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# 2018 10-Year Assessment Summary

October 25, 2018

Stakeholder and Customer Webcast  
Jeremy Voigt, System Planning

# Topics

- Messages
- Capital forecast
- Larger projects by zone

# Messages

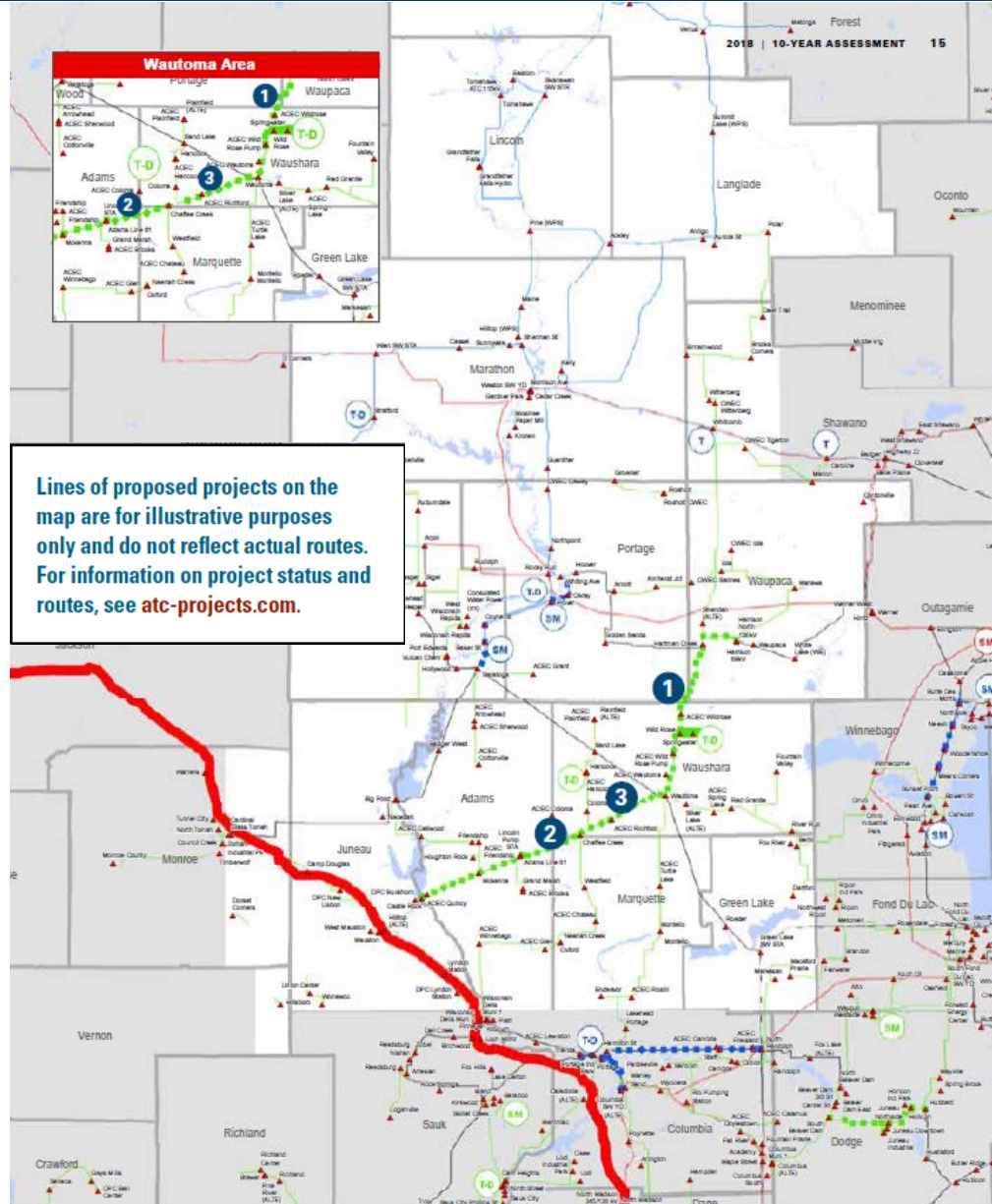
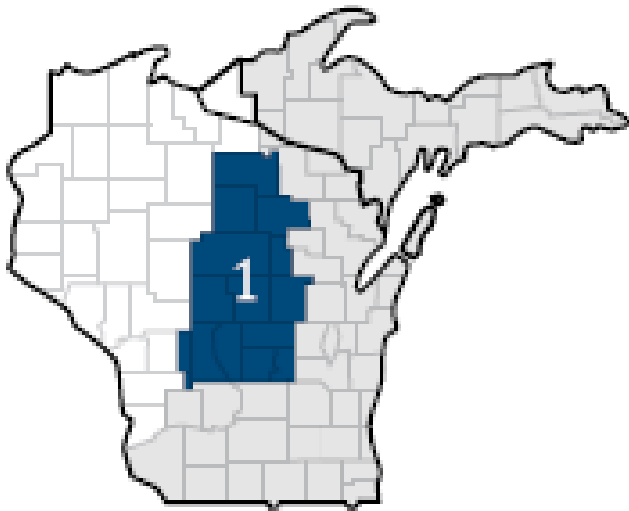
- Load forecast has slightly lower growth rate relative to 2017 Assessment
- Mount Pleasant Tech Interconnection Project
  - Shorter timeframes to complete work
- Changing generation mix
  - Mostly renewables; 6.6 GW in queue
  - Leading to cancelling of some network projects
- Modest amount of new network projects
  - New customer interconnections main reason for new network projects
- Asset Renewal
  - Maintaining assets for a reliable future

