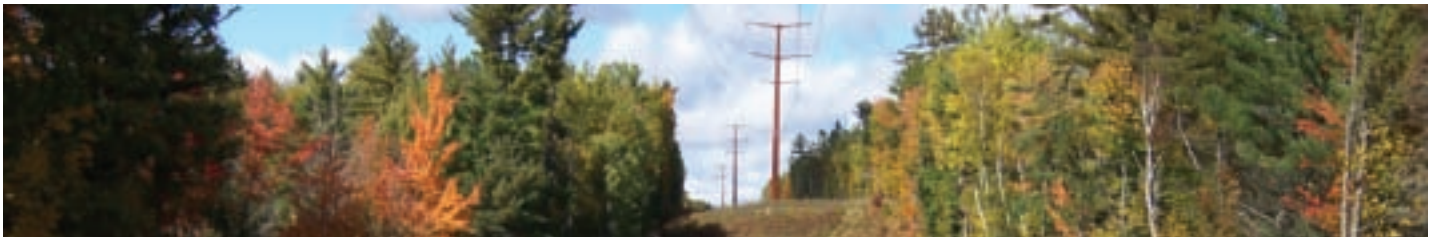


10-Year Transmission System Assessment

A look at electric transmission system limitations and proposed solutions for improving electric system reliability

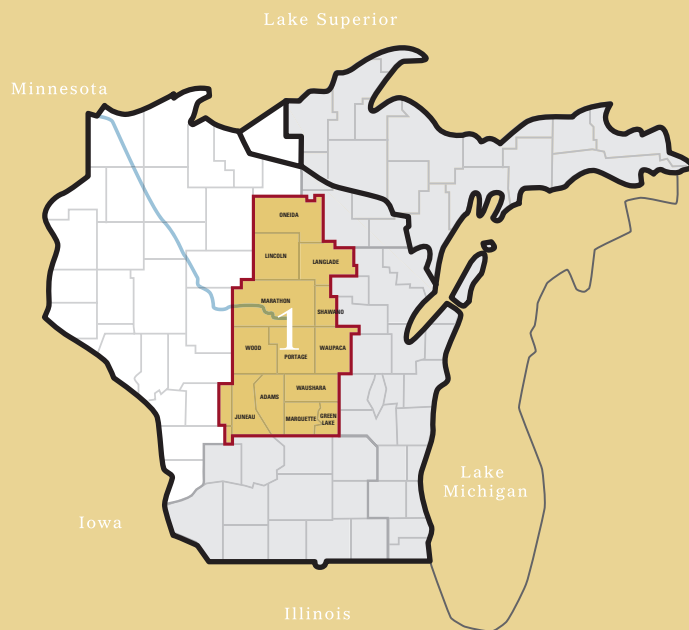
www.atc10yearplan.com

September 2008

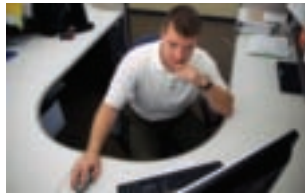


- ADAMS**
- FOREST** (southwestern portion)
- FOND DU LAC** (northwest portion)
- GREEN LAKE**
- JUNEAU**
- LANGLADE**
- LINCOLN**
- MARATHON**
- MARQUETTE**
- MONROE** (eastern portion)
- ONEIDA**
- PORTAGE**
- SHAWANO** (western portion)
- VERNON** (eastern portion)
- VILAS** (southern portion)
- WAUPACA**
- WAUSHARA**
- WINNEBAGO** (western portion)
- WOOD**

North Central Wisconsin



zone 1



Looking at tomorrow's electric needs today

Advances in technology powered by electricity are improving our quality of life. At the same time, they've created a dependence on and expectation for an uninterrupted supply of electricity. However, the age of the transmission system and changes in the regional wholesale electricity market are impacting the reliability of the electric system upon which people and businesses have become so dependent.

American Transmission Co. was formed in 2001 to plan, permit, build, own, operate and maintain a transmission system that meets the reliability, economic and adequacy needs of our customers. Our planners continually conduct engineering studies on the electric transmission system looking for potential problems that may affect the future performance of the system.

