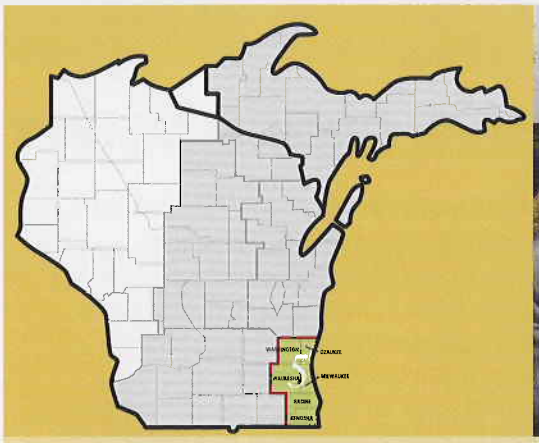


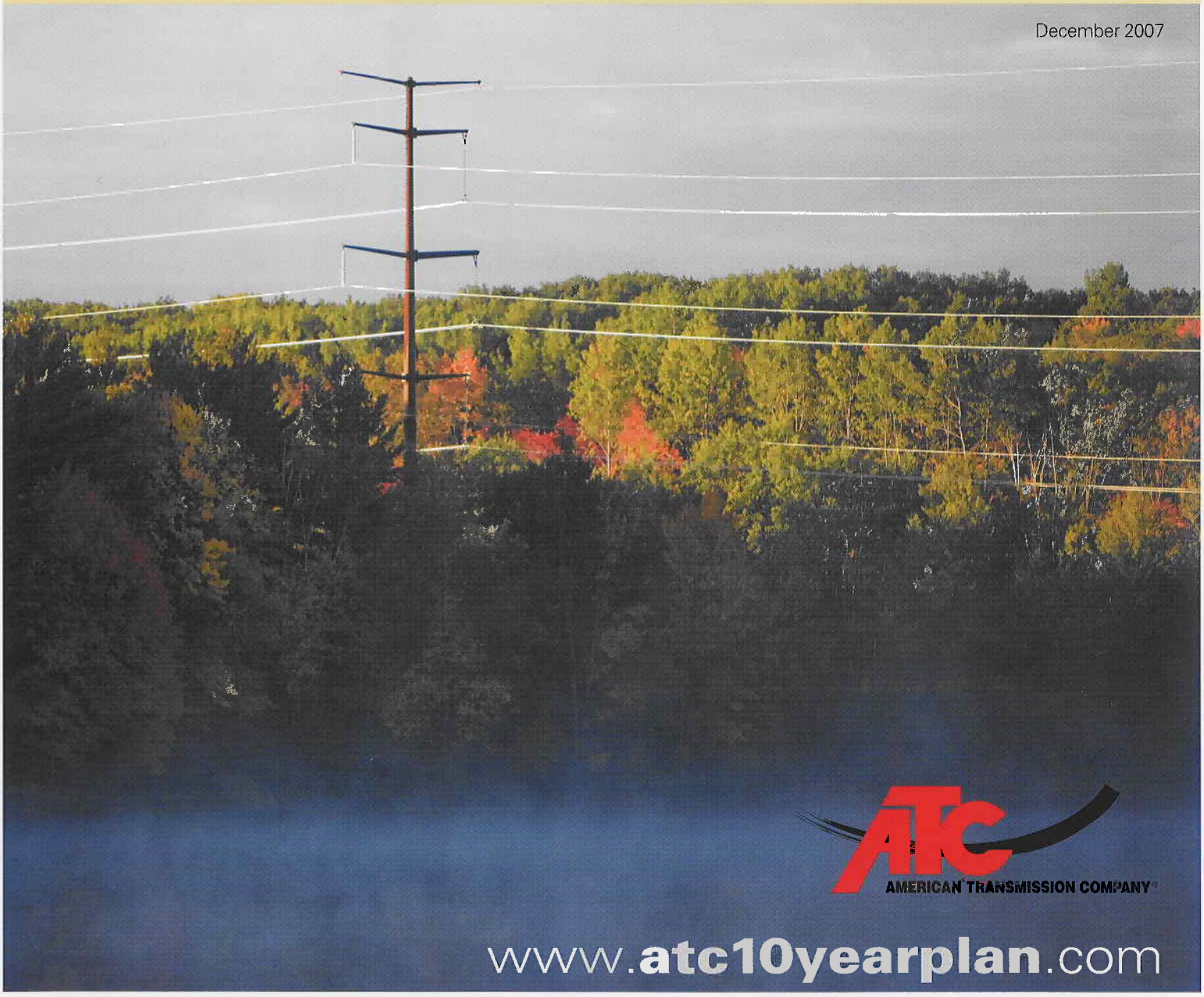
zone5

Southeast 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



AMERICAN TRANSMISSION COMPANY®

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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Southeast Wisconsin

