

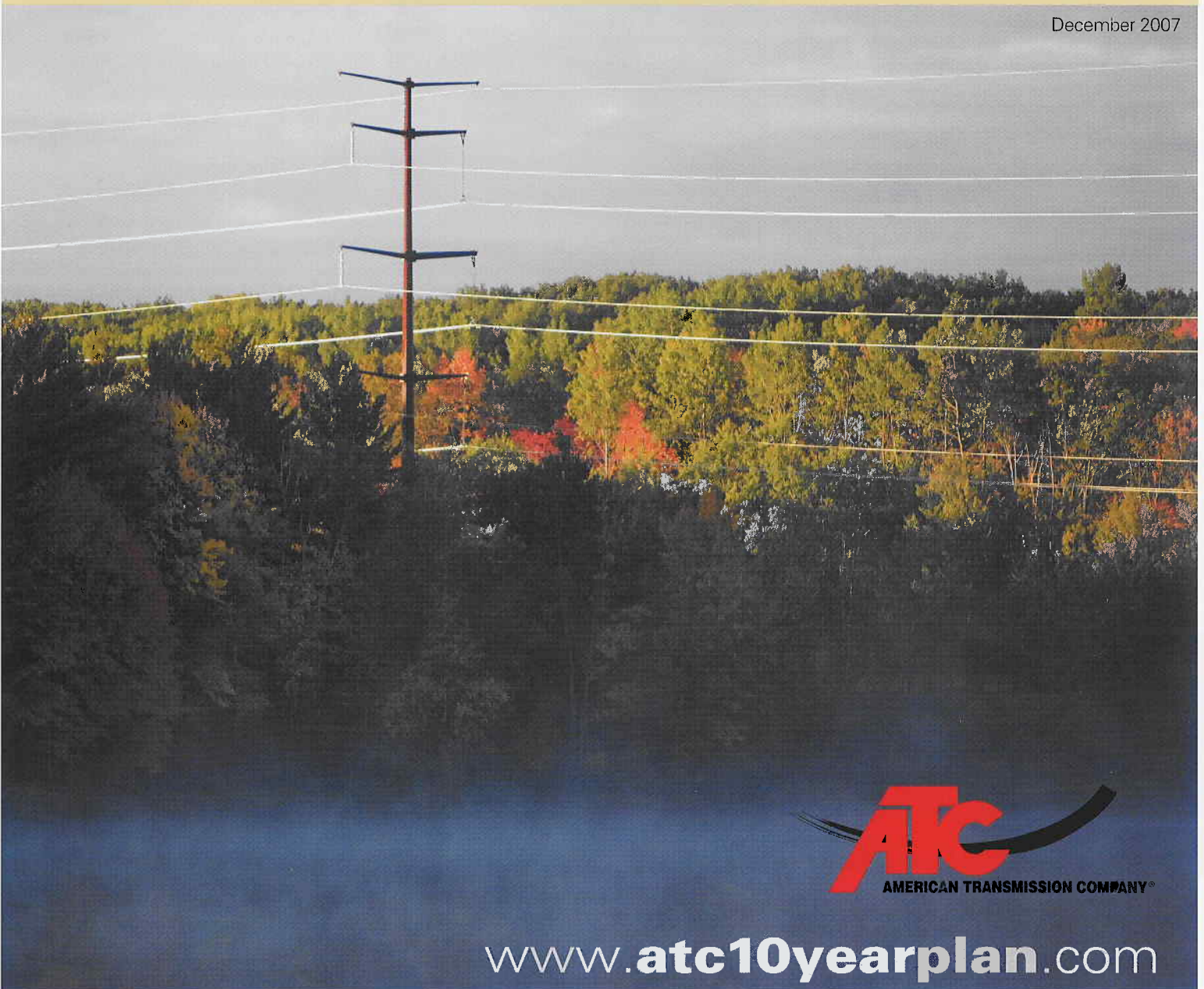


Michigan's Upper Peninsula and Northern Wisconsin

2007 10-Year Transmission System Assessment **Update**

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

December 2007



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, 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 document represents an update to our 2006 10-Year Assessment information based on further development of specific needs and projects during the past year. We did not undertake a complete set of new transmission system studies but used information from the 2006 10-Year Assessment to develop projects that will be put into service. These project changes are reflected in this summary.

