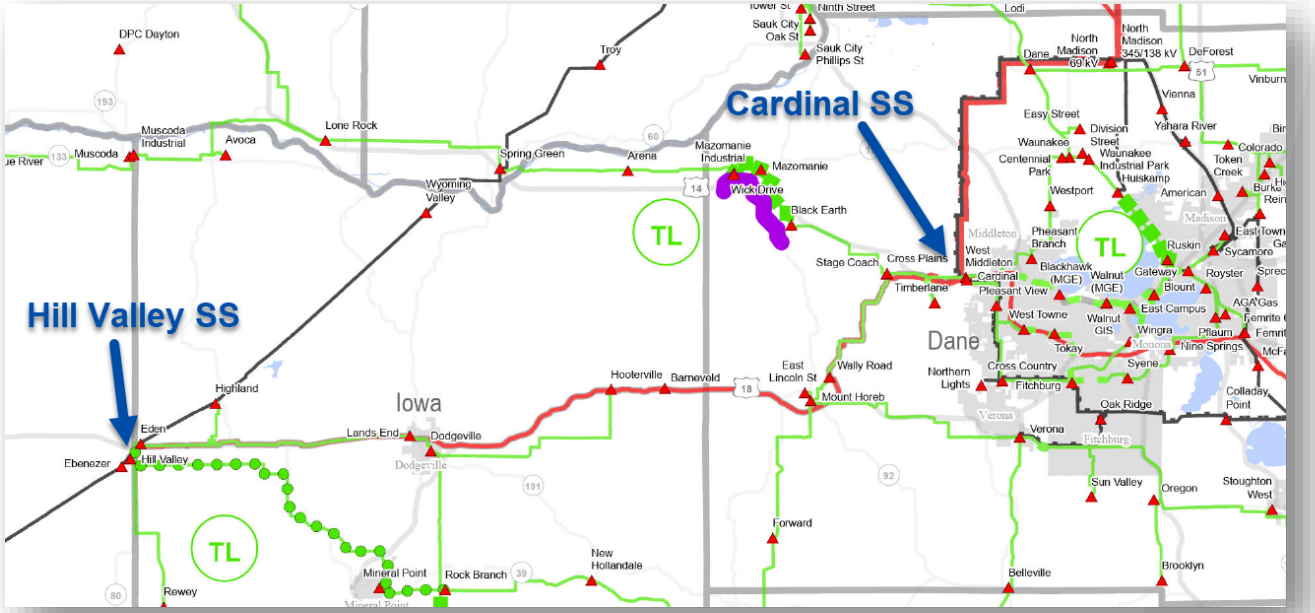


Zone 3 Projects

Project Description	Project #	In-service year	Need Driver	Status	Zone
Rock County Reliability Project	1	2024	Reliability	Planned	3
Gaston Road SS, DIC, Additional Transformer	2	2024	T-D Interconnection	Planned	3
Duck Creek SS, DIC, New Substation	3	2024	T-D Interconnection	Planned	3
Nelson Dewey – Bloomington 69-kV (Y-184), rebuild & OPGW	4	2025	Reliability, Condition and Performance	Planned	3
Huiskamp – Ruskin (6937), Partial Rebuild	5	2025	Condition and Performance	Planned	3
North Beaver Dam SS Asset Renewal & South Beaver Dam – North Beaver Dam, 69kV (Y-59) Line Rebuild	6	2026	Condition and Performance	Planned	3
Darlington – Rock Branch 69kV (Y-109), Rebuild	7	2026	Condition and Performance	Planned	3
Wick Drive – Black Earth 69kV, (Y-62), OPGW Addition & Partial Rebuild	8	2026	Communication	Proposed	3
Hillman – Darlington 138kV (X-14/X-101), Rebuild	9	2028	Condition and Performance	Proposed	3
Eden – Rock Branch 69kV (Y-106) Uprate	10	2027	Economic, Condition and Performance	Provisional	3
South Fond du Lac – Spring Brook 69kV (Y-133), Rebuild	11	2032	Condition and Performance	Provisional	3

Cardinal - Hickory Creek 345-kV, line construction (#1)

- Scope of Work:
  - 102-mile, 345-kV Transmission Line connecting Dubuque County, Iowa to Dane County, Wisconsin.
- Project is co-owned by ATC LLC, ITC Midwest LLC and Dairyland Power Cooperative.
- Initial estimated project cost: $500 million.