Since 2001, ATC has produced annual assessments of the transmission system, identifying areas of need on the system and proposing solutions to those needs. This assessment covers the years 2008 through 2018. Our studies identify and prioritize future projects needed to improve system adequacy and reliability and meet evolving priorities for increased availability of renewable generation. As part of our technical studies, we take a comprehensive look at various factors affecting electricity utilization in the region, such as business development, employment trends, population and projected growth in electricity usage. We look 10 years into the future because it can take 5 to 10 years to plan, study route options, get approvals and build new transmission lines.

In this year's assessment, our studies identify and prioritize \$2.7 billion in future projects needed over the next 10 years to improve the adequacy and reliability of the electric transmission system for our customers and all electricity users in the region we serve. In this report we also identify new challenges facing the electric industry.

Clean energy objectives impact transmission planning

Concerns for climate change have caused many states, consumers and utilities to turn toward greater use of renewable generation of electricity, such as wind, solar, biomass or hydro power. With renewable resources often being located in remote locations, new interstate high voltage transmission lines will be needed to deliver large volumes of renewable

energy from where it's produced to population centers where it's used. As today's transmission system has neither the capacity nor the configuration to accommodate high volumes of renewable energy, we're reaching out to regulators and utilities across state lines to begin planning a regional transmission grid that can meet these challenges.

Annual energy efficiency and conservation efforts also are currently mandated by state law, and the energy savings from these efforts are factored in to each utility's load growth forecast and our needs analysis. Programs that are designed to reduce electricity usage during peak-use periods have greater potential to impact planning for new transmission lines than overall efficiency programs. However, increasing energy use is only one of many drivers of new transmission projects. Changing power flows, generation utilization and location, and shifts in population centers also contribute to the need for new transmission facilities.

Our progress continues

Since we were formed in 2001, we've invested \$1.9 billion to upgrade more than 1,350 miles of transmission line, improve 110 electric substations and build 32 new transmission lines totaling 344 miles. These investments have helped to raise the system's performance in meeting peak demand, supporting a new fleet of generation, increasing import capability, interconnecting wind projects, alleviating overloads and voltage instabilities, reducing energy losses and improving system reliability ratings. As we plan for new challenges of meeting renewable energy mandates and accommodating changing market power flows, we will do so with your input.

We seek your input

As part of the planning that occurs throughout the year, we proactively seek input from customers, regulators, community officials, residents and others in an effort to strike the right balance between the need for a safe and reliable system, and the potential impacts on costs, landowners and the environment. Public examination and discussion can improve projects by incorporating the perspectives of those most familiar with impacted areas. We believe that by working with the people and communities we serve, we can find better solutions that will meet future electricity demand.

The details of our studies can be found at www.atc10yearplan.com.



www.atc10yearplan.com

North Central Wisconsin – Zone 1

Electric System Overview

Population, employment increasing

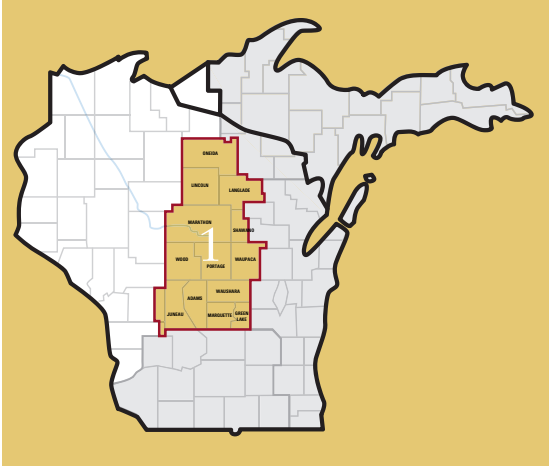
- Population in Zone 1 is projected to grow at 0.6 percent annually for both the 2008-2013 and 2013-2018 periods. From 2008 to 2013, Marathon County is projected to realize the largest increase in population, while Adams County is projected to have the highest growth rate.
- Employment in Zone 1 is projected to grow at 1.1 percent annually between 2008 and 2013 and at 1.0 percent from 2013 through 2018. From 2008 to 2013, Marathon County is projected to realize the largest increase in employment, while Adams County is projected to have the highest growth rate.