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, projected growth in population and electricity usage and savings from energy efficiency efforts.

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.

Federal oversight increases

In recent years, the federal government has taken additional steps to ensure that transmission-owning utilities, like ATC, have produced and shared planning information with the public and local stakeholders. Since 2001, we have engaged in open and collaborative efforts to share information and solicit input on our plans. We believe that in making our planning efforts transparent and available to the public, the proposals for needed facilities can be more readily understood and accepted by communities that stand to benefit from them. The underlying principles of this approach are now required from utilities that own and plan for new transmission lines. An overview of our planning process is available at www.atc10yearplan.com.



In the years 2008 and beyond, ATC will be conducting additional public outreach, gathering input from our stakeholders early in the 10-Year Assessment process to include in our assumptions and models. We will also meet with interested stakeholders in the middle of the process to review interim results. This process is intended to provide even more openness and

transparency and result in better planning.

Studies indicate need for \$2.8 billion investment over 10 years

In our assessment of the electric transmission system needs through 2016, we estimate \$2.8 billion in system improvements including 353 miles of new transmission lines and upgrades to 652 miles of existing lines across our service area.

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

Transmission is the vital link in bringing power to

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



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Michigan's Upper Peninsula and Northern Wisconsin

Electric System Overview

Population, employment increasing

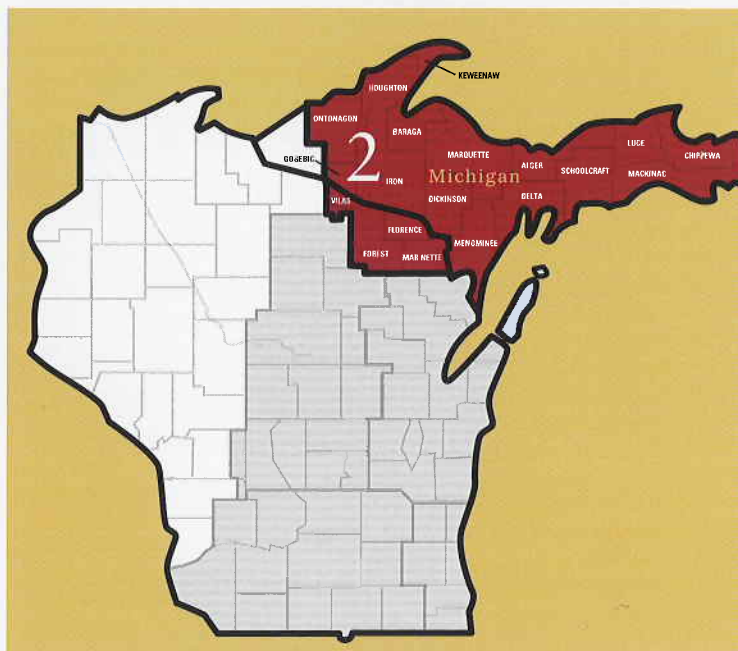
- Population in Zone 2 is projected to grow 0.3 percent annually through 2011. From 2001 to 2006, Vilas County realized the largest increase in population and the highest growth rate.
- Employment in Zone 2 is projected to grow 1.4 percent annually through 2011. From 2001 to 2006, Marquette County realized the largest increase in employment, while Forest County had the highest growth rate.

Electricity usage growing

- Zone 2 typically experiences peak electric demands during the winter months. Ore mining and paper mills are the largest electricity users in the zone.
- As depicted in the 2006 Assessment, electric load is projected to grow 0.4 percent annually through 2015.

Transmission projects completed or under way address electric needs

- **Cranberry-Conover new 115-kilovolt line** – The PSCW approved our application to construct this new 115-kilovolt transmission line from the southern boundary of Eagle River to just east of Conover. This project is currently under construction.
- **Conover-Plains transmission line rebuild** – In conjunction with the Cranberry-Conover project outlined above, rebuilding this 69-kilovolt line for 138-kilovolt operation improves the voltage profile in the western Upper Peninsula and addresses aging facilities with condition issues.



Our 2007 10-Year Transmission System Assessment Update outlines more than 30 additional projects to ensure electric system reliability in Michigan's Upper Peninsula and Northern Wisconsin. The following pages describe the system limitations in Michigan's Upper Peninsula and Northern Wisconsin, and our planned, proposed and provisional projects to address those limitations.

communities

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.

