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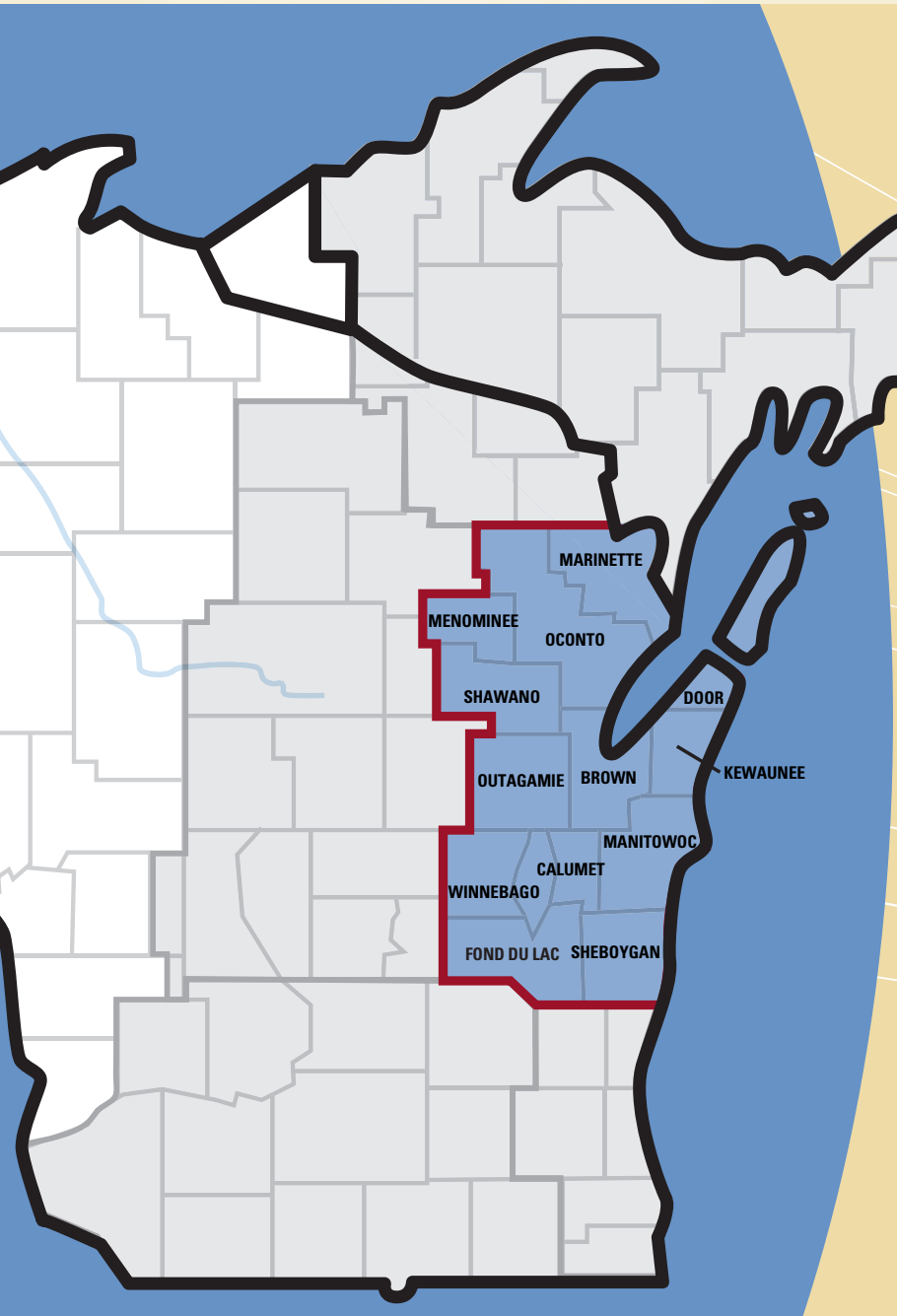
An excerpt from ATC's

2005

10-Year Transmission System Assessment



Zone 4 – Northeast Wisconsin

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

September 2005

www.atc10yearplan.com

About transmission planning

American Transmission Co. annually produces a 10-Year Transmission System Assessment that identifies and begins to prioritize future projects needed to improve the adequacy and reliability of the electric transmission system. Our planners continually conduct engineering studies on the electric transmission system looking for potential problems that may affect the future performance of the system.