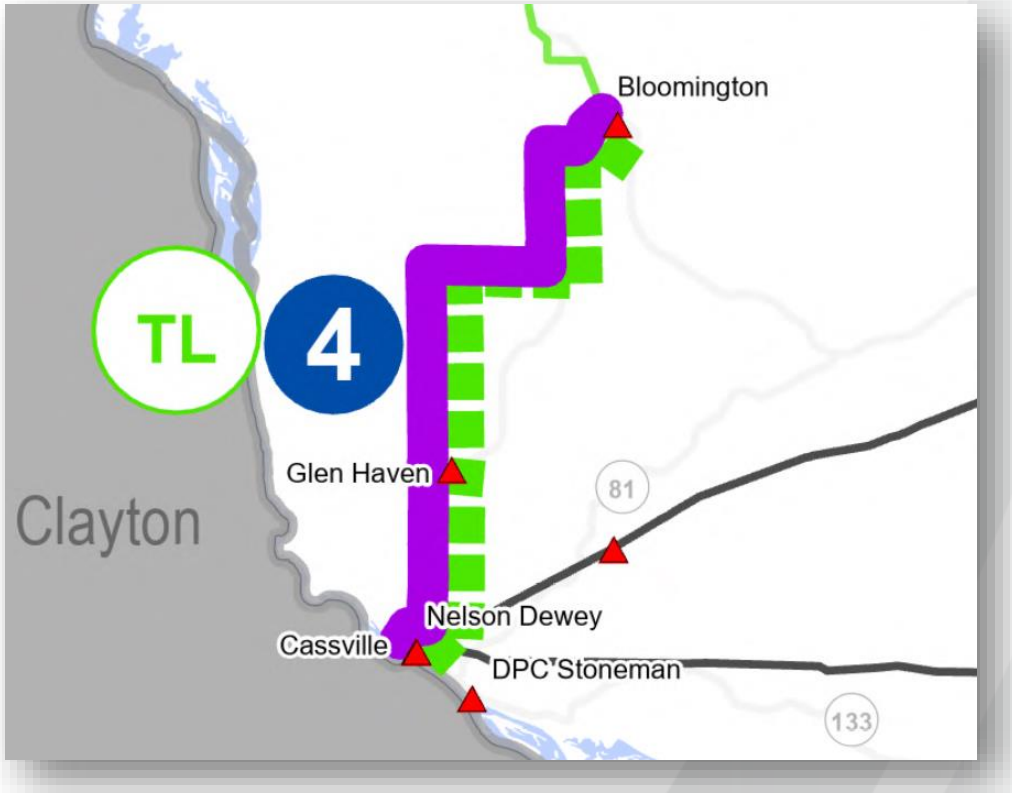


Note: Hickory Creek – Hill Valley 345-kV line not shown on this figure.

- Public Service Commission of Wisconsin CPCN approval in 2019.
- Construction began in Iowa in April of 2021 and in Wisconsin in November of 2021.
- In service dates (ISD):
  - From Hill Valley Substation to Cardinal Substation, ISD expected during December 2023.
  - From Hickory Creek to Hill Valley Substation, ISD expected during June 2024.

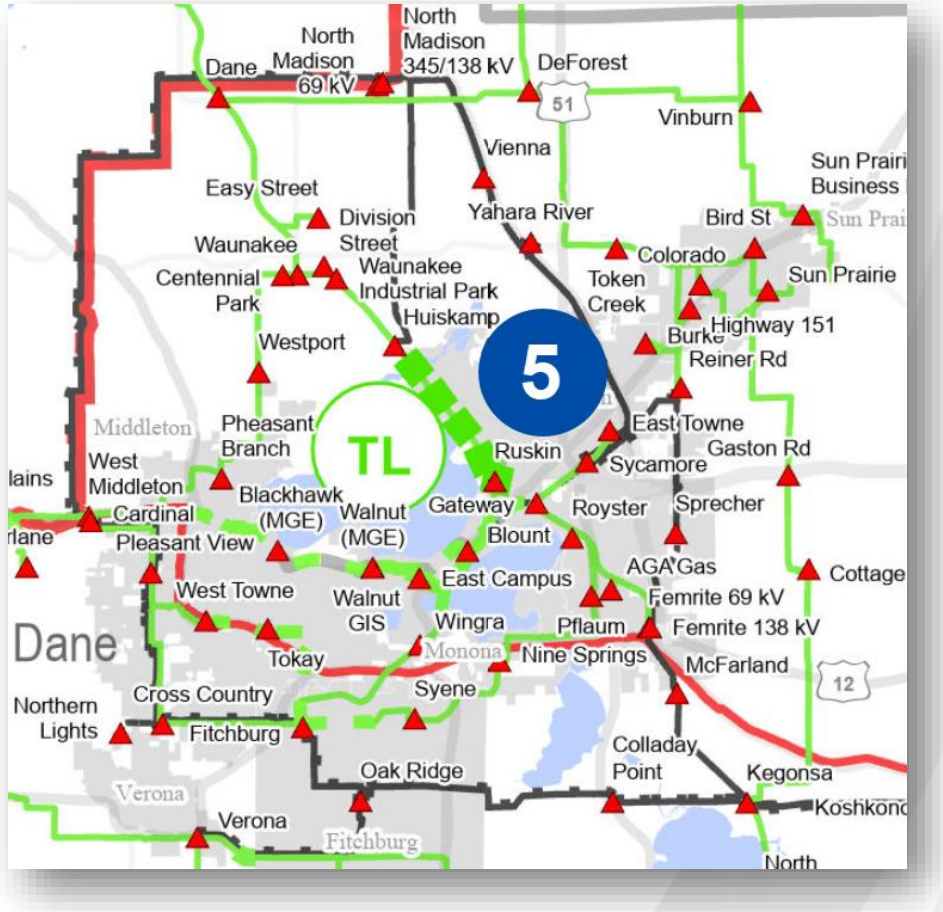
Nelson Dewey – Bloomington 69-kV (Y-184), rebuild & OPGW