Electricity usage growing

- Peak electric demands typically occur during the summer months, with some winter peaks appearing in the northern portion. Primary electricity users in Zone 1 include a number of large paper mills and food processing plants.
- Electric load is projected to grow approximately 1.3 percent annually through 2018.

Transmission projects completed or under way address electric needs

- **Arrowhead-Weston project** – This 345-kilovolt transmission line was recently completed between Wausau, Wis., and Duluth, Minn. The 140-mile portion of this line between Gardner Park (Weston) and Stone Lake was completed in 2006. The entire 220-mile line was placed in service in 2008 and will improve reliability, help increase electric import capability and reduce the impact of system disturbances.

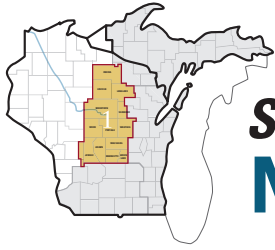


- **Gardner Park-Highway 22 (Central Wisconsin) project** – Construction is under way on a new 50-mile, 345-kV line between the Gardner Park Substation near the Weston Power Plant and a new substation in central Shawano County to be named Highway 22. The 345-kilovolt line is needed to support output of Weston Power Plant and strengthen reliability.
- **Cranberry-Conover project** – This new 115-kilovolt transmission line was recently completed between the southern boundary of Eagle River to just east of Conover. This reinforcement project will also include the rebuild and conversion of the Conover-Iron River-Plains 69-kV line to 138-kV operation by 2010. This alternative addresses the long-term reliability issues of the Rhinelander Loop, provides substantial voltage support to the 69-kV system in the western portion of the Upper Peninsula and addresses potential long-term condition issues due to the age of the existing 69-kV system.

Our 2008 10-Year Transmission System Assessment outlines 17 additional projects to ensure electric system reliability in North Central Wisconsin. The following pages describe the system limitations in North Central Wisconsin and our planned, proposed and provisional projects to address those limitations.

Transmission is the vital link in bringing power to communities

Transmission lines move electricity at high voltages over long distances – from power plants to communities where local utilities deliver power to homes and businesses via local electric distribution lines. A reliable transmission network provides access to many sources of power, whether they are local or regional. Having multiple paths to get power from producers to consumers lessens the chance that they will experience service interruptions. Multiple major transmission lines also give power generators and local utilities the flexibility to access regions where they can sell and buy electricity to control overall costs for everyone.



System Limitations **North Central Wisconsin – Zone 1**



Transmission system characteristics in Zone 1

ATC delivers power in Zone 1 with various transmission facilities including:

- an east-west 345-kV line from Arpin Substation through Stevens Point extending to the Appleton area,
- a 345-kV line extending from Wausau to northeastern Minnesota,
- a 345-kV line extending from Wausau to Stevens Point,
- a 115-kV network in the northern portion of the zone and
- a 138-kV and 69-kV network in the southern portion of the zone.

There are a number of transmission system performance issues in Zone 1 including overloaded lines and equipment and low system voltages. Driving these issues are steady or rapid load growth in certain areas and the recently completed construction of a new power plant in the Wausau area.