As part of our planning studies, we take a comprehensive look at various factors affecting electricity utilization in the region, such as business development, employment trends, proposed new generation and projected growth in electricity usage.

Our studies consistently show that the transmission system is operating at the limits of its capabilities primarily because the system is being used in vastly different ways than it was just 10 years ago. Throughout our service territory, increased electricity usage, more power transactions between utilities, new power producers and the condition of existing facilities are driving the need for new and/or upgraded facilities. Our studies have shown that, in general, it is not possible to provide for new usage, or continue to meet existing usage, without new and/or significantly upgraded transmission facilities. Consequently, we have been, and are, developing reinforcements to the transmission system that will serve customers reliably for years to come. We conduct this long-term planning because it generally can take 5 to 10 years to plan, secure approvals, construct and put into service new transmission lines. Our plans include $3.4 billion in projects throughout our service area over the next 10 years.

About ATC

We own and operate the electric transmission system in portions of Wisconsin, Upper Michigan and north central Illinois. 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.

Understanding electric transmission

The electric transmission system serves as the vital link in bringing power to people, businesses and communities. The transmission system is the necessary connection between where power is produced and where power is used. The transmission grid is a network of high-voltage wires that link the many sources of electric generation to the lower-voltage electric distribution systems that deliver power to homes and businesses via a local utility. The electric transmission system also provides access to diverse and more economic sources of power, and it plays a critical supporting role in the vitality and growth of communities and businesses.

Zone 4 – Northeast Wisconsin
Electric system overview

Population, employment increasing in Zone 4

- Population is projected to grow 0.8 percent annually through 2010. Brown County is projected to realize the largest increase in population, while Calumet County is projected to have the highest growth rate.
- Employment is projected to grow 1.2 percent annually through 2010. Brown County is projected to realize the largest increase in employment, while Door County is projected to have the highest growth rate.

Electricity usage growing in Zone 4

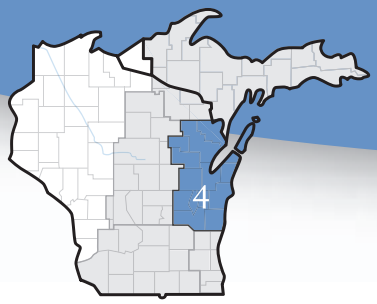
- Peak electric demands typically occur during the summer months, though the northern portion of Zone 4 typically experiences nearly equal winter peaks. Paper mills and foundries in the Green Bay and Appleton metropolitan areas are some of the largest electricity users in the zone.
- Electric load is projected to grow approximately 2.5 percent annually through 2014.

Transmission projects completed or under way address electric system needs

- **Generating Interconnection projects** – Existing 345-kilovolt transmission lines have been looped into new switchyards to interconnect new generation at Sheboygan Energy Center and Fox Energy Center.
- **Howards Grove project** – Construction is under way on looping a 138-kilovolt transmission line into a new Howards Grove substation.
- **Morgan-Stiles project** – Construction is under way on rebuilding a 138-kilovolt transmission line in Oconto County. An interim solution to increase transfer capability between Wisconsin and Upper Michigan.
- **Plains-Stiles project** – Construction is under way on upgrading and rebuilding 110 miles of 69-kilovolt and 138-kilovolt transmission lines in Oconto and Marinette counties in Wisconsin, and Menominee and Dickinson counties in Michigan that are more than 80 years old. The lines are operating at their limits and often are overloaded limiting the transfer of power between northeastern Wisconsin and the Upper Peninsula of Michigan. We are phasing in construction and expect to complete the project in 2006.
- **Gardner Park-Central Wisconsin project** – The Public Service Commission of Wisconsin is reviewing our application to build a 50-mile, 345-kilovolt transmission line between a new Gardner Park Substation near Weston Power Plant and a new substation in Shawano County. The line is needed to support the increased output from upgrades to Weston Power Plant by the end of 2009.
- **Morgan-Central Wisconsin-Werner West project** – The PSC also is reviewing our application for this project, which will intersect with the Gardner Park-Central Wisconsin project. Morgan-Werner West will link the existing Morgan Substation, southwest of Oconto Falls, to a new substation, called Werner West, in the New London area. The project will increase transfer capability between Wisconsin and Michigan's Upper Peninsula and increase electric system reliability in the area.