# Capital Forecast

	2014	2015	2016	2017	2018
Specific Network Projects	\$1.4B	\$1.4B	\$1.3B	\$0.7B/\$1.0B*	<b>\$0.5B</b>
Regional Multi-Value Projects	\$0.5B	\$0.5B	\$0.5B	\$0.4B	<b>\$0.3B</b>
Asset Maintenance	\$1.2B	\$1.4B	\$1.4B	\$1.4B	<b>\$1.5B</b>
Other Capital Categories	\$0.2B/\$0.8B	\$0.4B/\$1.2B	\$0.4B/\$1.2B	\$0.3B/\$0.8B	<b>\$0.5B/\$1.1B</b>
Total 10-Year Capital Cost	\$3.3B/\$3.9B	\$3.7B/\$4.5B	\$3.6B/\$4.4B	\$2.8B/\$3.6B	<b>\$2.8B/\$3.4B</b>

\*The Specific Network Projects range in 2017 reflects the fact that NARA projects in the 10-Year Assessment project list and in the MTEP database may be replaced by generation being considered in the MISO generation queue.

# Zone 1



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](http://atc-projects.com).

SUBSTATION KEY		TRANSMISSION LINE KEY		EXISTING TRANSMISSION LINES KEY	
<b>SS</b>	<b>New substation</b> Supports transmission system expansion		<b>345-kV transmission line</b>		<b>69 kV</b>
<b>SM</b>	<b>Substation modifications</b> Upgrades equipment ratings to avert facility overloads		<b>115-, 138- or 161-kV transmission line</b>		<b>115 kV</b>
<b>T</b>	<b>Transformer</b> Supports local growth and improves voltage levels		<b>69-kV transmission line</b>		<b>230 kV</b>
<b>C</b>	<b>Capacitor bank or reactor</b> Relieves low voltages or high voltages		<b>Rebuilt 115- or 138-kV transmission line</b>		<b>138 kV</b>
<b>T-D</b>	<b>T-D interconnection</b> Supports local growth		<b>115- or 138-kV transmission line rating upgrade</b>		<b>161 kV</b>
			<b>69-kV transmission line rating upgrade</b>		