Michigan's Upper Peninsula and Northern Wisconsin

Transmission system characteristics in Zone 2

ATC delivers power in Zone 2 with various transmission facilities including:

- a north-south 345-kV line extending from near Marquette to the Iron Mountain area and south to the Oconto area,
- 138-kV lines from Arnold to the Manistique area,
- a 138/69-kV network in the western portion of the zone and
- a 69-kV network in the eastern portion of the zone.

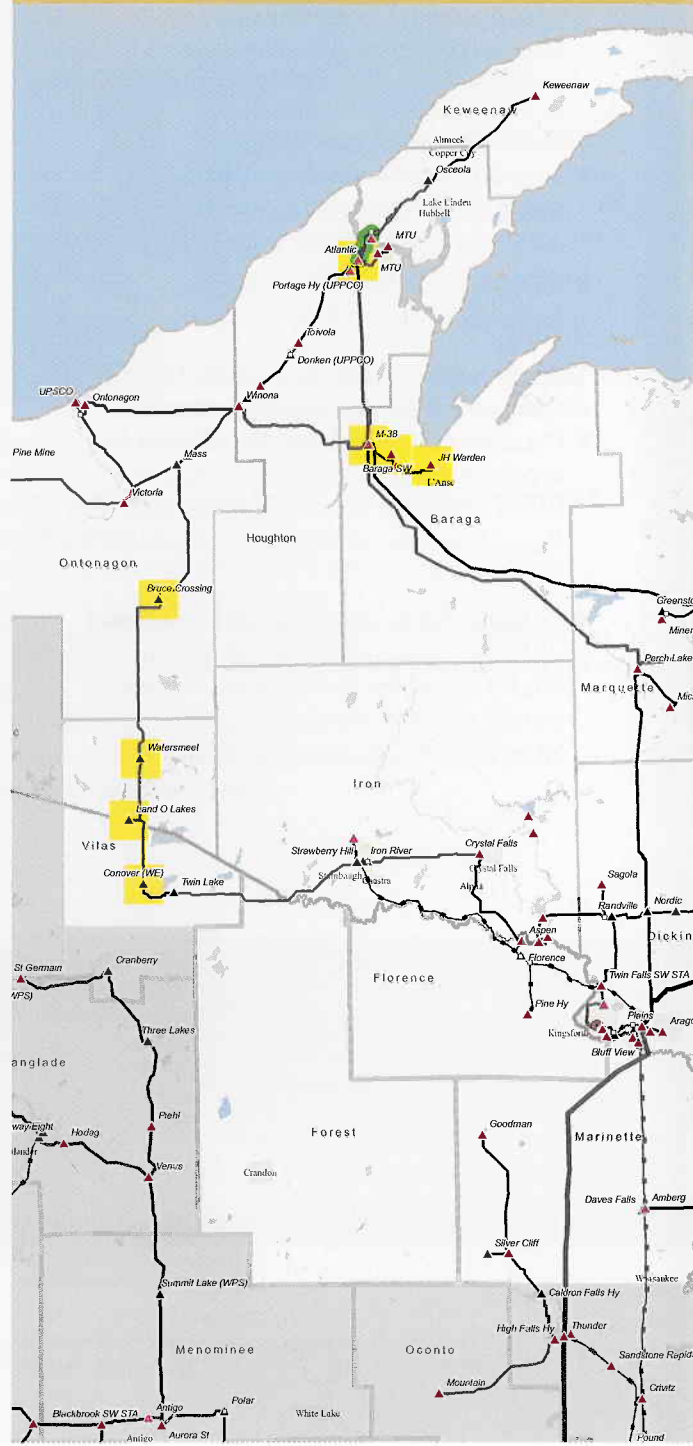
There are a number of transmission system performance issues in Zone 2 including limited ability to import or export power, generator instability, overloaded lines and equipment, low system voltages and the chronic limitations to transmission service. Primary drivers of these issues include a mismatch of low-cost generation to load in the Upper Peninsula and aging facilities in poor or obsolete condition.

Transmission system limitations in Zone 2

In the analysis of year 2007 performed in the 2006 Assessment of Zone 2, we identified low voltages, transmission facility overloads and transmission service limitations. In addition, heavily loaded facilities during off-peak periods, especially when the Ludington Pumped Storage Facility in Lower Michigan is pumping, continue to keep the system working with very small operating margins.