Our 10-Year Assessment outlines more than 40 additional projects to ensure electric system reliability in Northeast Wisconsin. The following pages describe the transmission system limitations in Northeast Wisconsin and our planned, proposed and provisional projects to address those limitations.

For more information about current projects, please visit the Projects section of our Web site, ***www.atcllc.com***



Northeast Wisconsin

ZONE 4 INCLUDES THE COUNTIES OF:

- Brown
- Calumet
- Door
- Fond du Lac
- Manitowoc
- Marinette (southern portion)
- Menominee
- Oconto
- Outagamie
- Kewaunee
- Shawano (eastern portion)
- Sheboygan
- Winnebago

Transmission system characteristics of Zone 4

ATC delivers power in Zone 4 with various transmission facilities including:

- four 345-kV lines extending from Kewaunee and Point Beach nuclear plants,
- two 345-kV lines extending from Edgewater Power Plant,
- an west-east 345-kV line extending from Stevens Point to the Appleton area,
- a 345-kV line connecting Fond du Lac to Columbia, Edgewater and North Appleton via Fitzgerald Substation and
- a 345-kV line connecting Morgan to Plains.

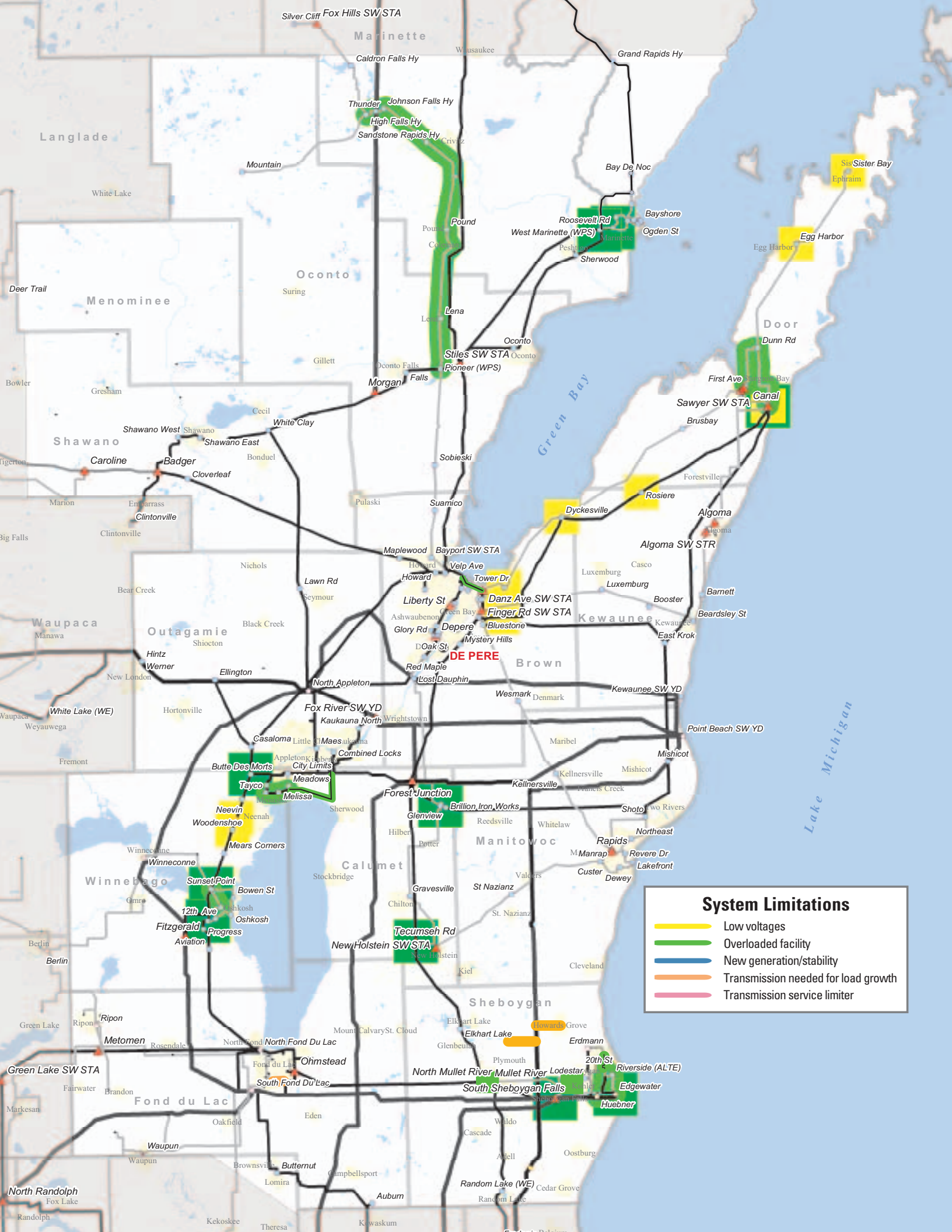
There are a number of transmission system performance issues in Zone 4, most notably insufficient transformer capability, limited transfer capability to and from Michigan's Upper Peninsula, the stability response of the Kewaunee and Point Beach nuclear plants, aging facilities in poor condition and heavily loaded facilities in Fox Valley and Green Bay. Primary drivers of these issues include steady load growth in certain areas, new power plants and increased desire to transfer power through the system.