- Scope of Work:
  - Rebuild 15 miles of 69kV transmission.
  - Install new conductor and new OPGW
- Estimated cost $16.3 million.
- The project is scheduled to be in service in 2025.
  - Currently in project scoping

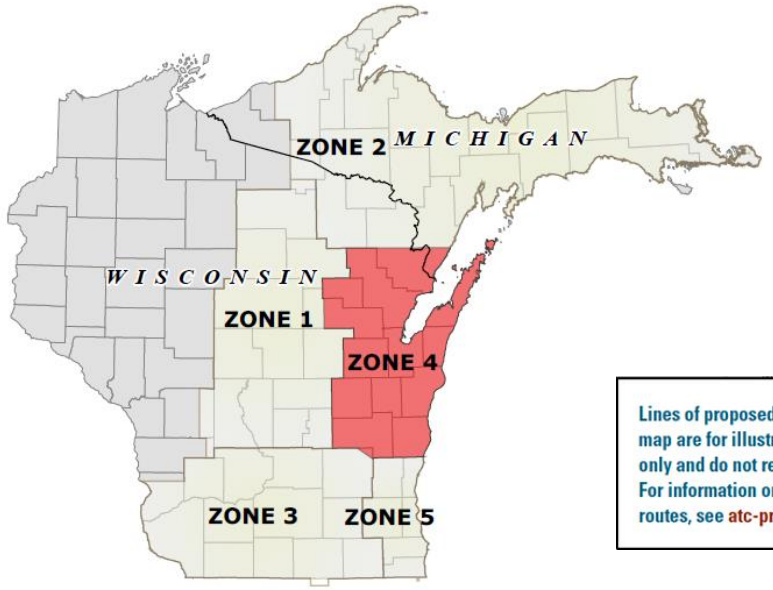


Huiskamp – Ruskin (6937), Partial Rebuild

- Scope of Work:
  - Partially rebuild 4.9 miles of 69kV transmission.
    - Replace select legacy steel lattice towers with new structures.
    - Transfer existing conductor and static to new structures.
- Estimated cost: $7.9M million.
- Construction scheduled in 2025
- The project is expected to be in service in 2025
  - Currently in detailed design



Zone 4



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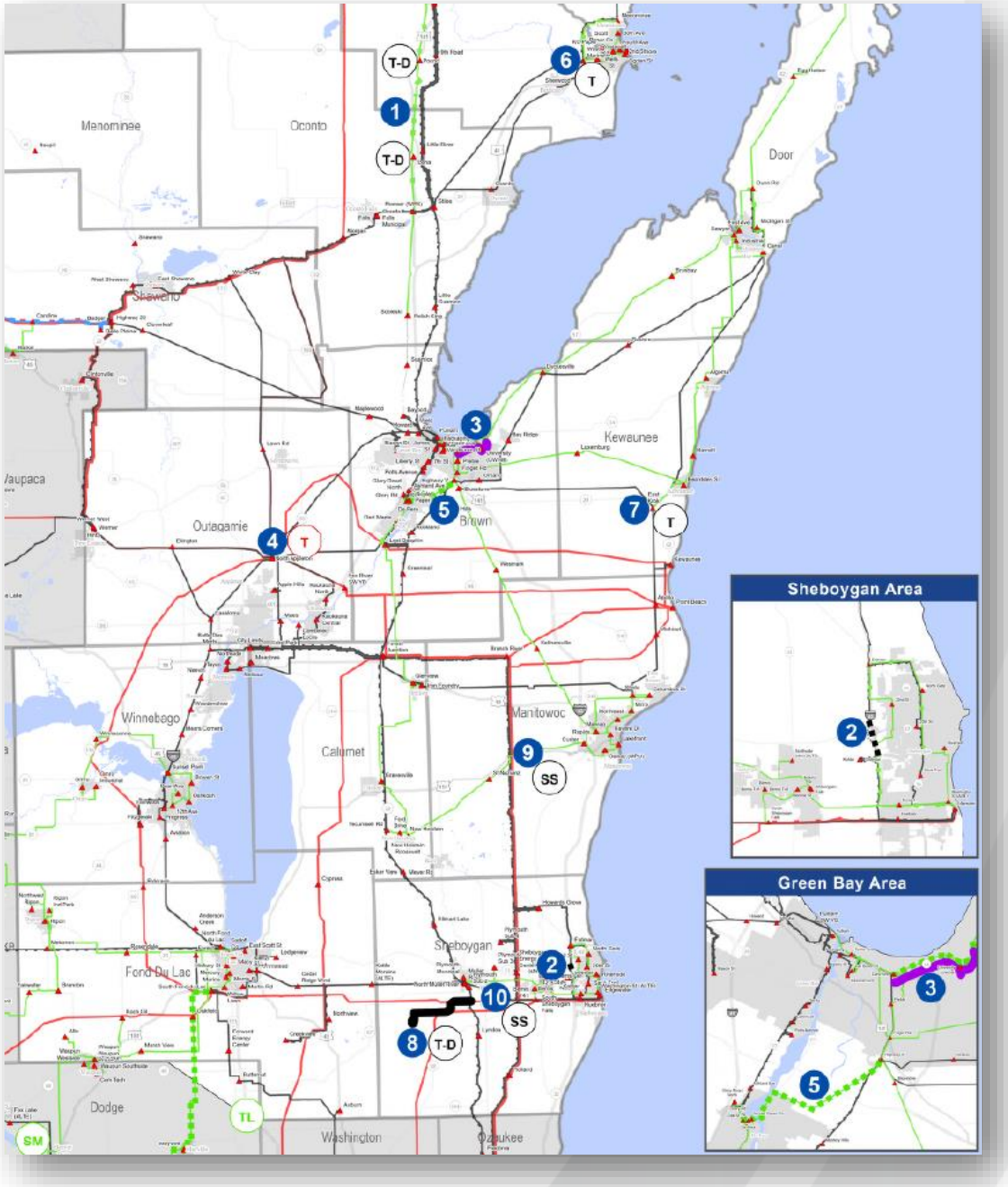

