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businesses running  
and communities strong

## 2017 10-Year Assessment Summary

October 24, 2017

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 2016 Assessment
- Lower capital forecast
- Generation mix changing
  - Renewables
- Modest amount of new network projects
  - New customer interconnections main reason for new network projects
- Cancelling a few network projects
  - Lower load growth
  - Less expensive new project selected during project development
- Asset Renewal
  - Maintaining assets for a reliable future

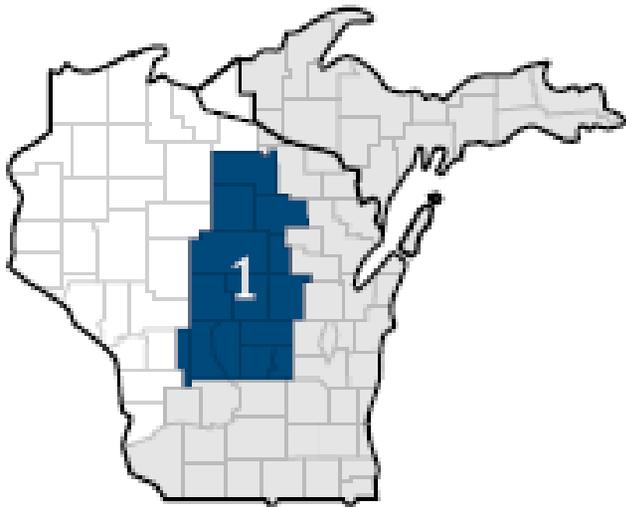
# Capital Forecast

	2013	2014	2015	2016	2017
Specific Network Projects	\$1.2B	\$1.4B	\$1.4B	\$1.3B	<b>\$0.7B/\$1.0B*</b>
Regional Multi-Value Projects	\$0.5B	\$0.5B	\$0.5B	\$0.5B	<b>\$0.4B</b>
Asset Maintenance	\$1.1B	\$1.2B	\$1.4B	\$1.4B	<b>\$1.4B</b>
Other Capital Categories	\$0.2B/\$0.8B	\$0.2B/\$0.8B	\$0.4B/\$1.2B	\$0.4B/\$1.2B	<b>\$0.3B/\$0.8B</b>
Total 10-Year Capital Cost	\$3.0B/\$3.6B	\$3.3B/\$3.9B	\$3.7B/\$4.5B	\$3.6B/\$4.4B	<b>\$2.8B/\$3.6B</b>

