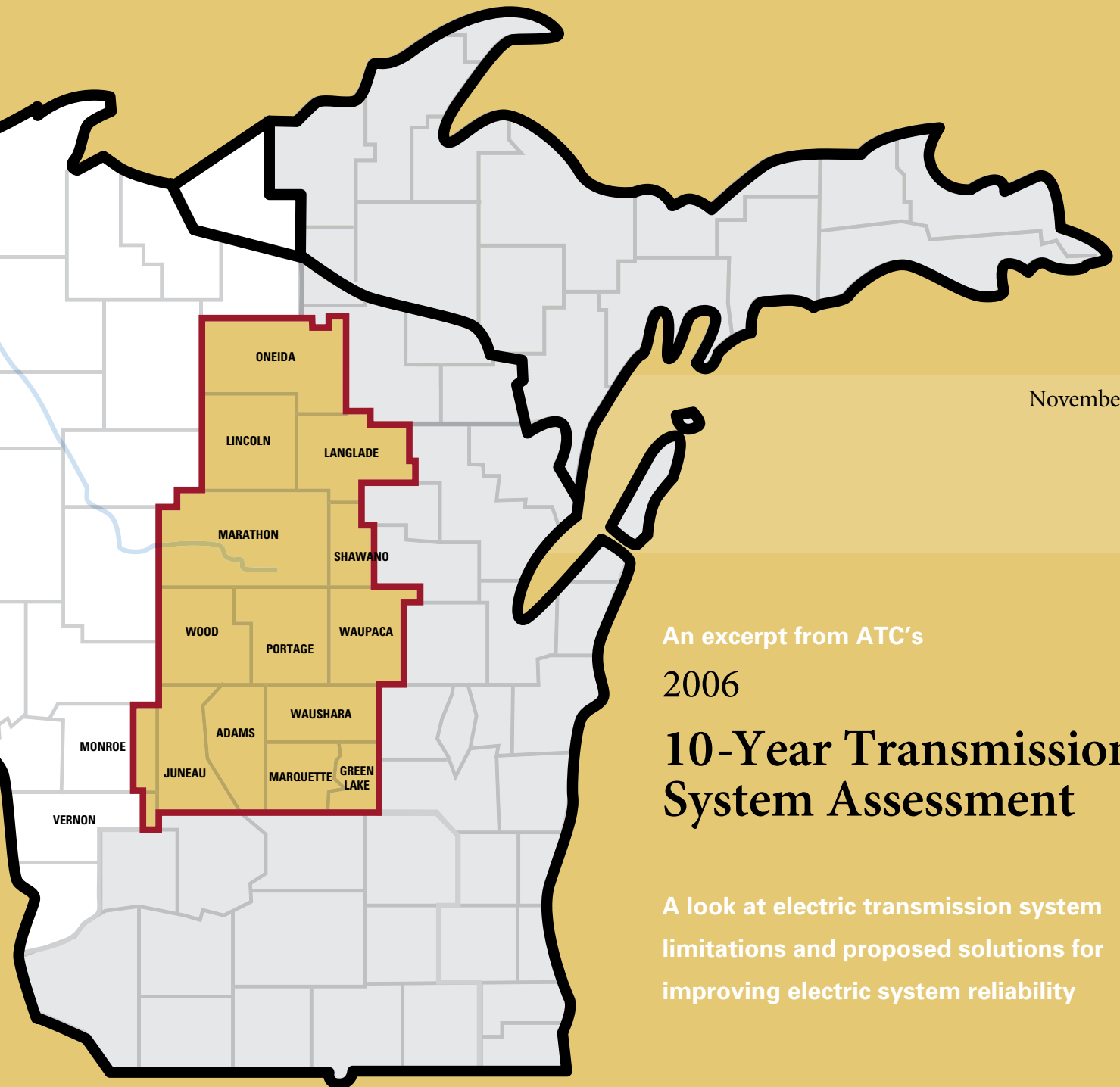




Zone 1 – North Central Wisconsin



November 2006

An excerpt from ATC's
2006

10-Year Transmission System Assessment

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

www.atc10yearplan.com



Looking at tomorrow's electric needs today

Advances in technology powered by electricity are improving our quality of life. At the same time, it's created a dependence on and expectation for an uninterrupted supply of electricity. We rarely notice how plugged in we are...unless the lights go out.

At ATC, we are helping to keep the lights on, businesses running and communities strong. However, the age of the electric 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.