Transmission system limitations in Zone 4

In the 2006 analysis of Zone 4, we identified low voltages, transmission facility overloads and transmission service limitations. In addition, transmission service limitations during off-peak periods when the Ludington Pumped Storage Facility is in pump mode contribute to heavy loading on facilities south of Green Bay to Michigan and continue to keep the system working with very small operating margins.

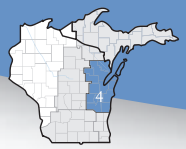
The areas identified as vulnerable to low voltages are Peshtigo, Door County and west of Appleton. Most notable of the transmission service limitations are the Plains-Stiles 138-kV line (Zone 4) and the Hiawatha-Indian Lake 69-kV line (Zone 2). Both lines are being addressed for the near term with projects planned to be completed in 2006.

The potential for generation at Kewaunee and Point Beach nuclear plants becoming unstable after certain disturbances on the transmission system has been a long-standing limitation and the reason for an operating guide at Point Beach. This situation is somewhat aggravated by new generation being constructed near Kaukauna. Projects to improve stability response are scheduled to be in service by 2006.



System Limitations

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



Northeast Wisconsin

Transmission projects in Zone 4

We have completed 11 network projects in Zone 4 since the 2004 Assessment Update, most notably the West Marinette-Amberg 138-kV line rebuild and conversion project.