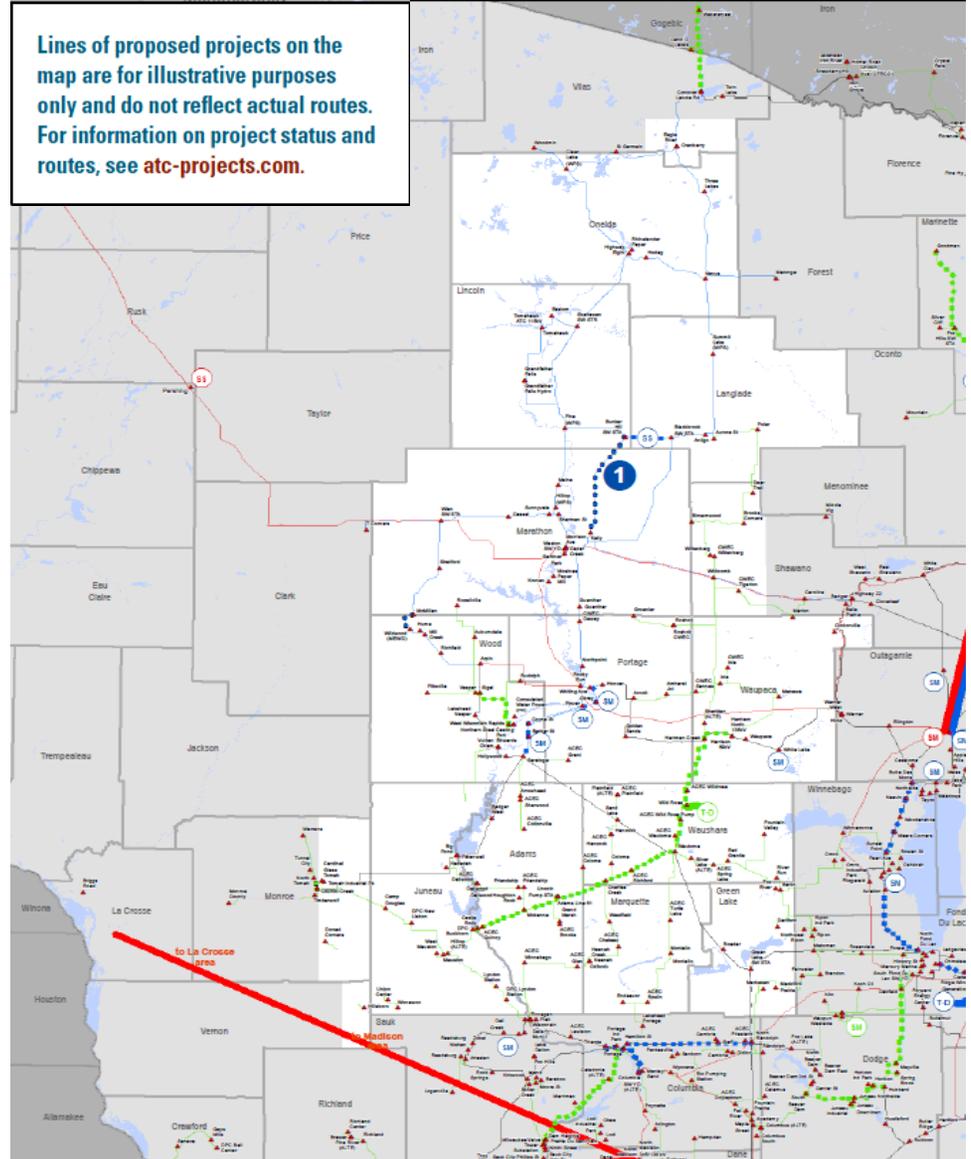
\*The Specific Network Projects range in 2017 reflects the fact that NARA projects in the 10-Year Assessment project list and in the MTEP database may be replaced by generation being considered in the MISO generation queue.



# 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> 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	115- or 138-kV transmission line rating upgrade	138 kV	345 kV
<b>C</b> Capacitor bank or reactor	Relieves low voltages or high voltages	69-kV transmission line rating upgrade			
<b>T-D</b> T-D interconnection	Supports local growth				