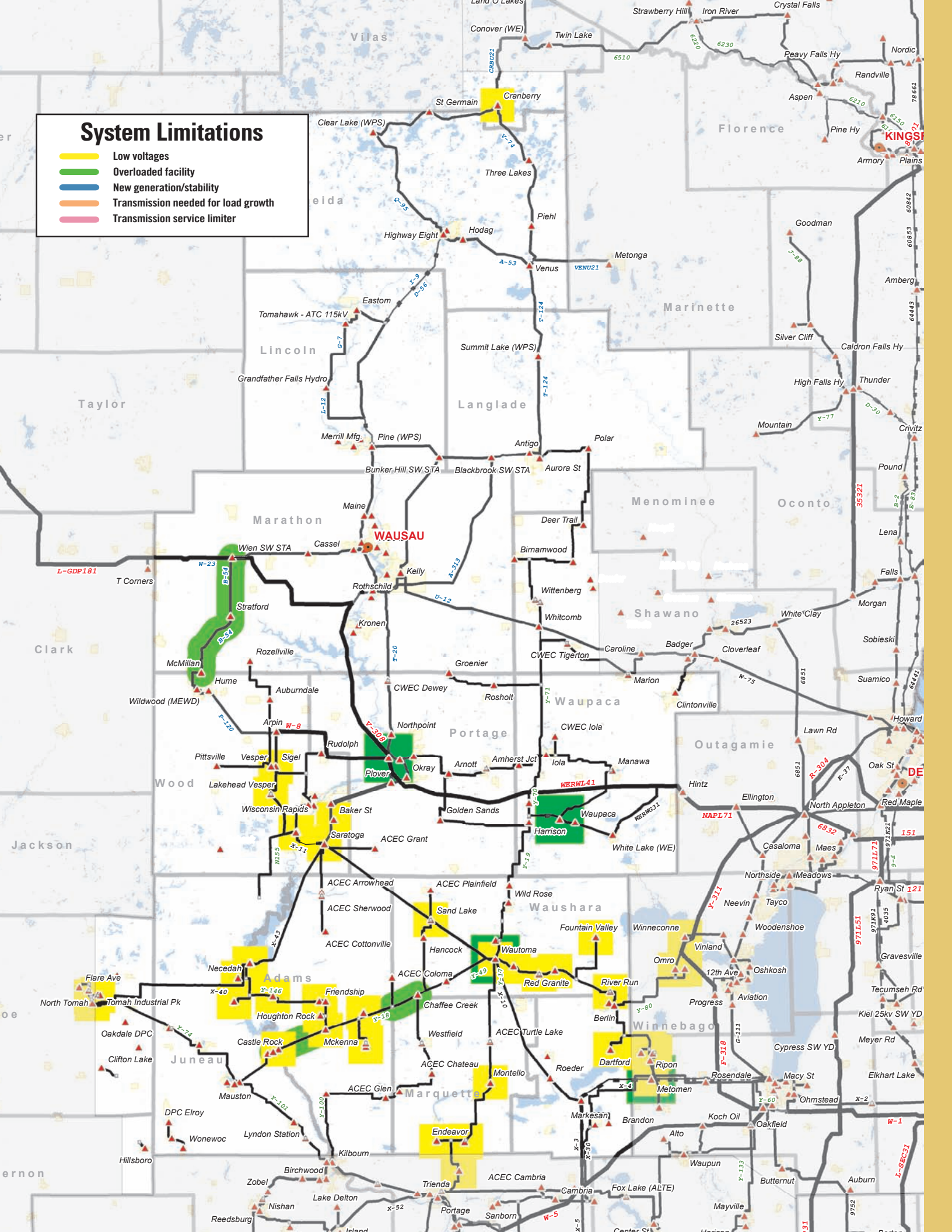
Transmission system limitations in Zone 1

In the analysis of Zone 1, we identified low voltages and transmission facility overloads. Low voltages occur in the area north of Wausau toward the Michigan border. The most notable facility overloads occur on 115-kV lines in the Rhinelander Loop. We are implementing a number of projects to reinforce the Rhinelander Loop. In 2008, ATC completed the first phase of a longer-term reinforcement by constructing a new Cranberry-Conover 115-kV line. This reinforcement project also includes the rebuild and conversion of the Conover-Iron River-Plains 69-kV line to 138-kV operation by 2010. This alternative addresses the long-term reliability issues of the Rhinelander Loop, provides substantial voltage support to the 69-kV system in the western portion of the Upper Peninsula and addresses potential long-term condition issues due to the age of the existing 69-kV system.