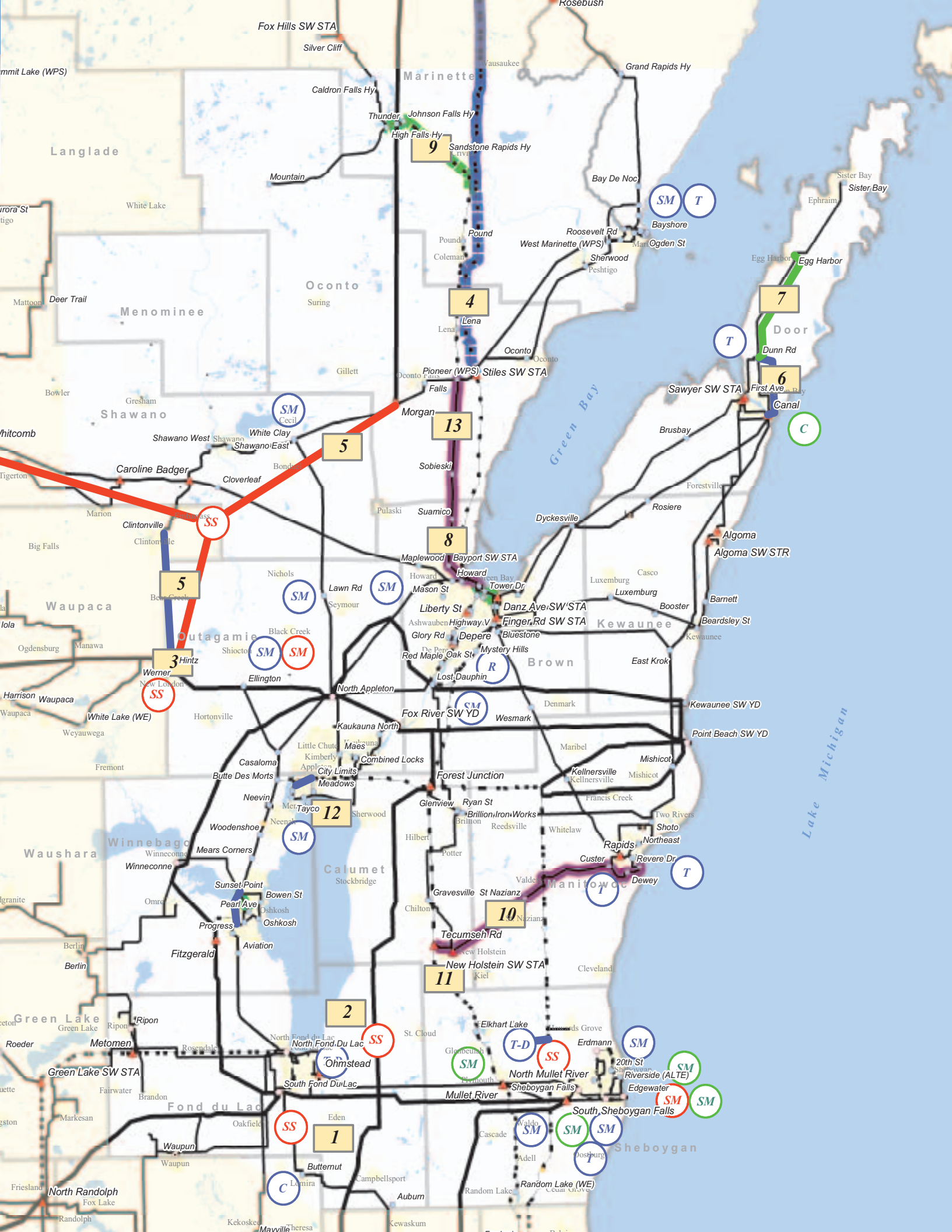
Our current plans in Zone 4 include more than 40 projects between 2005 and 2015. These projects are in various stages of development. The most notable planned, proposed and provisional projects in Zone 4, along with their projected year of completion and the factors driving the need for the projects, are listed below.