# Zone 1 Projects

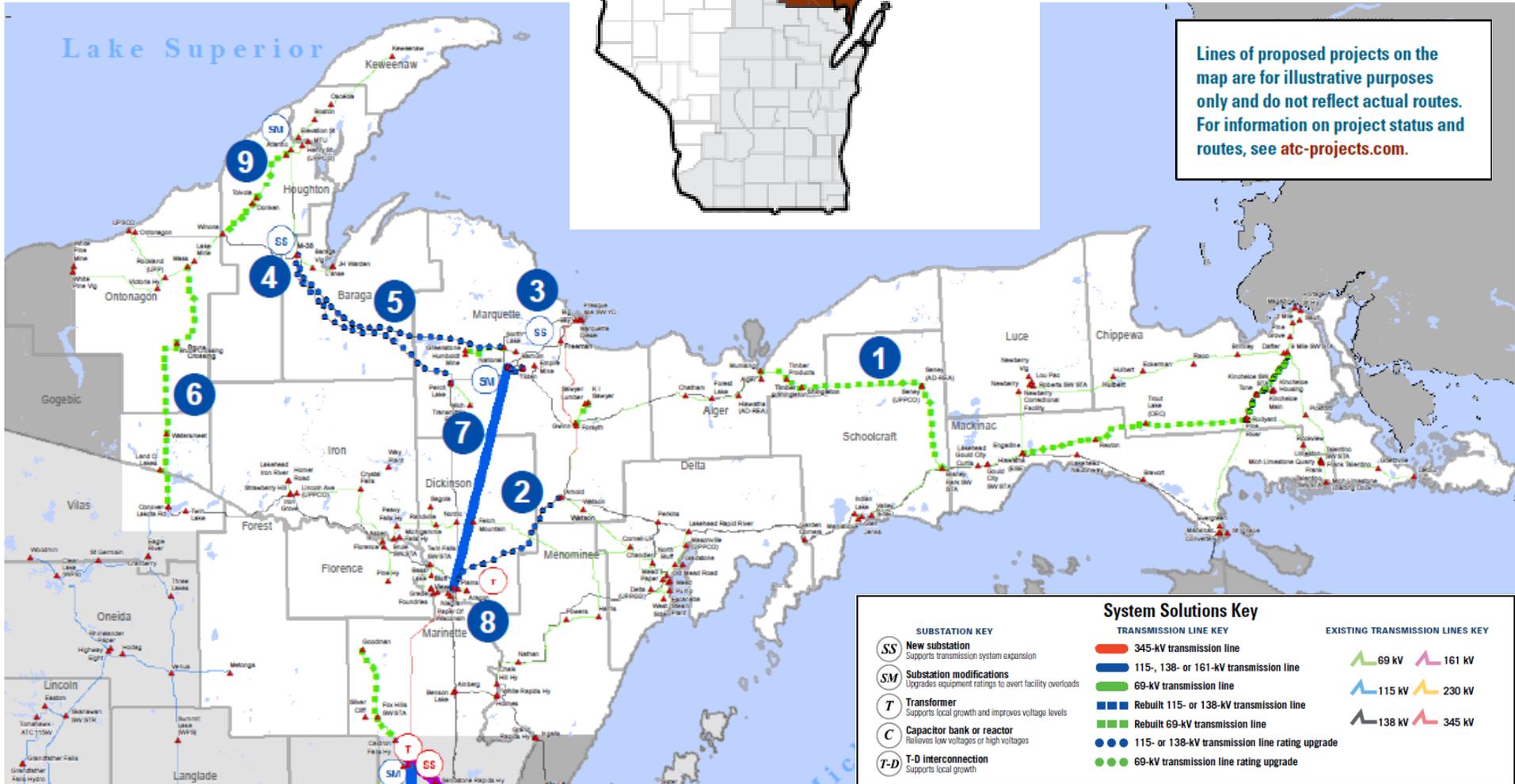
PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
Planned Project		
1 M13-Reinforcement-Bunker Hill-Blackbrook	2019	Overloads and condition

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

# Zone 2



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**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	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	115- or 138-kV transmission line rating upgrade	138 kV	345 kV
<b>C</b> Capacitor bank or reactor	Relieves low voltages or high voltages	69-kV transmission line rating upgrade			
<b>T-D</b> T-D interconnection	Supports local growth				