Zone 4 Projects

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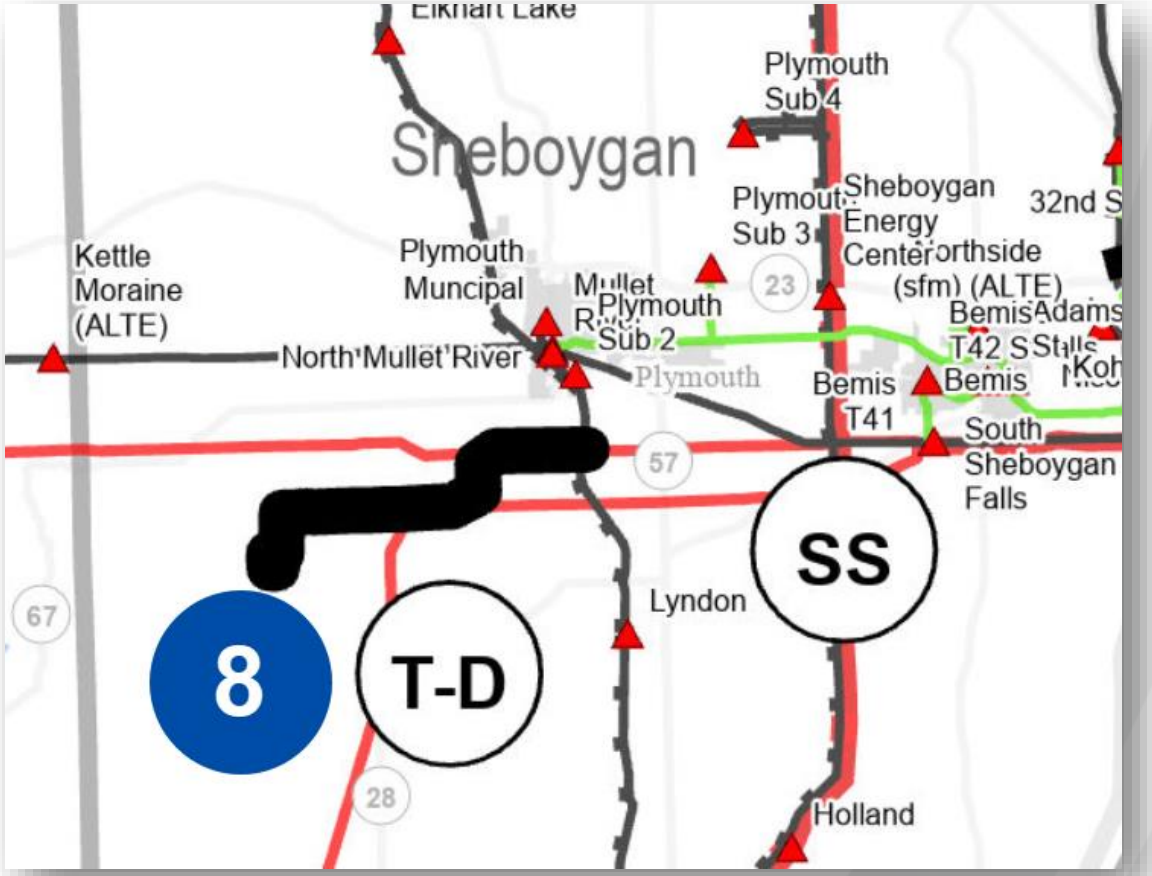
Pioneer SS – Crivitz SS 138-kV Line (E-83/B-2), Retire 69-kV and Reconfigure Load to 138-kV	1	2024	Condition and Performance, T-D Interconnection	Planned	4
Edgewater SS – Lodestar SS 138 kV (X-48/Y-31), Underground Cable Rebuild	2	2024	Condition and performance	Planned	4
Danz Ave. SW STA – University (WPS) 69-kV line (O-15), underground rebuild & OPGW	3	2026	Condition and Performance	Planned	4
North Appleton SS – Transformer Replacement and Asset Renewal	4	2024	Condition and Performance	Planned	4
Oak St – Hwy V 69-kV line (Z-26), Rebuild	5	2026	Condition and Performance	Planned	4
West Marinette SS – Transformer and Breaker Asset Renewal	6	2025	Condition and Performance	Planned	4
East Krok Transformer Replacement	7	2027	Reliability, Condition and Performance	Planned	4
Plymouth #5, DIC, New Substation	8	2025	T-D Interconnection	Planned	4
Valders SS, New 138/69 kV Substation	9	2028	Economic, Reliability	Proposed	4
Mullet River Area Reliability Project	10	2027	Reliability, Condition and Performance	Proposed	4