To address the issues, ATC continually conducts engineering studies on the electric transmission system looking for potential problems that may affect the future performance of the system. 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.

Our findings are summarized in an annual 10-Year Transmission System Assessment, which identifies and begins to prioritize future projects needed to improve the adequacy and reliability of the electric transmission system. We look 10 years into the future because it can take up to eight years to plan, study route options, get approvals and build new transmission lines.

Studies indicate need for \$3.1 billion investment over 10 years

In our assessment of the electric transmission system needs through 2016, we estimate \$3.1 billion in system improvements including 360 miles of new transmission lines and upgrades to more than 840 miles of existing lines across our service area. Summarized in this booklet are highlights of the electric transmission system issues in North Central Wisconsin.

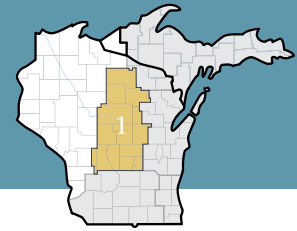
For complete information from our 2006 10-Year Assessment, go to: www.atc10yearplan.com

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.



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Zone 1 – North Central Wisconsin

Electric System Overview

Population, employment increasing

- Population is projected to grow 0.7 percent through 2011. From 2001 to 2006, Marathon County realized the largest increase in population, while Juneau County had the highest growth rate.
- Employment in Zone 1 is projected to grow 1.1 percent through 2011. From 2001 to 2006, Marathon County realized the largest increase in employment, while Adams County had 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 2.4 percent annually through 2015.

Transmission projects completed or under way address electric needs

- **Arrowhead-Weston project** – This 345-kilovolt transmission line is under construction between Wausau, Wis., and Duluth, Minn. The 220-mile line is expected to be in service in 2008 and will improve reliability, help increase electric import capability and reduce system disturbances.
- **Gardner Park-Hilltop project** – Work is under way on rebuilding an 11-mile, 115-kilovolt line to prevent electric system overloads and to support the addition of a new generator at Weston Power Plant.
- **Venus-Metonga project** – The Public Service Commission of Wisconsin approved our application to build an 11-mile, 115-kilovolt transmission line between Monico and Crandon, Wis., to improve electric reliability and resolve local electric distribution voltage and capacity problems.
- **Gardner Park-Central Wisconsin project** – The PSC approved our application to build a new 50-mile line between new substations near Weston Power Plant and in central Shawano County. The 345-kilovolt line is needed to support output of Weston Power Plant and strengthen reliability.
- **Cranberry-Conover project** – We have filed an application to build a new, 138-kilovolt transmission line between south of Eagle River and east of Conover.
- **Portage-Montello project** – We are building and upgrading 11 miles of 69-kV lines (some 50 years old) between substations in Portage and Montello.

Our 2006 10-Year Transmission System Assessment outlines 34 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.

Zone 1 – North Central Wisconsin

Transmission system characteristics in Zone 1

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

- an east-west 345-kV line from Stevens Point extending to the Appleton area,
- a 345-kV line extending from the Weston Power Plant 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.

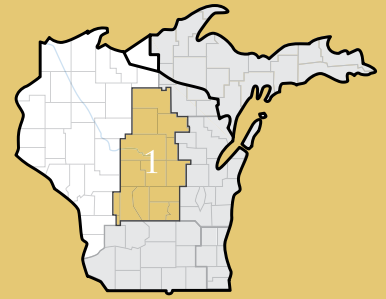
There are a number of transmission system performance issues in Zone 1 including generator instability, voltage instability, overloaded lines and equipment, low system voltages and the inability to import more power from neighboring states. Driving these issues are steady or rapid load growth in certain areas, ATC customer needs to import additional power and the construction of a new power plant in the Wausau area.

Transmission system limitations in Zone 1

In the analysis of Zone 1 for 2007, we identified low voltages, transmission facility overloads and potential generator instability. In addition, when power imports from Minnesota are high, heavily loaded facilities continue to result in the system operating with very little margin.

The most notable low voltages occur in the area north of Wausau toward the Michigan border (the Rhinelander Loop). The most notable facility overloads occur on 115-kV lines, also in the Rhinelander Loop. We are implementing a number of projects to reinforce the Rhinelander Loop. A new transmission line providing a new source to the area will be needed by 2008, and a second source will be needed beyond the 2020 timeframe.