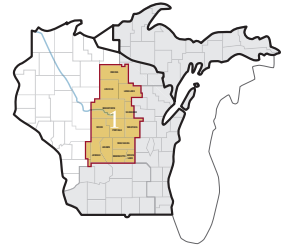
Low voltages and overloaded facilities in and around the Petenwell/Castle Rock Lakes area and in the Berlin-Ripon area will necessitate a combination of reinforcements.

System Limitations

- Low voltages
- Overloaded facility
- New generation/stability
- Transmission needed for load growth
- Transmission service limiter



System Solutions North Central Wisconsin – Zone1



We have implemented six projects in Zone 1 since the 2007 Assessment Update, most notably the construction of the new Arrowhead-Stone Lake-Gardner Park (Weston) 345-kV and the Cranberry-Conover 115-kV lines.

Our current plans in Zone 1 include 18 projects between 2008 and 2018. These projects are in various stages of development. The most notable planned, proposed and provisional projects in Zone 1, along with their projected year of completion and the factors driving the need for the projects, are listed below.

	Project description	In-service year	Need driver
	Planned projects		
1	Gardner Park-Highway 22 345-kV line	2009	Needed to deliver output of Weston 4 generation
2	Highway 22 345-kV substation	2009	Needed to deliver output of Weston 4 generation
3	Rebuild Arpin-Rocky Run 345-kV line	2010	Improve condition of existing line
	Provisional projects		
4	Monroe County-Council Creek 161-kV line	2012	Addresses low-voltage situation in the area, improves import capability, avoids need to reconfigure system during emergencies
5	Construct 115-kV line from new Woodmin Substation to the Clear Lake Substation	2012	T-D interconnection