Areas in the western and far eastern Upper Peninsula are most vulnerable to low voltages. The most notable area experiencing transmission service limitations is the Hiawatha-Indian Lake 69-kV line. This limitation was addressed for the near term with a project completed in 2006. In addition, a future conversion from 69-kV to 138 kV is currently being considered.

The potential for generation at Presque Isle Power Plant becoming unstable after certain disturbances on the transmission system has been a long-standing limitation and the reason for an automated tripping scheme in place at Presque Isle. We are evaluating alternatives to this complex scheme.

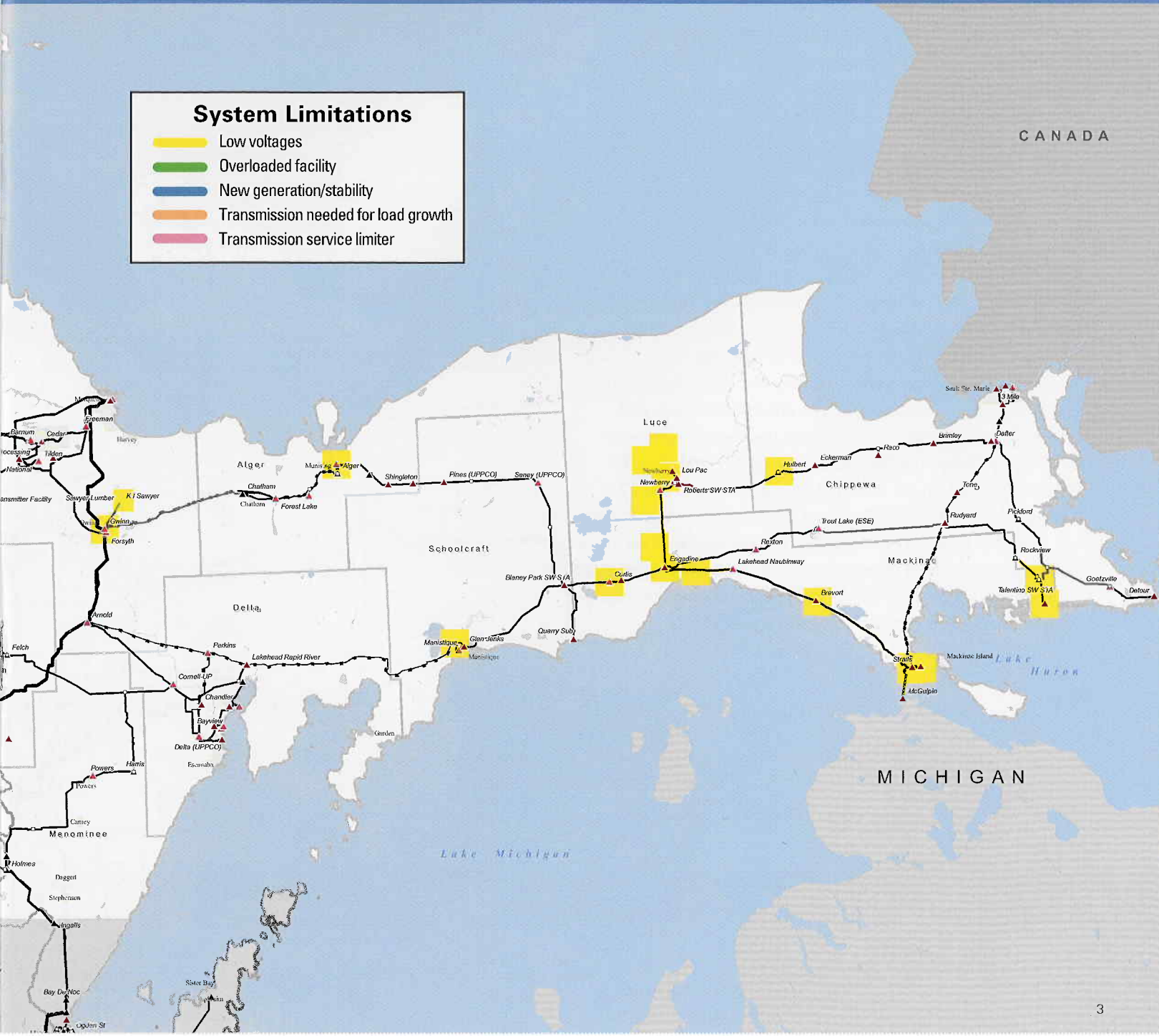


Zone 2 includes the counties of:

- Alger, Mich.
- Baraga, Mich.
- Chippewa, Mich.
- Delta, Mich.
- Dickinson, Mich.
- Florence, Wis.
- Forest, Wis. (northern portion)
- Gogebic, Mich. (eastern portion)
- Houghton, Mich.
- Iron, Mich.
- Keweenaw, Mich.
- Luce, Mich.
- Mackinac, Mich.
- Marinette, Wis. (northern portion)
- Marquette, Mich.
- Menominee, Mich. (northern portion)
- Ontonagon, Mich. (eastern portion)
- Schoolcraft, Mich.
- Vilas, Wis. (northern portion)
- Winnebago, Wis. (western portion)
- Wood, Wis.

System Limitations

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



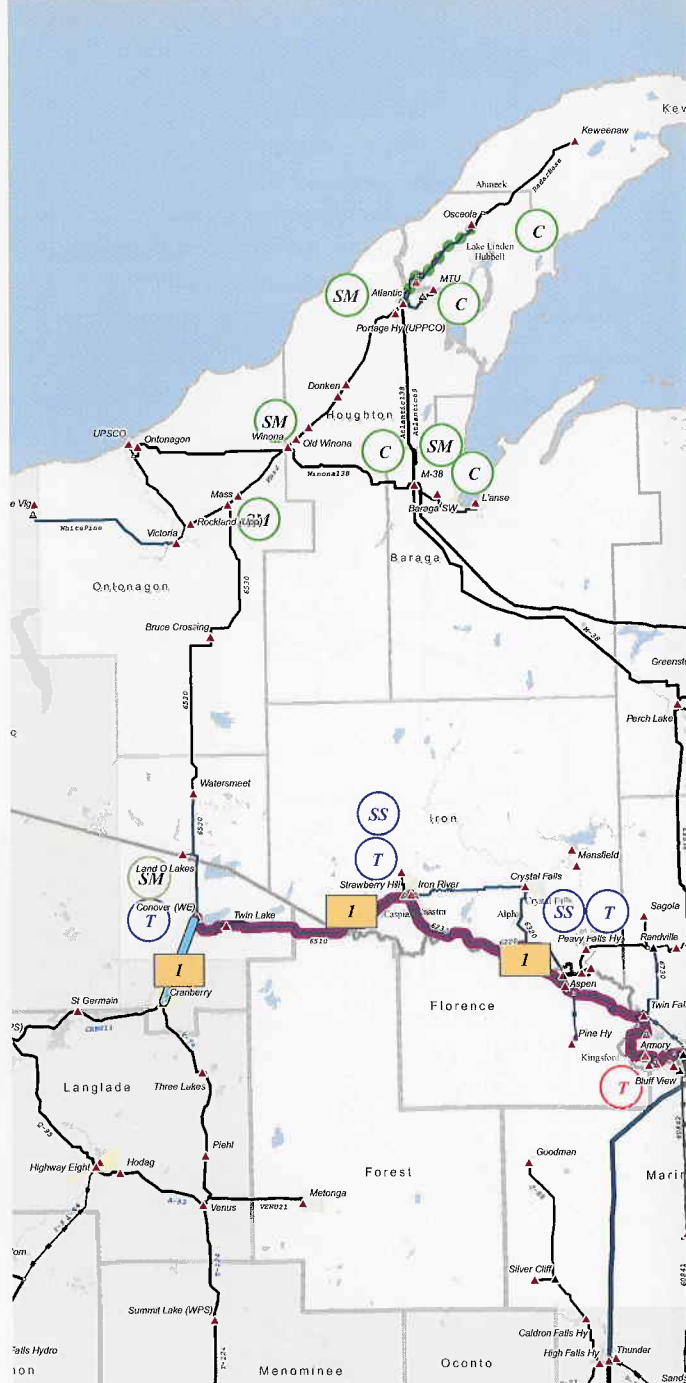
Michigan's Upper Peninsula and Northern Wisconsin

Transmission projects in Zone 2

ATC completed eleven projects in Zone 2 since the 2006 Assessment. Most of these projects were smaller line clearance updates and capacitor bank additions. Several future projects are under consideration with yet to-be-determined (TBD) in-service dates.