# Zone 1 Projects

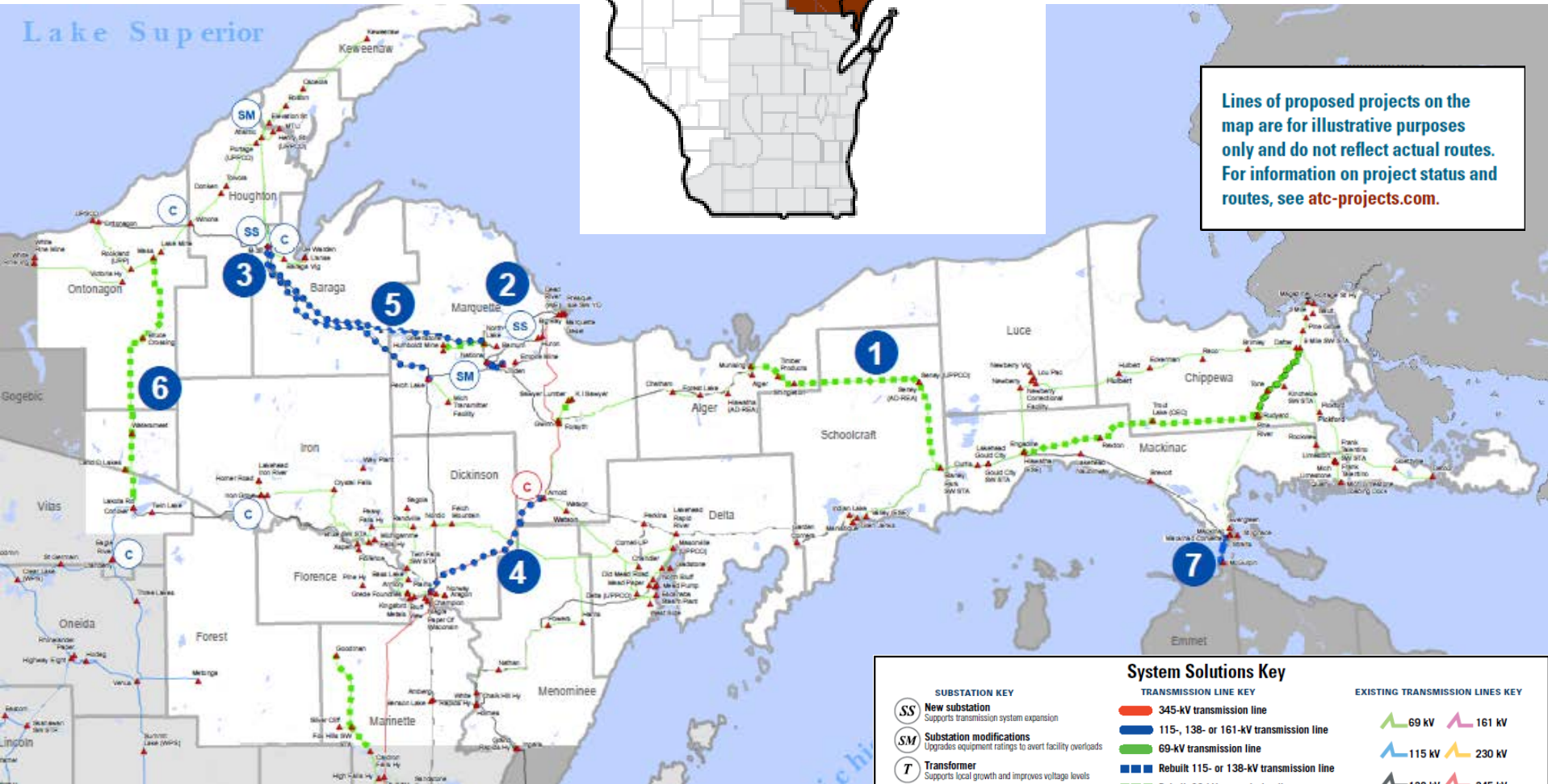
PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
<b>Planned Projects</b>		
<b>1</b> Wild Rose – Harrison 69-kV line (Y-19) partial rebuild	2020	Condition and performance
<b>2</b> Chaffee Creek – Lincoln Pump Station 69-kV line (Y-18) rebuild	2021	Condition and performance
<b>3</b> Wautoma – Chaffee Creek 69-kV line (Y-49) rebuild	2021	Condition and performance

*Additional projects may be found in the full 10-Year Assessment at [atc10yearplan.com](http://atc10yearplan.com).*

# Zone 2



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](http://atc-projects.com).



SUBSTATION KEY		TRANSMISSION LINE KEY		EXISTING TRANSMISSION LINES KEY	
<b>SS</b>	<b>New substation</b> Supports transmission system expansion		345-kV transmission line		69 kV
<b>SM</b>	<b>Substation modifications</b> Upgrades equipment ratings to avert facility overloads		115-, 138- or 161-kV transmission line		115 kV
<b>T</b>	<b>Transformer</b> Supports local growth and improves voltage levels		69-kV transmission line		230 kV
<b>C</b>	<b>Capacitor bank or reactor</b> Relieves low voltages or high voltages		Rebuilt 115- or 138-kV transmission line		138 kV
<b>T-D</b>	<b>T-D interconnection</b> Supports local growth		115- or 138-kV transmission line rating upgrade		345 kV
			69-kV transmission line rating upgrade		