Electric System Overview

Population, employment increasing

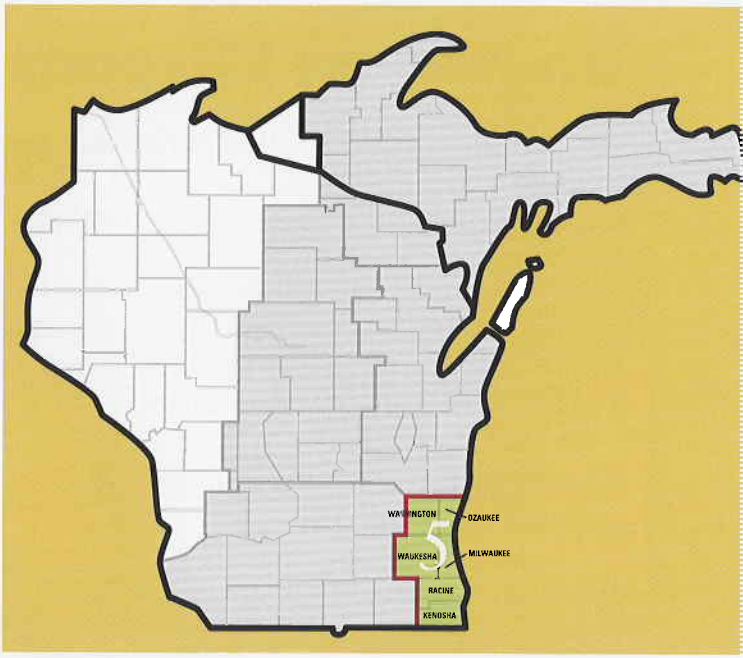
- Population in Zone 5 is projected to grow 0.6 percent annually through 2011. From 2001 to 2006, Waukesha County realized the largest increase in population, while Washington County had the highest growth rate.
- Employment in Zone 5 is projected to grow 1.2 percent annually through 2011. From 2001 to 2006, Waukesha County realized the largest increase in employment and had the highest growth rate.

Electricity usage growing

- Peak electric demands typically occur during the summer months. Large industrial loads in the Milwaukee metropolitan area (such as Charter Steel, Miller Brewing) are among the largest electricity users in the zone.
- As depicted in the 2006 Assessment, electric load is projected to grow approximately 1.6 percent annually through 2015.

Transmission projects address electric needs

Our 2007 10-Year Transmission System Assessment Update outlines more than 20 projects to ensure electric system reliability in Southeast Wisconsin. These projects are in various stages of development. The following pages describe the system limitations in Southeast 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.

Southeast Wisconsin

Transmission system characteristics in Zone 5

ATC delivers power in Zone 5 with various transmission facilities including:

- north-south 345-kV lines extending from the Edgewater, Point Beach and Sheboygan Energy Center power plants,
- 345-kV lines from the Pleasant Prairie Power Plant,
- 345-kV, 230-kV and 138-kV lines from the Oak Creek Power Plant and
- numerous 138-kV lines in and around the metro Milwaukee area.

Transmission system reinforcements needed to interconnect and deliver new generation at Port Washington and Oak Creek power plants comprise much of the expansion in Zone 5. Significant load growth in Waukesha, Walworth and Washington counties is projected to exceed the capabilities of the existing 138-kV system in those areas, signaling the need for transmission system reinforcements.