Our current plans in Zone 2 include more than 30 projects between 2007 and 2016 to address issues. These projects are in various stages of development. The most notable planned, proposed and provisional projects in Zone 2, along with their projected year of completion and the factors driving the need for the projects appear on the following page. In-service years designated as "TBD" mean we are still working to develop the appropriate project completion date.

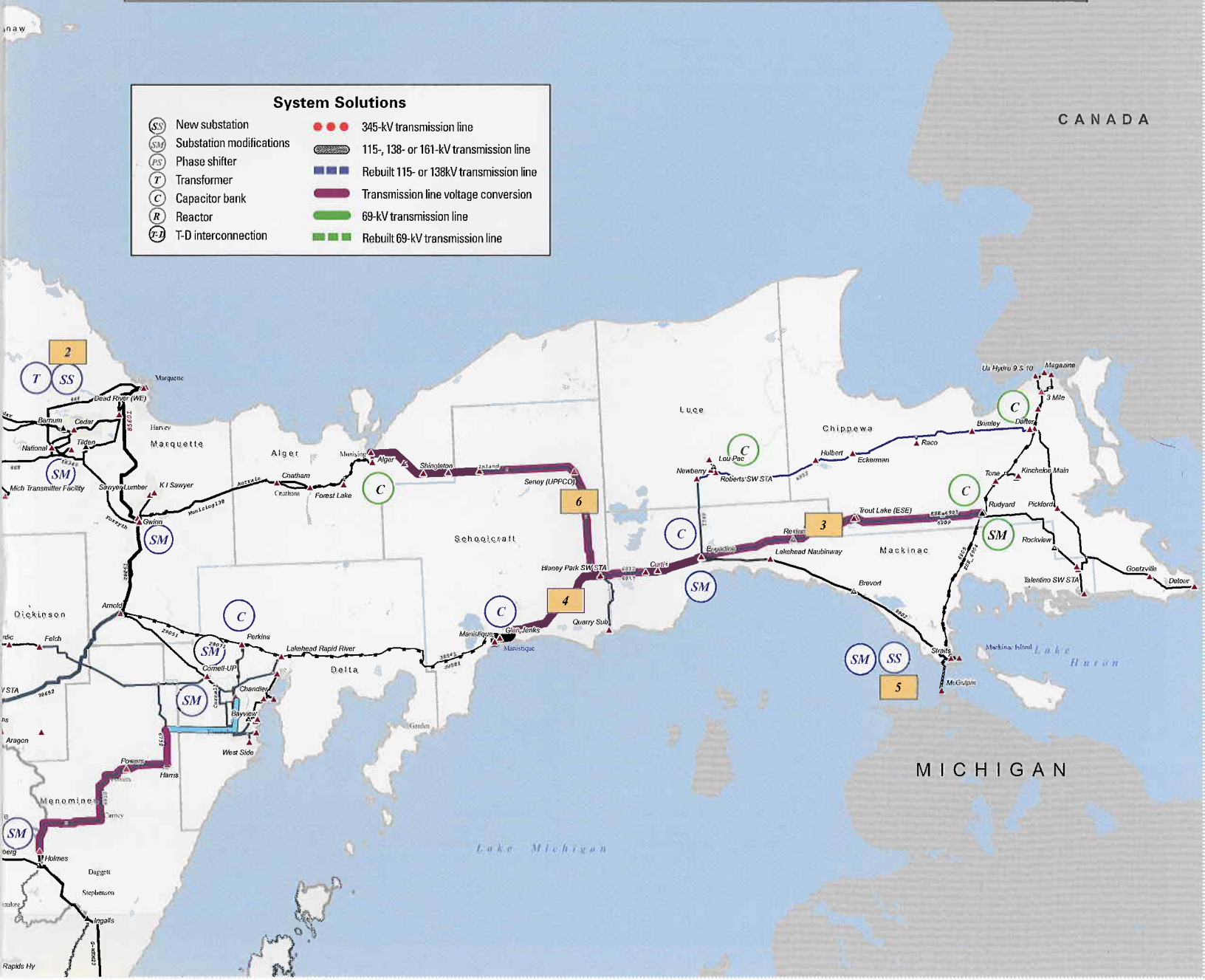
After completing the 2007 Update process, late in the summer of 2007, ATC became aware of the potential for extremely low hydro output in the eastern portion of the Upper Peninsula of Michigan, particularly during times of winter peak loads. During the fall of 2007, ATC has been working with customers in this area to develop emergency plans to prevent overloads and extremely low voltages in this area if critical equipment were to fail to operate as needed. Some emergency projects ATC is developing, which we were not able to include in the 2007 Update project lists, include second transformers at the Straits and Hiawatha substations and advancing installation of capacitor banks at the Nine Mile substation. ATC is continuing to work with our customers to explore longer term solutions that continue to provide reliable transmission service in this area.