# Zone 2 Projects

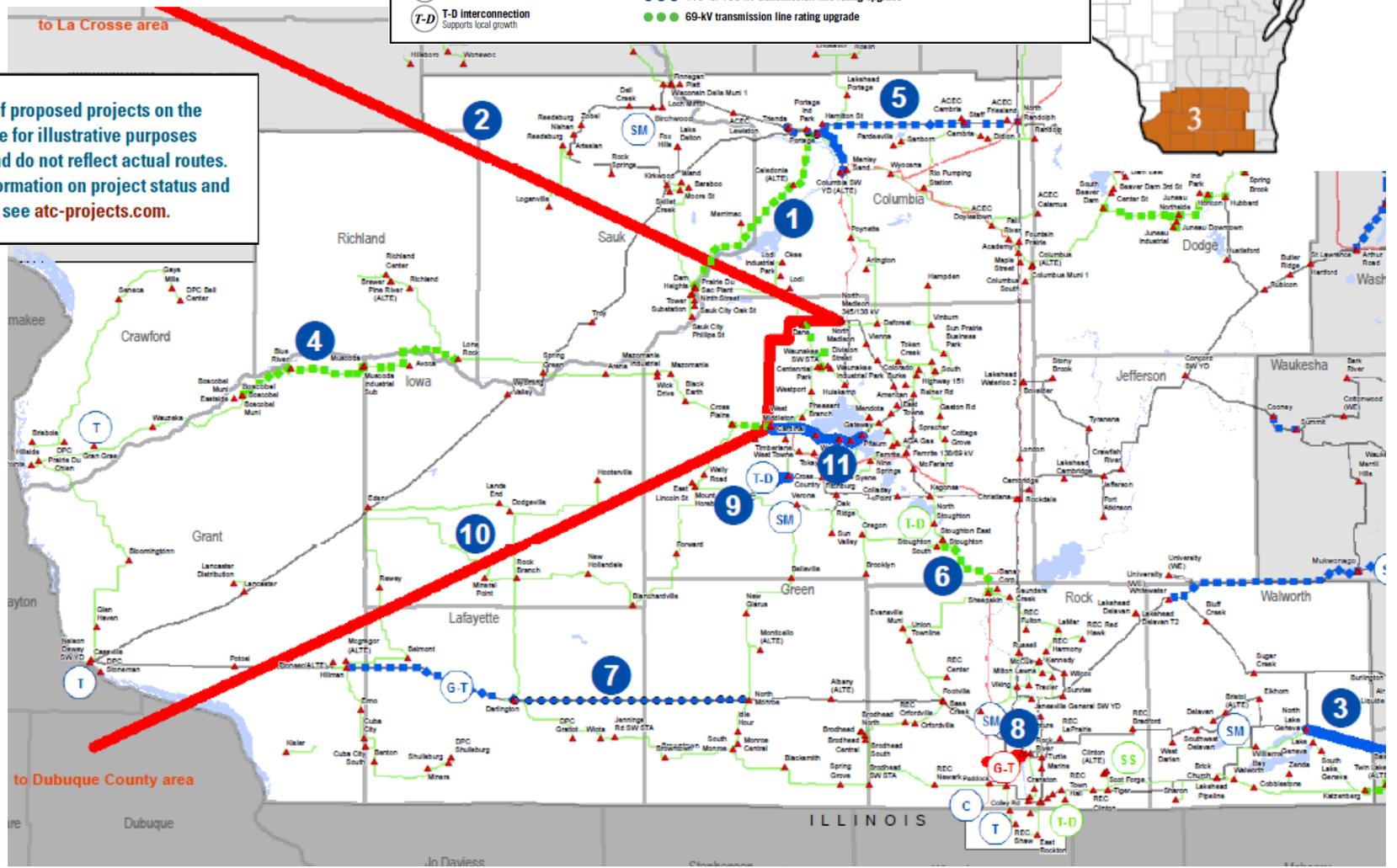
	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
<b>1</b>	<b>Planned Project</b> Munising-Blaney Park 69-kV partial rebuild	2019	Condition and performance
<b>2</b>	<b>Proposed Project</b> Plains-Arnold 138-kV uprate	2019	Network integration transmission service request
<b>3</b>	<b>Provisional Projects</b> J703: Huron Substation, new G-T interconnection	2019	G-T interconnection
<b>4</b>	J704 / J711: Silver River Substation, new G-T interconnection	2019	G-T interconnection
<b>5</b>	J704 / J711: North Lake-Silver River 138-kV line NLKG31, uprate	2019	G-T interconnection
<b>6</b>	Lakota-Winona 138-kV conversion	2021	Overloads and low voltages
<b>7</b>	Plains-National 138-kV project	2023	Overloads and low voltages
<b>8</b>	Plains 345 / 138-kV project	2023	Overloads and low voltages
<b>9</b>	Winona-Atlantic 69-kV line rebuild	2024	Overloads and low voltages