Plymouth Reliability Project

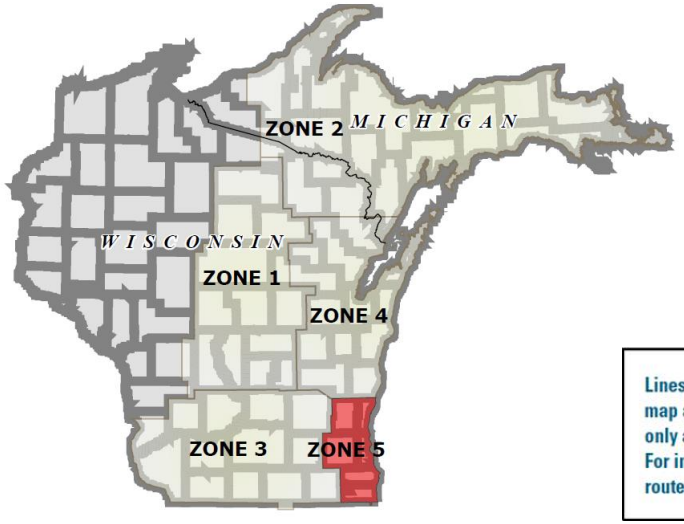
- Projected ISD: 9/2026
- MTEP22, App. A, ID 21925
- Cost: $31.0M
- Need:
  - New T-D interconnection request to serve expansion of pipeline pumping facility and enhance Plymouth Utilities distribution reliability in the area
- Scope
  - New 138 kV Plymouth 5 Substation with breakers
  - New double-circuit 138 kV line from Saukville-Elkhart Lake line (8241) to loop in and out of new substation (~8 miles)



Valders SS, New 138/69 kV Substation

- Scope of Work:
  - New 138/ 69 kV substation connecting Forest Junction-Howards Grove 138kV and the New Holstein-Custer 69kV transmission lines.
- Estimated Cost: $26.3 million (2028$)
- Benefits:
  - Relieves economic congestion in Northern Manitowoc
  - Provides an additional source for Manitowoc load, enhancing operational flexibility
  - Prepares the system to better address potential reliability issues related to future changes in Manitowoc area generation
  - Helps to accommodate possible future local load or generation growth
- Challenges:
  - Requires Public Service Commission of Wisconsin CA
  - Material acquisitioning
- The project is scheduled to be in service in 2028