# Zone 2 Projects

	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
	<b>Planned Projects</b>		
1	Munising-Blaney Park 69-kV line (Inland) rebuild	2019	Condition and performance
2	J703: Huron Substation, new G-T interconnection	2019	G-T interconnection
3	J704: Silver River Substation, new G-T interconnection	2019	G-T interconnection
4	Plains – Arnold 138-kV uprate	2019	Network integration transmission service request
	<b>Proposed Project</b>		
5	J711-Silver River Substation, network upgrades	2020	G-T interconnection
	<b>Provisional Projects</b>		
6	Lakota – Winona 138-kV conversion	2021	Overloads and low voltages
7	Mackinac – McGulpin 138-kV submarine cables (9901, 9903), replacement	2021	Condition
	<i>Additional projects may be found in the full 10-Year Assessment at <a href="http://atc10yearplan.com">atc10yearplan.com</a>.</i>		

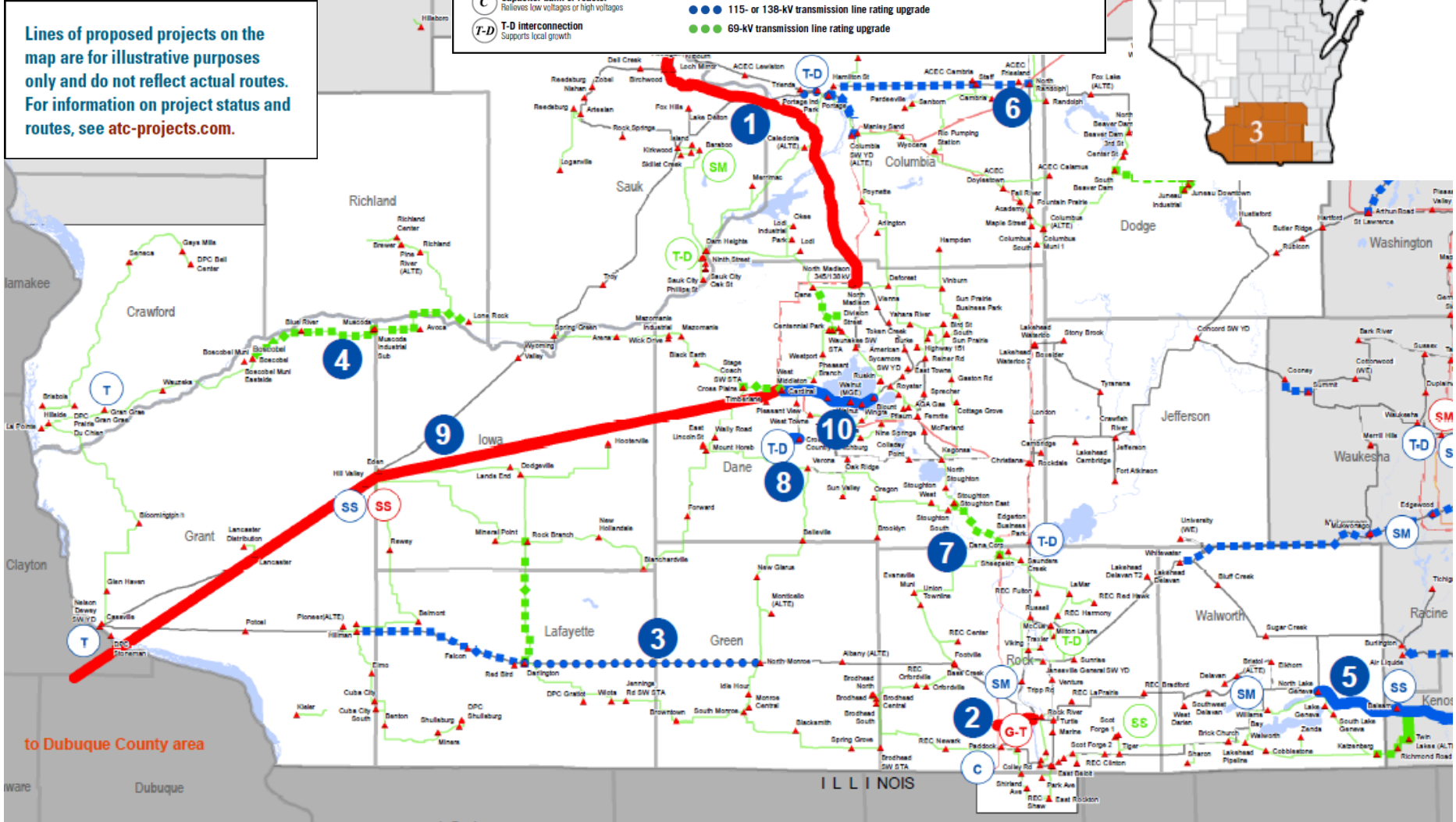


# Zone 3

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](http://atc-projects.com).