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

# Zone 3

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>161 kV</b>
<b>T</b>	<b>Transformer</b> Supports local growth and improves voltage levels		<b>69-kV transmission line</b>		<b>115 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>230 kV</b>
<b>T-D</b>	<b>T-D interconnection</b> Supports local growth		<b>Rebuilt 69-kV transmission line</b>		<b>138 kV</b>
			<b>115- or 138-kV transmission line rating upgrade</b>		<b>345 kV</b>
			<b>69-kV transmission line rating upgrade</b>		

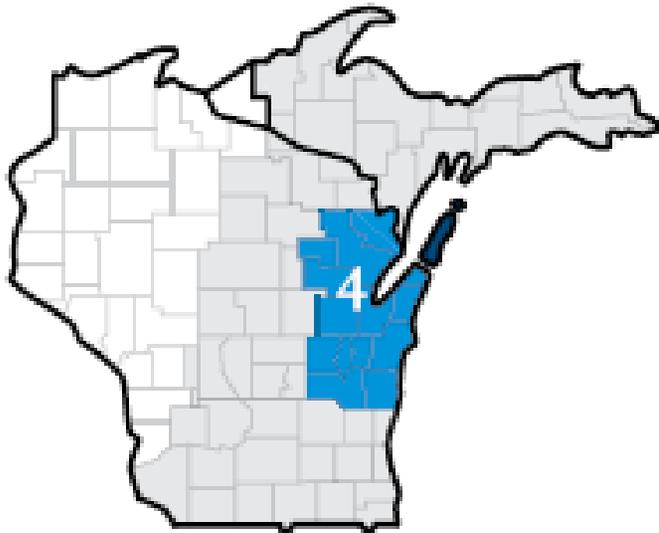
Lines of proposed projects on the map are for illustrative purposes only and do not reflect actual routes. For information on project status and routes, see [atc-projects.com](http://atc-projects.com).



# Zone 3 Projects

	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
<b>Planned Projects</b>			
1	Dam Heights-Portage 69-kV line rebuild	2017	Condition and performance
2	Badger Coulee: Briggs Rd-North Madison-Cardinal 345-kV line construction	2018	Reliability, economics and public policy
3	Spring Valley-North Lake Geneva 138-kV line construction	2019	Overloads and low voltages, provide network service
4	Boscobel-Lone Rock 69-kV line rebuild	2019	Condition and performance
5	Portage-Staff-North Randolph 138-kV line rebuild	2020	Condition and performance
6	Sheepskin-Stoughton 69-kV line rebuild	2020	Condition and performance
<b>Proposed Projects</b>			
7	J395: Darlington-North Monroe 138-kV line X-49, uprate	2019	G-T interconnection
8	J390: Kittyhawk Substation, new G-T interconnection	2019	G-T interconnection
9	Northern Lights Substation, new T-D interconnection	2020	T-D interconnection
10	Cardinal-Hickory Creek 345-kV line construction	2023	Reliability, economics and public policy
<b>Provisional Project</b>			
11	Cardinal-Blount 138-kV line construction	2029	Overloads and low voltages
<i>Additional projects may be found in the full 10-Year Assessment at <a href="http://atc10yearplan.com">atc10yearplan.com</a>.</i>			

# Zone 4



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).