Zone 5



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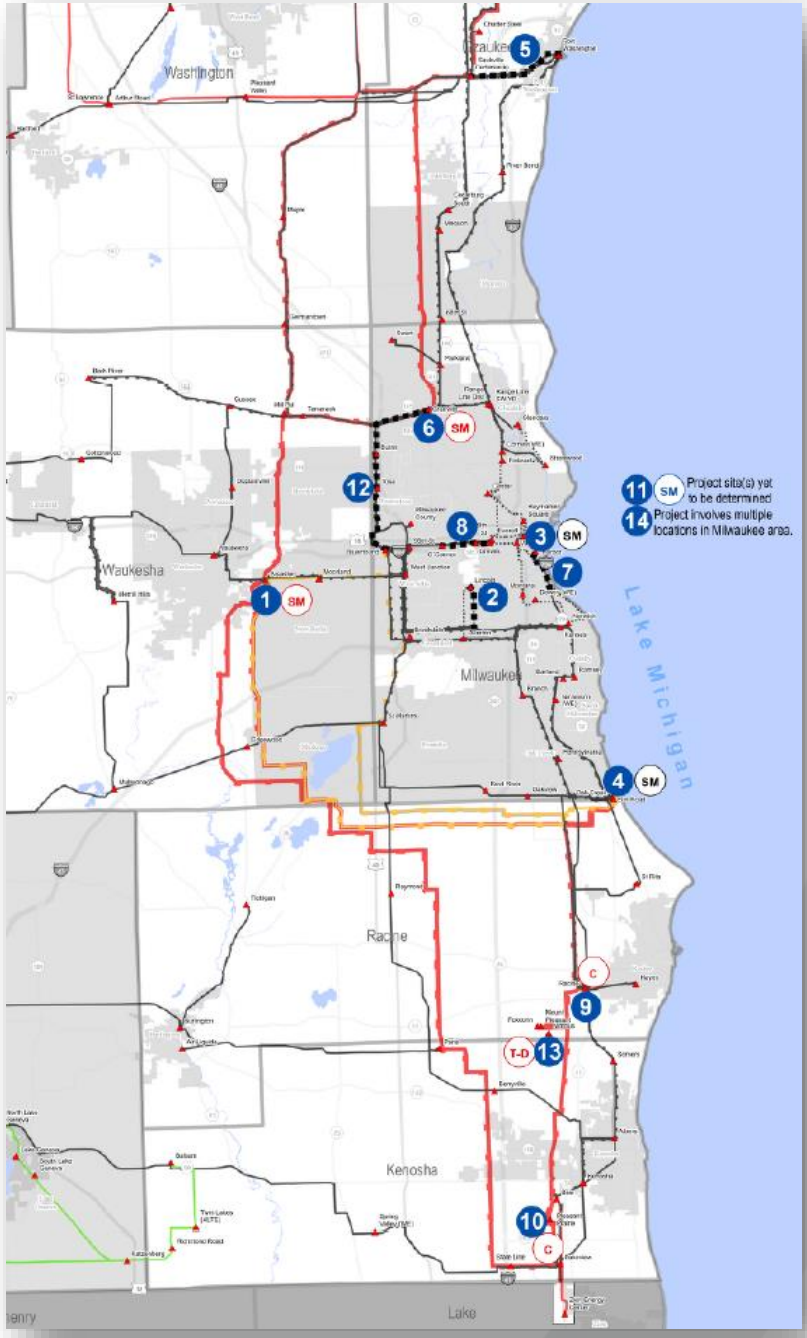
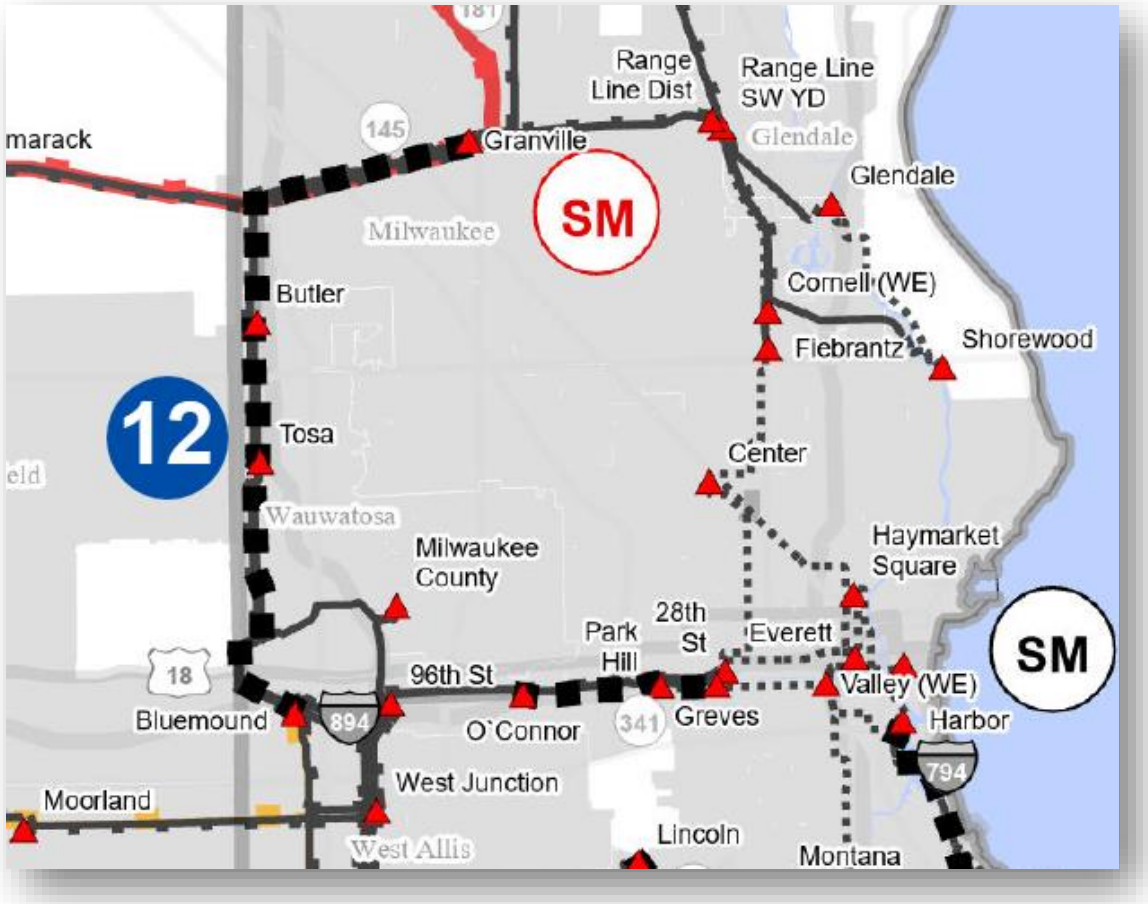