**System Solutions Key**

<b>SUBSTATION KEY</b>	<b>TRANSMISSION LINE KEY</b>	<b>EXISTING TRANSMISSION LINES KEY</b>
<b>SS</b> New substation Supports transmission system expansion	345-kV transmission line	69 kV
<b>SM</b> Substation modifications Upgrades equipment ratings to avert facility overloads	115-, 138- or 161-kV transmission line	161 kV
<b>T</b> Transformer Supports local growth and improves voltage levels	69-kV transmission line	115 kV
<b>C</b> Capacitor bank or reactor Relieves low voltages or high voltages	Rebuilt 115- or 138-kV transmission line	230 kV
<b>T-D</b> T-D interconnection Supports local growth	Rebuilt 69-kV transmission line	138 kV
	115- or 138-kV transmission line rating upgrade	345 kV
	69-kV transmission line rating upgrade	



to Dubuque County area

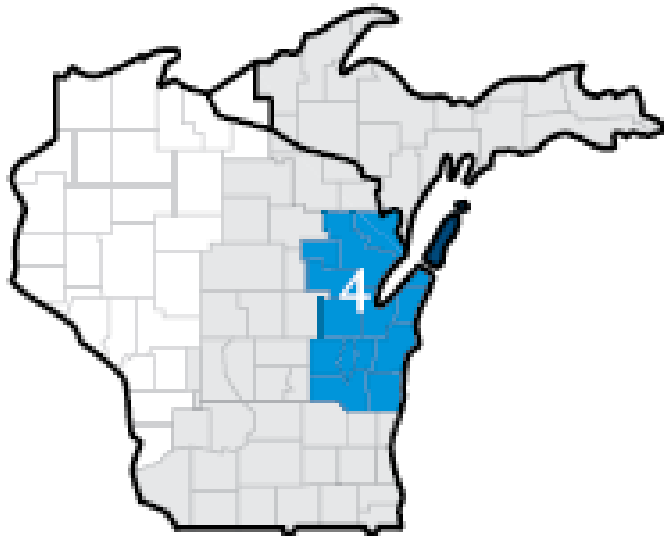


# Zone 3 Projects

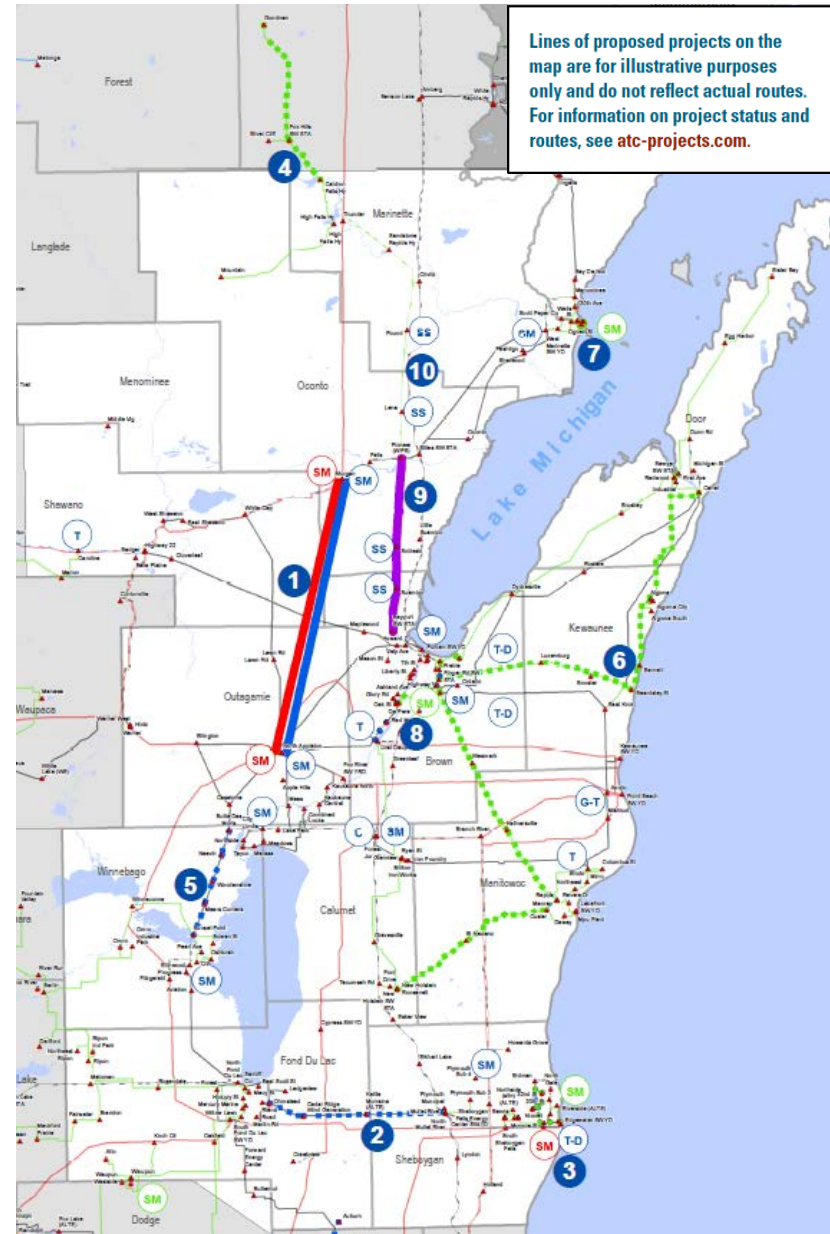
	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
<b>Planned Projects</b>			
1	Badger Coulee: Briggs Rd – North Madison – Cardinal 345-kV line construction	2018	Reliability, economics and public policy
2	J390: Kittyhawk Substation, new G-T interconnection	2019	G-T interconnection
3	J395: Darlington – North Monroe 138-kV line (X-49), Uprate	2019	G-T interconnection
4	Lone Rock – Boscobel 69-kV line (Y-124) rebuild	2019	Condition and performance
5	Spring Valley – North Lake Geneva 138-kV line construction	2019	Overloads and low voltages, provide network service