	Project description	In-service year	Need driver
	Planned projects		
1	Loop Butternut-South Fond du Lac 138 kV into Forward Energy Center	2005	Interconnection of new Forward Energy Center Power Plant
2	Loop Forest Junction-Arcadian 345 kV into Cypress	2006	Interconnection of new Cypress Power Plant
3	Werner West (New London) 345/138-kV Substation	2006	Addresses chronic transmission service limitation and facility overloads, improve system voltages in the area
4	Stiles-Amberg double-circuit 138-kV line rebuild	2006	Addresses chronic transmission service limitation, improves voltage stability limit in the UP, addresses aging facilities in poor condition
5	Werner West-Morgan 345-kV line and Clintonville-Werner West 138-kV line	2009	Addresses chronic transmission service limitations in Green Bay, improves Wisconsin-UP transfer capability, lowers system losses
	Proposed Projects		
6	Canal (Sturgeon Bay)-Dunn Road 138-kV line	2008	Addresses low voltages and facility overloads
7	Dunn Road-Egg Harbor 69-kV line	2010	Addresses low voltages and provides network service
	Provisional Projects		
8	Pulliam-New Suamico line rebuild & conversion from 69 kV to 138 kV	2008	Addresses facility overloads, addresses aging facilities in poor condition and accommodates T-D interconnection
9	Crivitz-High Falls 69-kV double-circuit line rebuild	2008	Addresses low voltages and facility overloads
10	New Holstein-Lakefront (Manitowoc) 69-kV line rebuild & conversion to 138 kV	2010	Addresses facility overload and improves transfer capability to Manitowoc area
11	Tecumseh Road-New Holstein 69-kV line rebuild conversion to 138 kV	2010	Addresses facility overload and improves transfer capability to & Manitowoc area
12	Northside-City Limits (Menasha) 138-kV line	2015	Addresses facility overloads
13	New Suamico-Pioneer line rebuild & conversion from 69 kV to 138 kV	2015	Addresses facility overloads, addresses aging facilities in poor condition and provides network service

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 138-kV transmission line
- Transmission line voltage conversion
- 69-kV transmission line
- Rebuilt 69-kV transmission line