Zone 5 Projects

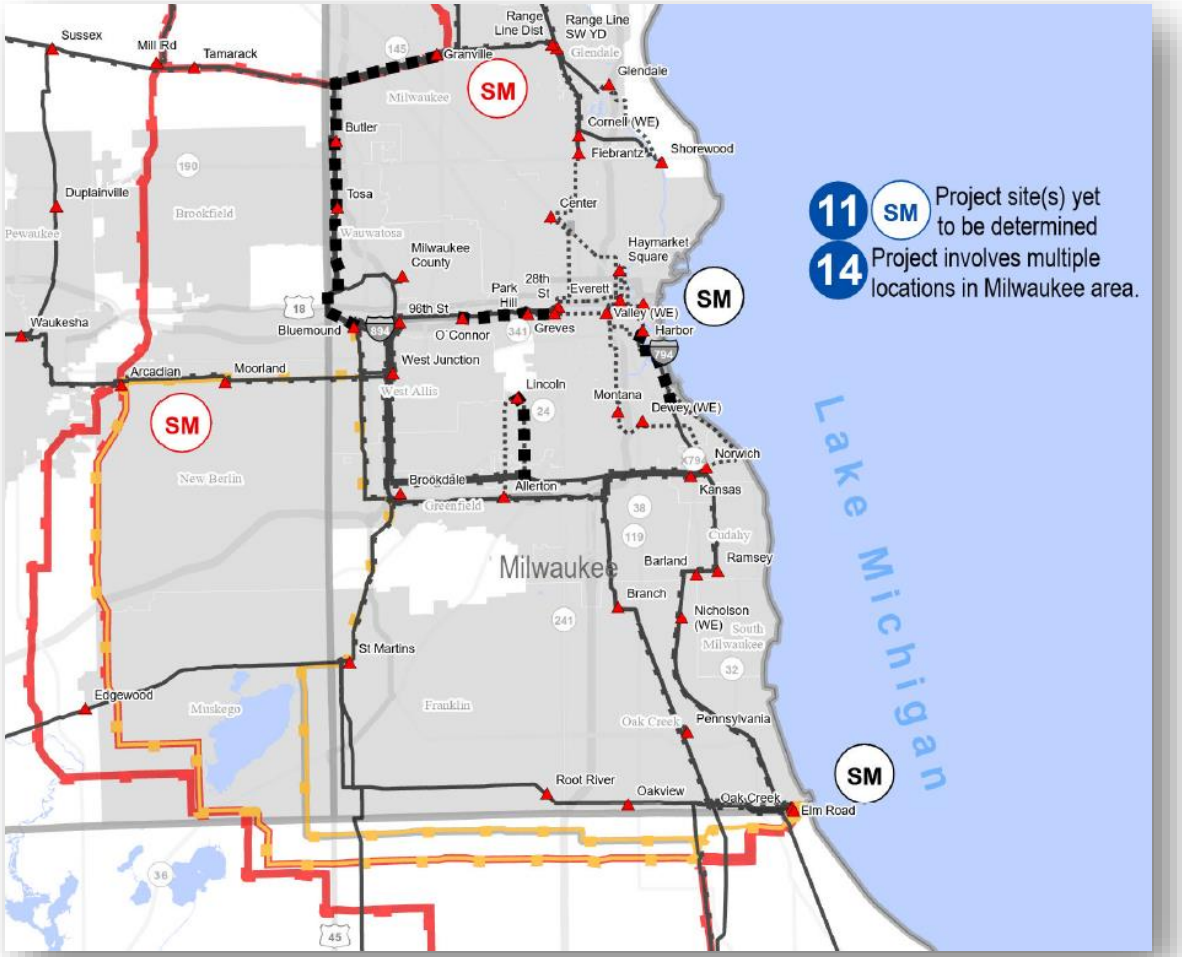
Project Description	TYA Project No.	In-Service Year	Need Driver	Status	Zone
Arcadian SS - Power Transformer and Control House Replacement and Asset Renewal	1	2025	Condition and performance/Reliability	Planned	5
Lincoln – 43rd Street Terminal 138 kV (5053), Replace with double circuit duct bank and XLPE cable	2	2026	Condition and performance	Planned	5
Everett GIS Asset Renewal	3	2025	Condition and Performance	Planned	5
Oak Creek, Racine SS and Remote Ends, Control Buildings and Relaying Asset Renewal	4	2026	Condition and Performance	Planned	5
Port Washington – Saukville 138 kV (X-132/X-133), Partial Rebuild	5	2024	Condition and performance/Reliability	Planned	5
Granville SS, Control House and Relay Replacement and Asset Renewal	6	2026	Condition and performance	Planned	5
Harbor – Russel Terminal 138 kV (893K11), Rebuild	7	2028	Condition and Performance	Planned	5
WisDOT I-94 Stadium Group of Projects	8	2026	Condition and Performance	Planned	5
Racine 345 kV Capacitor Bank Addition Project	9	2025	Reliability	Planned	5
Pleasant Prairie 345 kV Capacitor Bank Addition Project	10	2025	Reliability	Planned	5
Milwaukee Area Reactive Power Project	11	2026	Reliability	Provisional	5
Granville – Bluemound Corridor Rebuild	12	2028	Reliability	Provisional	5
Racine County, DIC, New Substation	13	2025	T-D Interconnection	Provisional	5
Milwaukee Area 230 kV Conversion To 345 kV Project	14	2028	Reliability	Provisional	5