Accommodating new generation under construction at the Weston Power Plant will require significant system reinforcements in Zone 1. Low voltages and overloaded facilities in and around the Wausau area and in the Berlin-Ripon area will necessitate a combination of reinforcements.

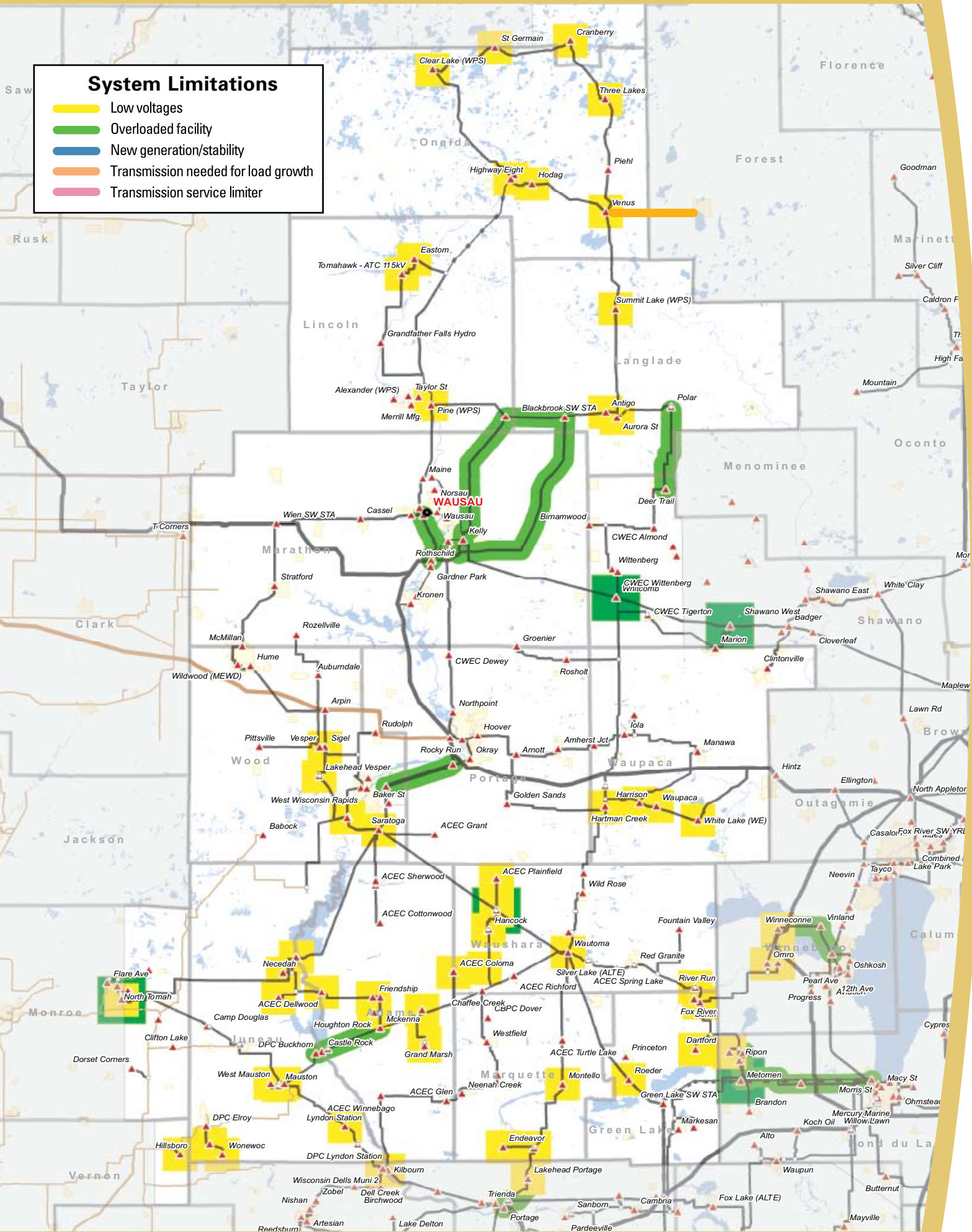


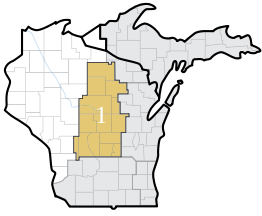
Zone 1 includes the Wisconsin counties of:

- 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

System Limitations

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





Zone 1 – North Central Wisconsin

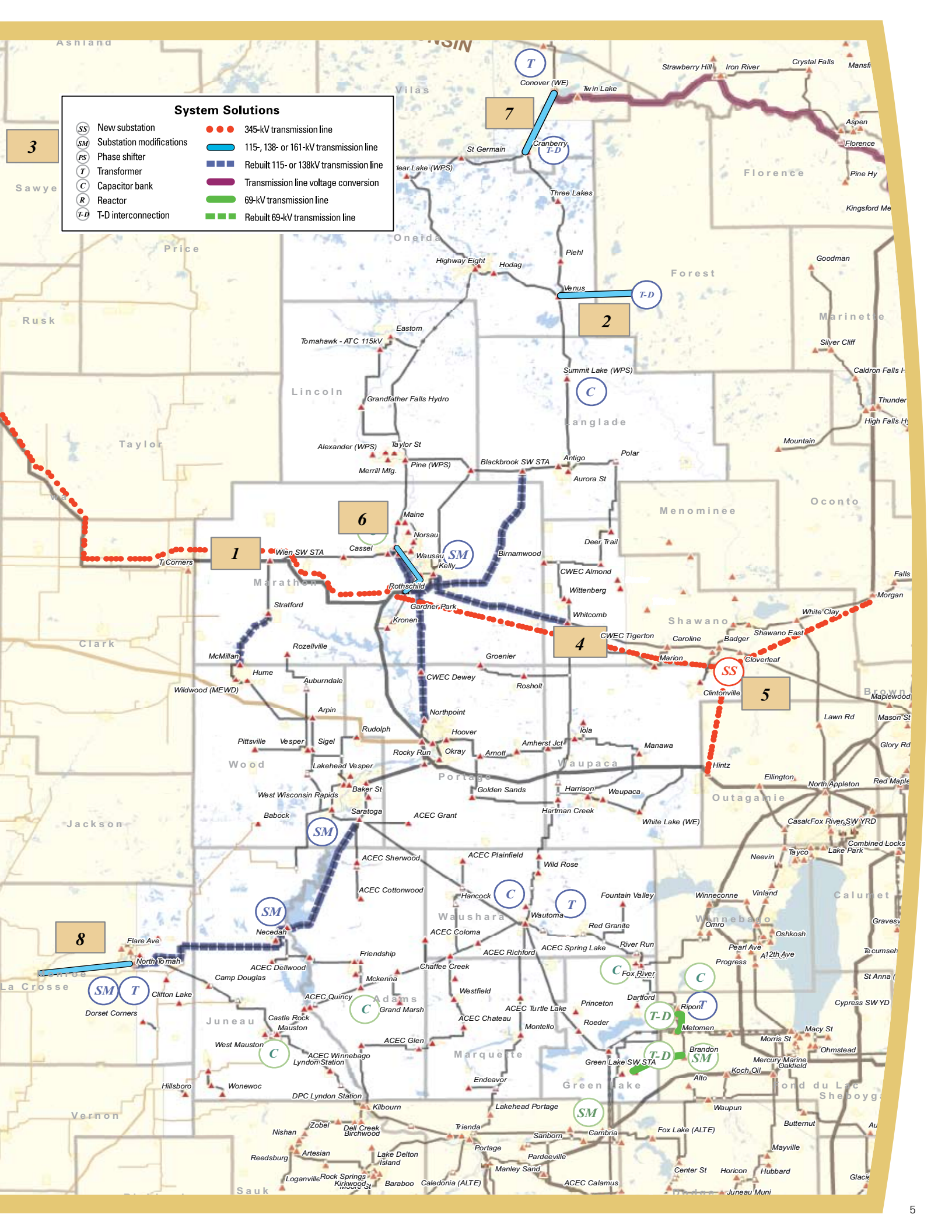
We have implemented eight projects in Zone 1 since the 2005 Assessment Update, most notably the construction of the new 345/115-kV Gardner Park Substation. Studies conducted for prior assessments indicate the potential for generation at Weston Power Plant becoming unstable if certain disturbances on the transmission system occur. The expansion of the Weston Substation, in conjunction with the construction of the new Gardner Park Substation to accommodate the planned Arrowhead-Gardner Park 345-kV line, remedies this issue.