	Project description	In-service year	Need driver
Planned projects			
1	Cranberry-Conover 115-kV line (under construction) and Conover-Iron River-Plains rebuild & conversion to 138 kV	2008-10	Part of Cranberry-Conover project (Zone 1) for Rhinelander Loop, improves voltage profile in the area, addresses aging facilities with condition issues
Proposed projects			
2	Relocate Cedar Substation (North Lake)	2009	Improves reliability in the area, addresses aging facilities in poor condition
Provisional projects			
3	Hiawatha-Pine River 69-kV line rebuild & conversion to 138 kV	TBD	Addresses potential overloads of existing lines in the area, addresses aging facilities in poor condition, improves voltage profile in the area, accommodates future expansion in the area
4	Convert Hiawatha-Indian Lake double-circuit, 69-kV line to 138-kV operation	TBD	Addresses chronic transmission service limitation, improves voltage profiles in the area, enhances value of another provisional project
5	Replace the existing Straits Substation (Mackinac)	TBD	Improves reliability in eastern UP, addresses substation facilities in poor condition, provides for future expansion
6	Blaney Park-Munising 69-kV line rebuild & conversion to 138 kV	2013	Addresses low voltages in the area, improves stability of Presque Isle generation, addresses aging facilities in poor condition

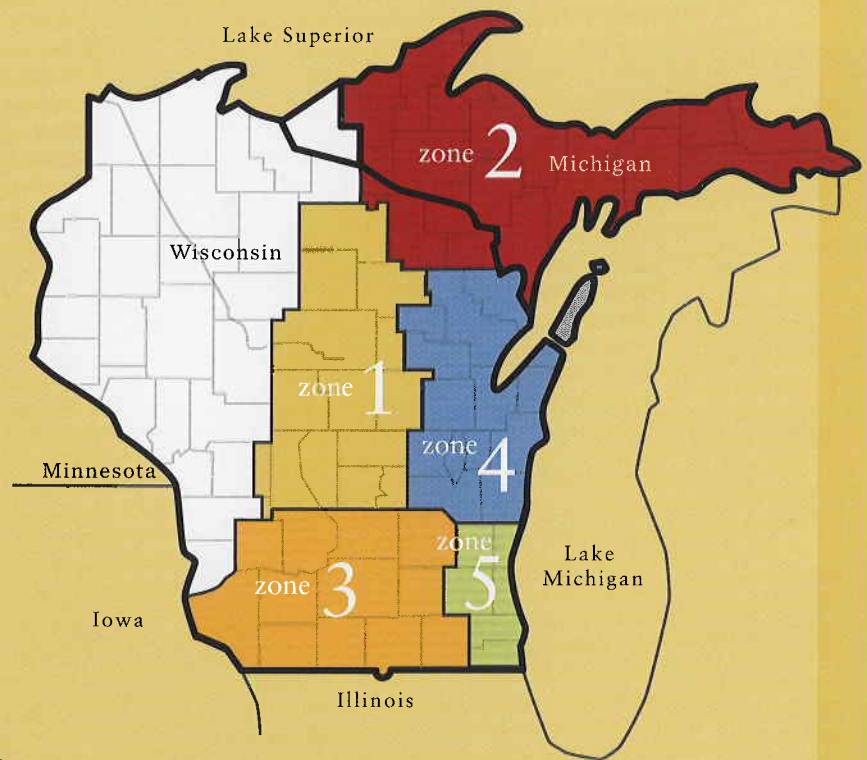
System Solutions

- (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 **9,100 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.
- **\$1.8 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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