Granville – Bluemound Corridor Rebuild



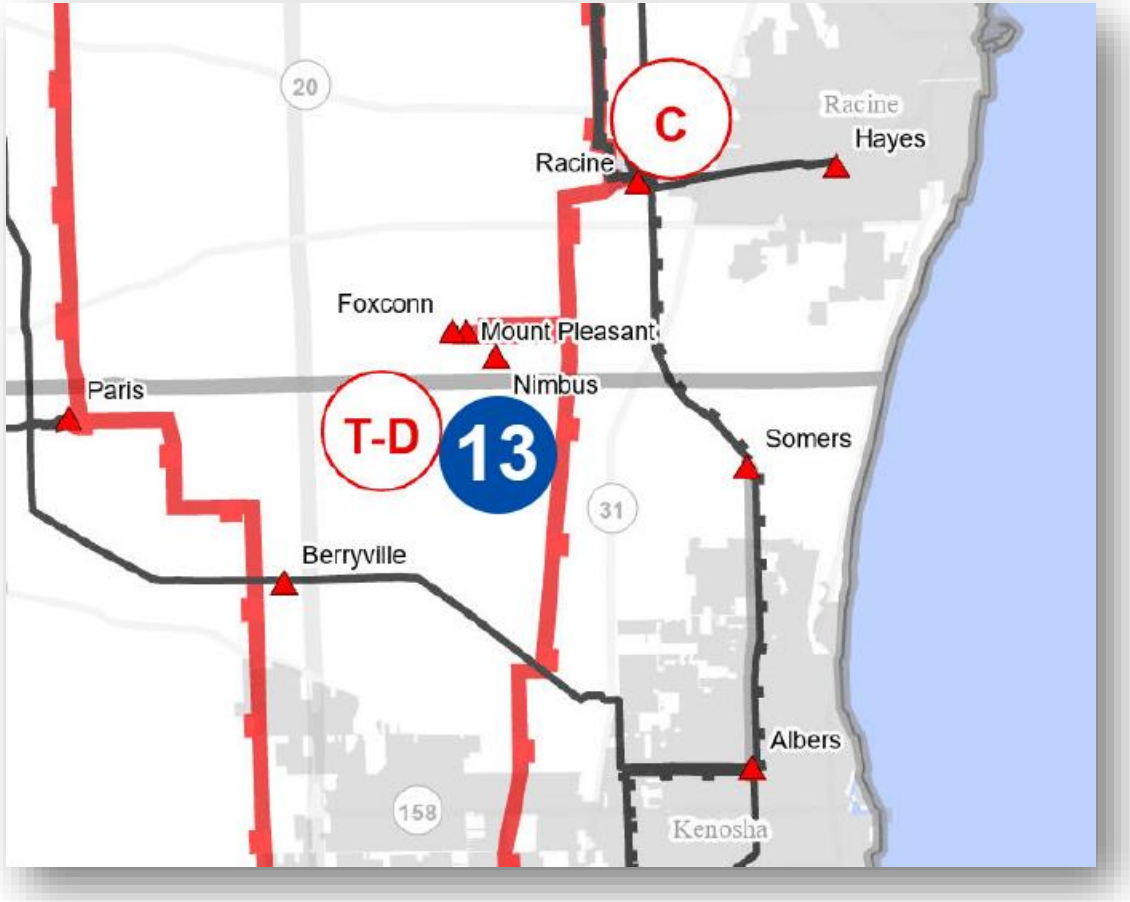
- Scope of Work:
  - Granville – Bluemound corridor rebuild to include an additional 345 kV outlet out of Granville SS and a replacement of existing 138 kV transmission line facilities. Alternatives are being explored.
- Estimated cost $130 million.
- Proposed In Service Date: December 2028.
- Need Drivers:
  - Address facility age and condition issues.
  - Address NERC contingency related reliability concerns
  - Address the adverse Market Congestion impacts of the corridor facilities
  - Increase the transfer capacity of the corridor to address Generator Interconnection and Load Interconnection needs,
- The project is currently submitted as a MTEP 2023 Appendix B project and is targeting MTEP 2024 Appendix A.

Milwaukee Area 230 kV Conversion To 345 kV Project



- Scope of Work:
  - Address facility age and condition issues,
  - Provide one high voltage standard of 345 kV, while streamlining needed spares, maintenance considerations, etc.,
  - Increase the transfer capability of the Zone 5 transmission system to address Generator Interconnection and Load Interconnection needs,
  - Address NERC contingency related reliability concerns.
- Estimated cost $420 million.
- Proposed In Service Date: December 2028.
- Need Drivers:
  - Rebuild Bluemound 230 kV bus as a 345 kV ring bus,
  - Rebuild and/or reconductor the Oak Creek to Bluemound 230 kV lines to 345 kV,
  - Add a 345 kV rung to Arcadian SS to loop in one of the rebuilt/converted lines,
  - Reconfigure the Elm Road 345 and Oak Creek 138 kV buses and add a third 345/138 kV transformer,
  - Retirement of all 230 kV facilities.
- MTEP 2023 Appendix B project targeted for MTEP 2024 Appendix A.

Racine County, DIC, New Substation



- New load interconnection request in the SE Wisconsin
- ISD targeting Q2 2025
- Project scope:
  - New 138/24.9 kV Interconnection Nimbus Substation
  - Two short 138 kV double-circuit transmission lines (<1.0 miles)
  - Expansion of the Mt. Pleasant Substation
  - New FACTS device at Mt. Pleasant
- ATC will request MISO's Expedited Project Review (EPR) Process to include this project in MTEP24 App A

Cornell SS, 138kV FACTS device

- Scope of Work:
  - Installation of FACTS power flow control device at Cornell substation
  - Series installation on 138kV normally-open underground cable
- Estimated cost $7.2 million.
- Benefits
  - Provides area economic congestion relief
  - Provides additional system support for expected future load growth
  - Improves reliability by increasing area network
  - Provides voltage support to Milwaukee area
- Target Appendix B of MTEP24
- Tentative in-service date of late 2025

For More Information

Visit the ATC 10-Year Assessment website:
www.atc10yearplan.com

Or contact

Ted Weber
Email: tweber2@atcllc.com