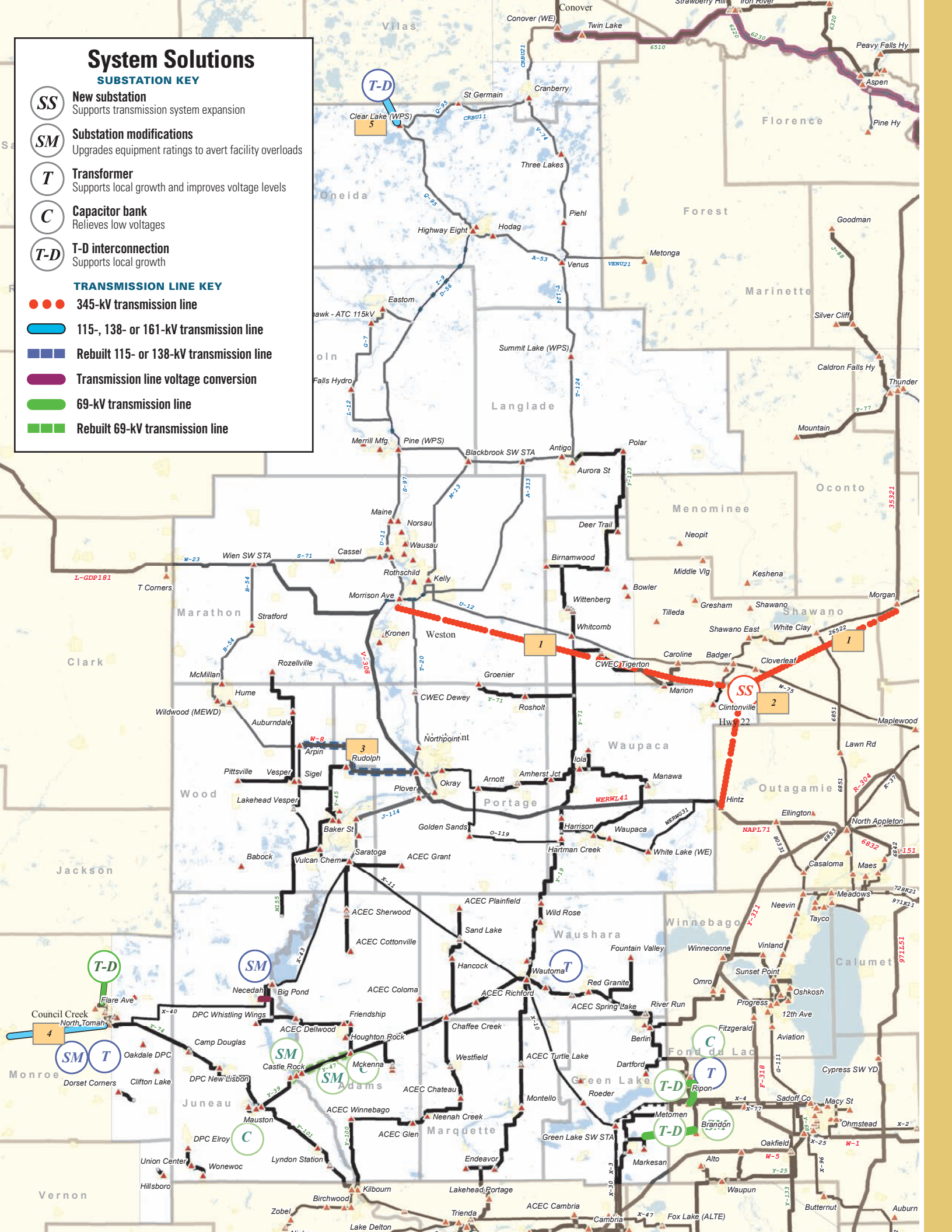
System Solutions

SUBSTATION KEY

- SS** New substation
Supports transmission system expansion
- SM** Substation modifications
Upgrades equipment ratings to avert facility overloads
- T** Transformer
Supports local growth and improves voltage levels
- C** Capacitor bank
Relieves low voltages
- T-D** T-D interconnection
Supports local growth

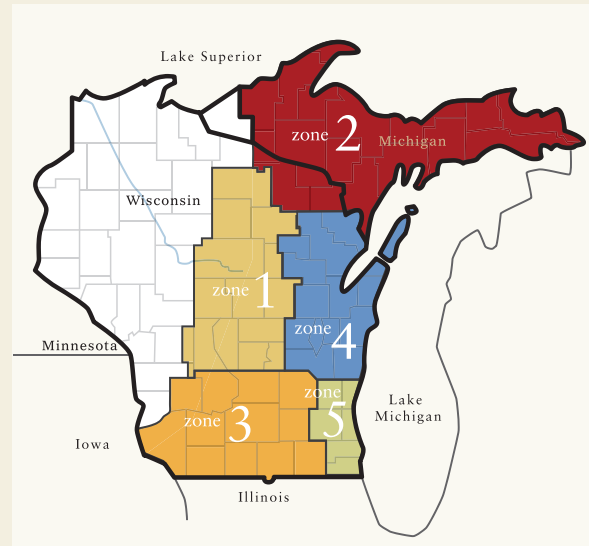
TRANSMISSION LINE KEY

- 345-kV transmission line
- ▬▬▬▬ 115-, 138- or 161-kV transmission line
- ▬▬▬▬ Rebuilt 115- or 138-kV transmission line
- ▬▬▬▬ Transmission line voltage conversion
- ▬▬▬▬ 69-kV transmission line
- ▬▬▬▬ Rebuilt 69-kV transmission line



ATC AT A GLANCE

- Formed in 2001 as the first multi-state, **transmission-only utility**.
- Owner and operator of approximately **9,350 miles of transmission line and 500 substations**.
- Meeting electric needs of approximately **five million people**.
- Transmission facilities in **66 counties** in Wisconsin, Michigan and Illinois.
- **\$2.2 billion** in total assets.
- **Seven offices** in the communities of Cottage Grove, De Pere, Madison, Waukesha and Wausau, Wis.; Kingsford, Mich.; and Washington DC.



AS A PUBLIC UTILITY, WE HAVE DUTIES AND RESPONSIBILITIES TO:

- Operate the transmission system reliably,
- Assess the ability of the system to adequately meet current and future needs,
- Plan system upgrades to meet those needs in the most efficient, effective and economic ways,
- Construct upgrades in time to meet those needs,
- Maintain the transmission equipment and surroundings to minimize opportunity for failures.

www.atc10yearplan.com



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

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