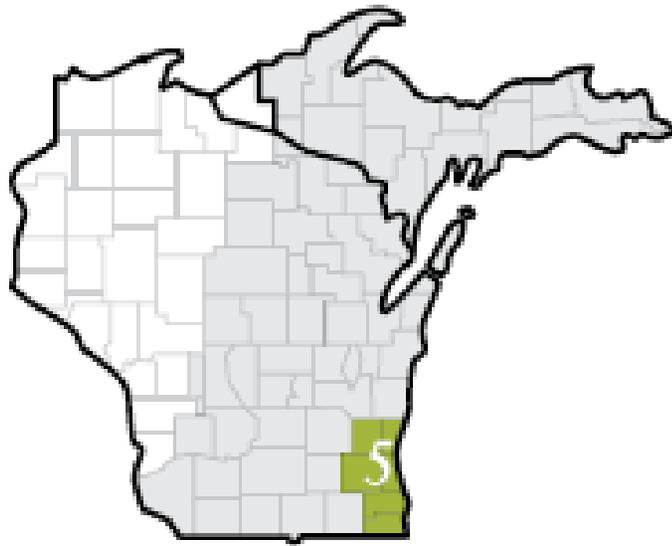
SUBSTATION KEY		TRANSMISSION LINE KEY		EXISTING TRANSMISSION LINES KEY	
<b>SS</b> New substation	Supports transmission system expansion	345-kV transmission line	115-, 138- or 161-kV transmission line	69 kV	161 kV
<b>SM</b> Substation modifications	Upgrades equipment ratings to avert facility overloads	69-kV transmission line	Transmission line voltage conversion	115 kV	230 kV
<b>T</b> Transformer	Supports local growth and improves voltage levels	Rebuilt 345-kV transmission line	Rebuilt 115- or 138-kV transmission line	138 kV	345 kV
<b>C</b> Capacitor bank or reactor	Relieves low voltages or high voltages	Rebuilt 69-kV transmission line	Rebuilt 69-kV transmission line	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 4 Projects