Our current plans in Zone 1 include more than 34 projects between 2006 and 2016. These projects are in various stages of development. The most notable planned 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. There are currently no projects in the proposed stage of development.

| | Project description | In-service year | Need driver |
|---|--|-----------------|---|
| | Planned projects | | |
| 1 | Arrowhead-Stone Lake-Gardner Park 345-kV line | 2006/2008 | Improves reliability, helps increase import capability, reduces reliance on operating guides, lowers system losses |
| 2 | Construct Venus-Metonga 115-kV line | 2007 | Transmission-distribution interconnection |
| 3 | Stone Lake 345/161-kV Substation | 2008 | Improves operation of Arrowhead-Gardner Park line, improves reliability in northwestern Wisconsin |
| 4 | Gardner Park-Central Wisconsin 345-kV line | 2009 | Needed to deliver output of Weston 4 generation |
| 5 | Central Wisconsin 345-kV Substation | 2009 | Needed to deliver output of Weston 4 generation |
| 6 | Weston-Sherman St.-Hilltop 115-kV line rebuild to include a new Gardner Park-Hilltop 115-kV line | 2007 | Addresses potential overloads of existing line, needed to accommodate output of Weston 4 generation |
| 7 | Cranberry-Conover 115-kV line | 2008 | Along with Conover-Plains 138-kV line upgrade (Zone 2), addresses low voltages/voltage collapse in Rhinelander Loop area, improves Wisconsin-Michigan UP transfer capability, improves voltages in western UP |
| | Provisional projects | | |
| 8 | Monroe County-Council Creek 161-kV line | 2010 | Addresses low-voltage situation in the area, improves import capability, avoids need to reconfigure system during emergencies |

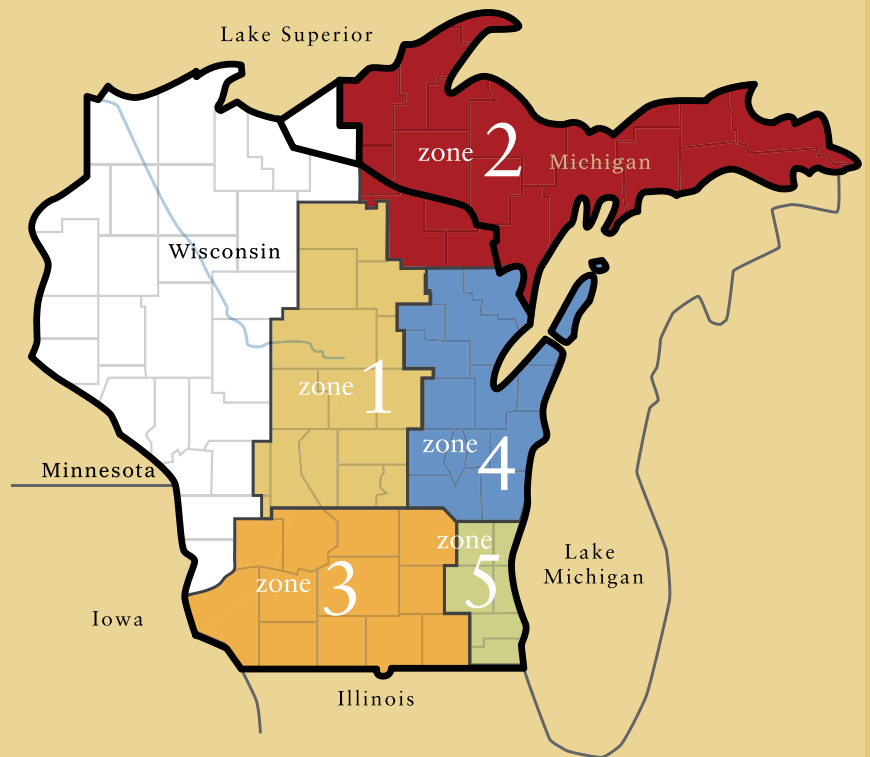
System Solutions

- SS New substation
- SM Substation modifications
- PS Phase shifter
- T Transformer
- C Capacitor bank
- R Reactor
- T-D T-D interconnection
- 345-kV transmission line
- 115-, 138- or 161-kV transmission line
- Rebuilt 115- or 138kV 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 **8,900 miles of transmission line and 480 substations**.
- Meeting electric needs of approximately **five million people**.
- Transmission facilities in **66 counties** in Wisconsin, Michigan and Illinois.
- **\$1.5 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.



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

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