6	Portage – Staff – North Randolph 138-kV lines (X-6), (X-98), rebuild	2020	Condition and performance
7	Sheepskin – Stoughton 69-kV line (Y-12) rebuild	2021	Condition and performance
<b>Proposed Projects</b>			
8	Northern Lights Substation, new T-D interconnection	2020	T-D interconnection
9	Cardinal – Hickory Creek 345-kV line construction	2023	Reliability, economics and public policy
<b>Provisional Project</b>			
10	Cardinal – Blount 138-kV line construction	2029	Overloads and low voltages

*Additional projects may be found in the full 10-Year Assessment at [atc10yearplan.com](http://atc10yearplan.com).*

# Zone 4



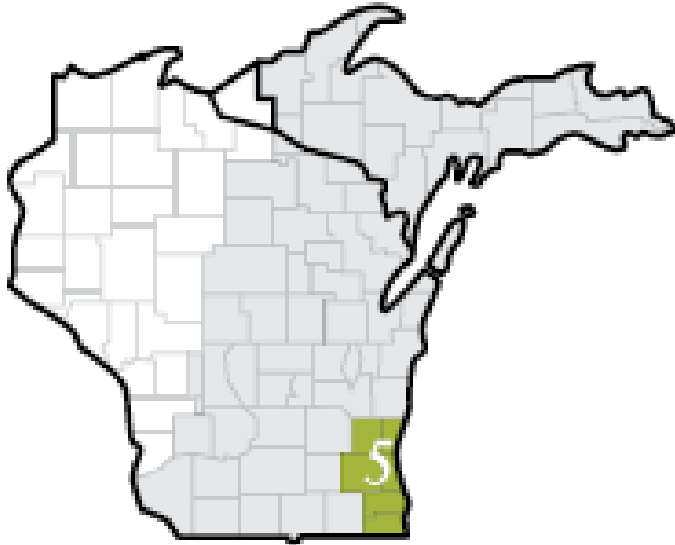
SUBSTATION KEY		TRANSMISSION LINE KEY		EXISTING TRANSMISSION LINES KEY	
<b>SS</b>	<b>New substation</b> Supports transmission system expansion		345-kV transmission line		69 kV
<b>SM</b>	<b>Substation modifications</b> Upgrades equipment ratings to avert facility overloads		115-, 138- or 161-kV transmission line		161 kV
<b>T</b>	<b>Transformer</b> Supports local growth and improves voltage levels		69-kV transmission line		115 kV
<b>C</b>	<b>Capacitor bank or reactor</b> Relieves low voltages or high voltages		Transmission line voltage conversion		230 kV
<b>T-D</b>	<b>T-D interconnection</b> Supports local growth		Rebuilt 345-kV transmission line		138 kV
			Rebuilt 115- or 138-kV transmission line		345 kV
			Rebuilt 69-kV transmission line		
			115- or 138-kV transmission line rating upgrade		
			69-kV transmission line rating upgrade		