Fox Hills SW STA
Silver Cliff
Rosebush
Grand Rapids Hy
Caldron Falls Hy
Johnson Falls Hy
Thunder
High Falls Hy
Sandstone Rapids Hy
Mountain
Bay De Noc
Bayshore
Roosevelt Rd
West Marinette (WPS)
Ogden St
Sherwood
Peshtigo
Pound
Coleman
Sister Bay
Ephraim
Egg Harbor
Door
Dunn Rd
Sawyer SW STA
First Ave
Canal
Brusbay
Green Bay
Lake Michigan
Oconto
Suring
Lena
Oconto
Pioneer (WPS)
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Liberty St
Danz Ave SW STA
Finger Rd SW STA
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Red Maple
Oak St
Lost Dauphin
Luxemburg
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Booster
Barnett
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Werner
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Ellington
Harrison
Waupaca
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Weyauwega
Hortonville
Fremont
North Appleton
Fox River SW YD
Wesmark
Denmark
Kewaunee SW YD
Point Beach SW YD
Maribel
Mishicot
Kaukauna North
Little Chute
Kimberly
Maes
Combined Locks
Casaloma
Butte Des Morts
City Limits
Meadows
Forest Junction
Kellnersville
Francis Creek
Neevin
Tayco
Sherwood
Glenview
Ryan St
Brillion
Iron Works
Reedsville
Two Rivers
Shoto
Northeast
Rapids
Whitelaw
Hilbert
Potter
Custer
Revere Dr
Dewey
Woodenshoe
Neenah
Winnebago
Waushara
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Winneconne
Calumet
Stockbridge
Sunset Point
Bowen St
Pearl Ave
Oshkosh
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Valders
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Gravesville
St Nazianz
Chilton
Tecumseh Rd
New Holstein
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Fitzgerald
Aviation
Berlin
Green Lake
Ripon
Roeder
Metomen
Rosendale
North Fond du Lac
Ohmstead
St. Cloud
Elkhart Lake
Glenbeulah
Erdmann
20th St
Riverside (ALTE)
Edgewater
Sheboygan Falls
North Mullet River
Mullet River
South Sheboygan Falls
Green Lake SW STA
Fairwater
Brandon
South Fond du Lac
Fond du Lac
Markesan
Oakfield
Eden
Waupun
Butternut
Campbellsport
Lomira
Auburn
Random Lake
Random Lake (WE)
Cascade
Waldo
Adell
Plymouth
Sheboygan
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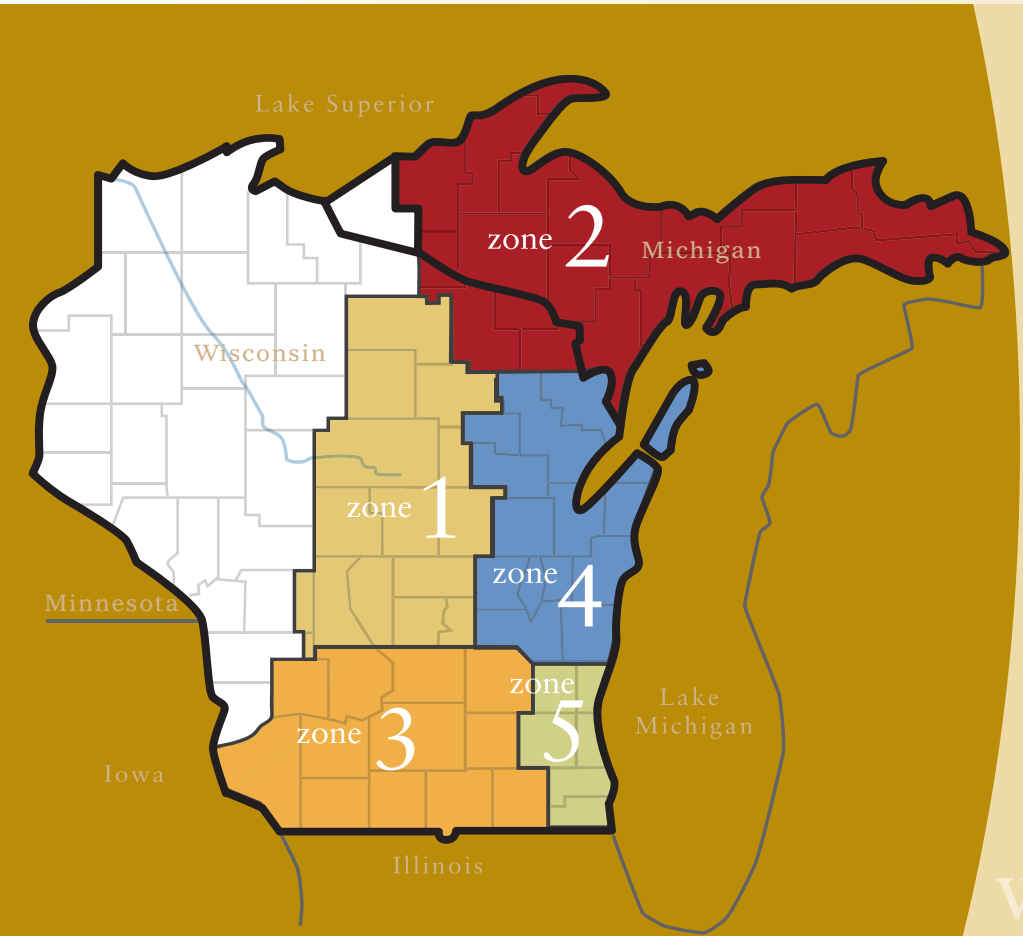

ATC at a glance

- Formed in 2001 as the first multi-state, **transmission-only utility**.
- Owner and operator of approximately **8,900 miles of transmission line** and **460 substations**.
- Meeting electric needs of approximately **five million people**.
- Transmission facilities in **66 counties** in Wisconsin, Michigan and Illinois.
- **$1.3 billion** in total assets.
- **Seven offices** in the communities of Cottage Grove, De Pere, Madison, Waukesha and Wausau, Wis.; Kingsford, Mich.; and Washington DC.

www.atcllc.com