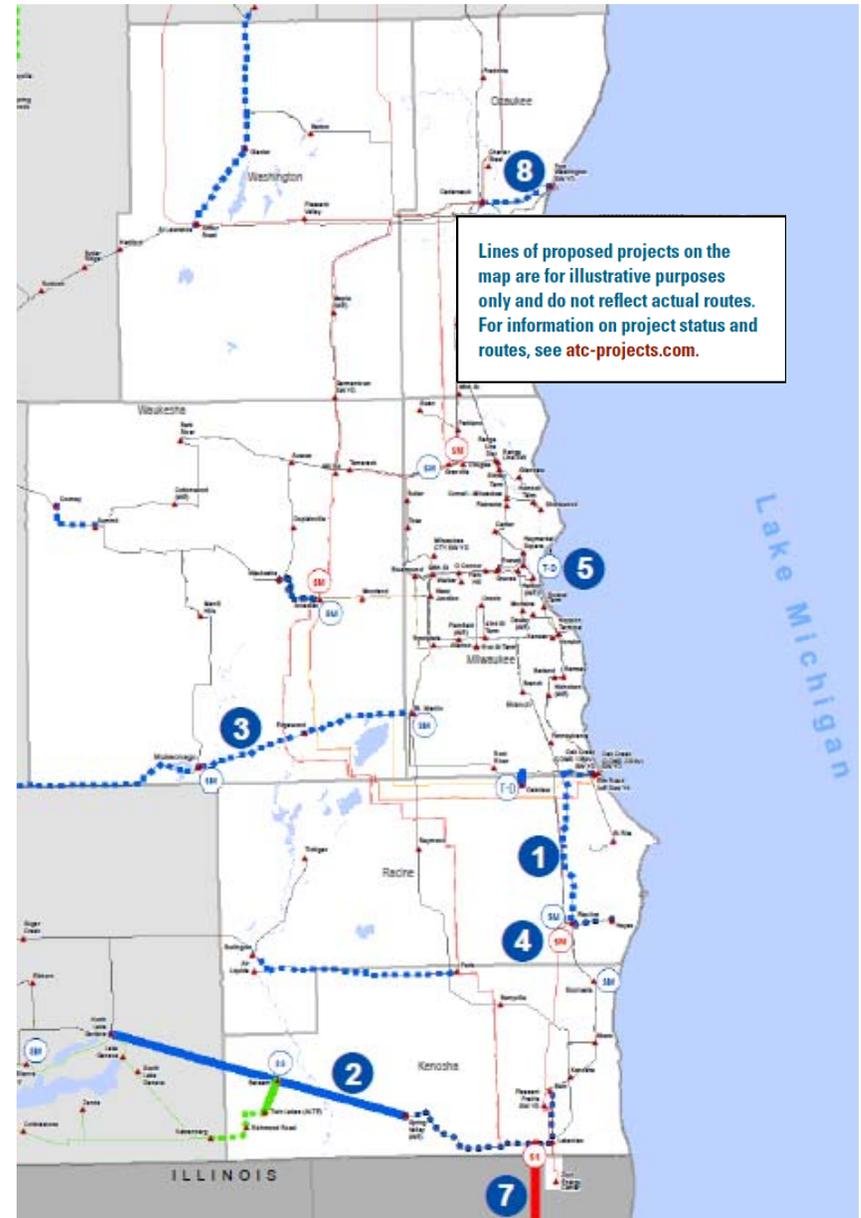
	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
	<b>Planned Projects</b>		
1	Creekview Substation: 138-kV line construction to serve T-D interconnection	2017	T-D interconnection
2	Bay Lake: North Appleton-Morgan 345-kV and 138-kV line construction	2018	Overloads and low voltages
3	Branch River 345-kV Substation construction	2018	Accommodate new generation
4	Ogden St.-Bayshore 69-kV line construction	2018	Provide network service
5	Edgewater Substation, reconfiguration	2020	Condition and performance
6	Cedar Ridge Wind Generation-Mullet River 138-kV line rebuild	2020	Condition and performance
7	Goodman-Caldron Falls 69-kV line rebuild	2020	Condition and performance
8	Butte des Morts-Neevin-Woodenshoe-Mears Corners-Sunset Point 138-kV line rebuild	2021	Condition and performance
9	Finger Road-Canal 69-kV line rebuild	2021	Condition and performance
	<b>Provisional Projects</b>		
10	Morgan-Plains 345-kV loop into new Thunder 345-kV substation.	2023	Overloads and low voltages
11	Morgan-Thunder 138-kV project	2023	Overloads and low voltages
12	Aviation-North Fond du Lac 138-kV line rebuild	2025	Overloads
	<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>	<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		Rebuilt 115- or 138-kV transmission line		230 kV
<b>T-D</b>	<b>T-D interconnection</b> Supports local growth		Rebuilt 69-kV transmission line		345 kV
			345-kV transmission line rating upgrade		
			230-kV transmission line rating upgrade		
			115- or 138-kV transmission line rating upgrade		
			69-kV transmission line rating upgrade		



# Zone 5 Projects

	PROJECT DESCRIPTION	IN-SERVICE YEAR	NEED DRIVER
	<b>Planned Projects</b>		
1	Oak Creek-Hayes 138-kV line 811 upgrade and reconfiguration	2018	Overloads
2	Spring Valley-North Lake Geneva 138-kV line construction	2019	Overloads and low voltages, provide network service
3	Mukwonago-Edgewood-St. Martins 138-kV line rebuild	2019	Condition and performance
4	Racine Substation, reconfiguration	2019	Condition and performance
	<b>Proposed Projects</b>		
5	Juneautown Substation, new T-D interconnection	2020	T-D interconnection
6	SE WI Economic Development Interconnection Project*	2020	T-D interconnection
7	Southeastern Wisconsin-Northeastern Illinois Reinforcement Project	2021	Overloads
8	Port Washington-Saukville 138-kV rebuild line 762 to a double circuit	2021	Overloads
	*Project 6, the proposed Southeast Wisconsin Economic Development Interconnection Project, was not mapped when this document was finalized because the project location had not been determined.		
	Additional projects may be found in the full 10-Year Assessment at <a href="http://atc10yearplan.com">atc10yearplan.com</a> .		



## For More Information

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

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