# Zone 4 Projects

	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
	<b>Planned Projects</b>		
1	Bay Lake: North Appleton – Morgan 345-kV and 138-kV line construction	2018	Overloads and low voltages
2	Cedar Ridge Wind – Mullet River 138-kV line (X-97) rebuild	2020	Condition and performance
3	Edgewater SS, 345-kV bus reconfiguration	2020	Condition and performance
4	Goodman – Caldron Falls 69-kV line (J-88) rebuild	2020	Condition and performance
5	Butte des Morts – Sunset Point 138-kV lines (40321), (80952), (A-79), (MCRG21) rebuild	2021	Condition and performance
6	Finger Rd – Canal 69-kV line (J-10) rebuild	2021	Condition and performance
7	Ogden St. – Bayshore 69-kV line construction	2021	Provide network service
8	Hwy V – Oak St 69-kV line (Z-26) rebuild	2022	Condition and performance
	<b>Proposed Projects</b>		
9	Bayport area – Pioneer, rebuild as double-circuit 138-kV	2021	Condition, performance and provide network service
10	Pioneer – Crivitz (E-83/B-2), retire 69-kV and reconfigure load to 138-kV	2022	Condition, performance, and provide network service
	<i>Additional projects may be found in the full 10-Year Assessment at <a href="http://atc10yearplan.com">atc10yearplan.com</a>.</i>		

# Zone 5



SUBSTATION KEY		TRANSMISSION LINE KEY		EXISTING TRANSMISSION LINES KEY	
<b>SS</b> New substation	Supports transmission system expansion	345-kV transmission line	115-, 138- or 161-kV transmission line	69 kV	161 kV
<b>SM</b> Substation modifications	Upgrades equipment ratings to avert facility overloads	69-kV transmission line	Rebuilt 115- or 138-kV transmission line	115 kV	230 kV
<b>T</b> Transformer	Supports local growth and improves voltage levels	Rebuilt 69-kV transmission line	345-kV transmission line rating upgrade	138 kV	345 kV
<b>C</b> Capacitor bank or reactor	Relieves low voltages or high voltages	230-kV transmission line rating upgrade	115- or 138-kV transmission line rating upgrade		
<b>T-D</b> T-D interconnection	Supports local growth	69-kV transmission line rating upgrade			



# Zone 5 Projects

PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
<b>Planned Projects</b>		
<b>1</b> Mount Pleasant Tech Interconnection Project	2019	T-D interconnection
<b>2</b> Mukwonago-Edgewood-St. Martins 138-kV lines (3013), (671K61), rebuild	2019	Condition and performance
<b>3</b> Spring Valley-North Lake Geneva 138-kV line construction	2019	Overloads and low voltages, provide network service
<b>4</b> Paris-Burlington 138-kV line (8962) rebuild	2021	Condition and performance
<b>5</b> St. Lawrence-Barton-Auburn 138-kV lines (8032), (9752), rebuild	2022	Condition and performance
<b>Proposed Projects</b>		
<b>6</b> Juneautown Substation, new T-D interconnection	2020	T-D interconnection
<b>7</b> Port Washington-Saukville 138-kV rebuild line 762 to a double circuit	2021	Overloads
<i>Additional projects may be found in the full 10-Year Assessment at <a href="http://atc10yearplan.com">atc10yearplan.com</a>.</i>		



# For More Information

Visit the ATC 10-Year Assessment  
website: [www.atc10yearplan.com](http://www.atc10yearplan.com)

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