Transmission system limitations in Zone 5

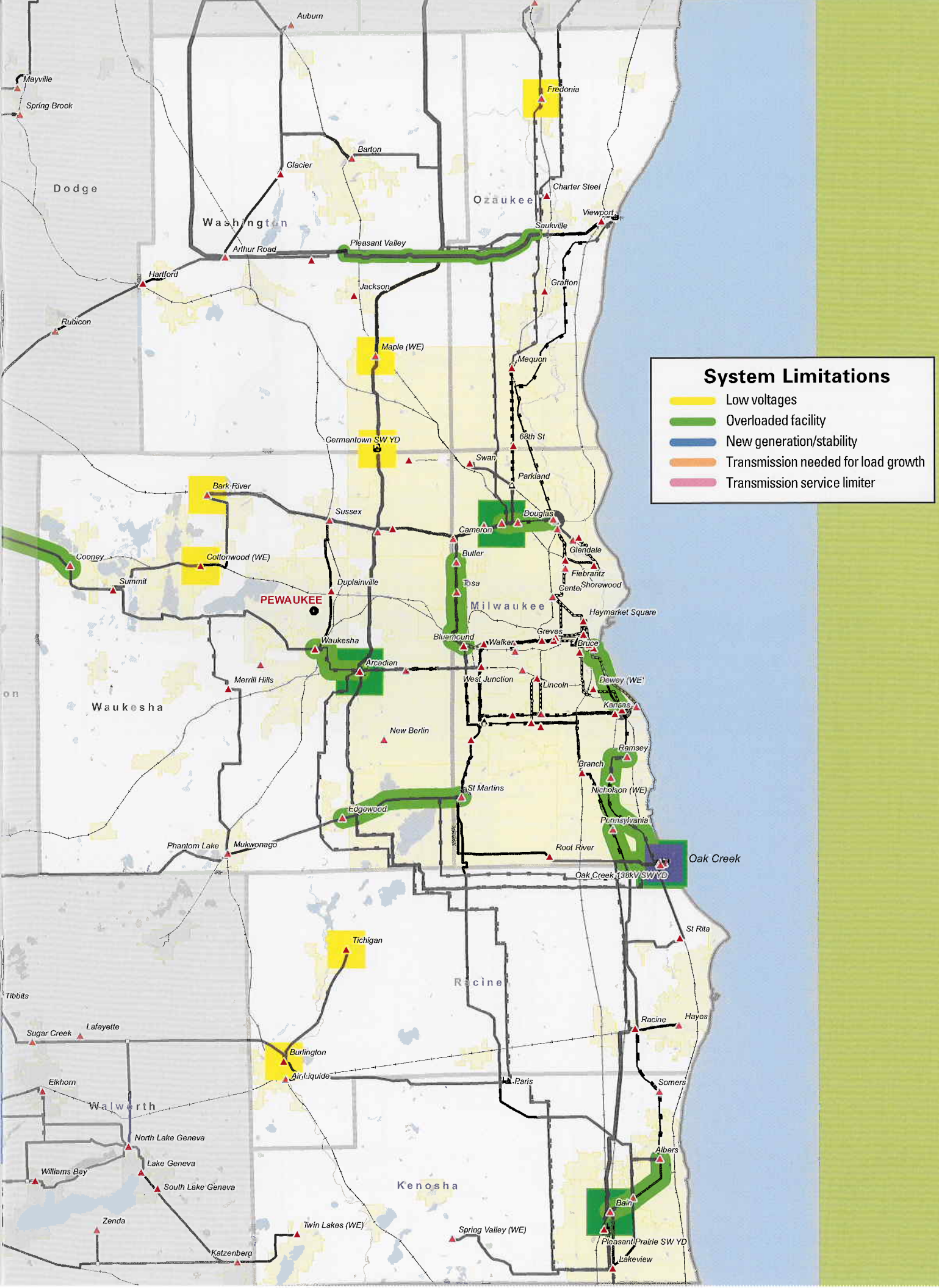
In the 2007 analysis of Zone 5 performed in the 2006 Assessment, we identified low voltages, transmission facility overloads and transmission service limitations. In addition, chronic transmission service limitations within Zone 5 need to be addressed.

The areas identified as vulnerable to low voltages are Washington County and areas west of Milwaukee. Numerous line overloads were identified throughout the zone. Most of the overloads and low voltages in Zone 5 result from low probability outages at substations. We are evaluating alternatives to address these issues. The low-voltage situation to the west of Milwaukee is an indication that load growth will exceed the load-serving capabilities of the 138-kV network serving that area, and the existing network will be insufficient without significant reinforcements.

Accommodating new generation at Port Washington and Oak Creek power plants is driving the need for most of the system reinforcements in the Milwaukee area.

Zone 5 includes the Wisconsin counties of:

- Kenosha
- Milwaukee
- Ozaukee
- Racine
- Washington
- Waukesha


Auburn
Mayville
Spring Brook
Fredonia
Barton
Glacier
Dodge
Ozaukee
Charter Steel
Washington
Viewport
Saukville
Pleasant Valley
Arthur Road
Hartford
Jackson
Grafton
Rubicon
Maple (WE)
Mequon
Germantown SW YD
68th St
Swan
Parkland
Bark River
Sussex
Douglas
Cameron
Glendale
Cooney
Cottonwood (WE)
Butler
Fiebrantz
Summit
Duplainville
Tosa
Shorewood
Center
PEWAUKEE
Milwaukee
Haymarket Square
Greves
Bluemound
Walker
Bruce
Waukesha
Arcadian
Merrill Hills
West Junction
Lincoln
Dewey (WE)
Waukesha
Kansas
New Berlin
Ramsey
Branch
St Martins
Nicholson (WE)
Edgewood
Pennsylvania
Phantom Lake
Mukwonago
Root River
Oak Creek
Oak Creek 138kV SW YD
St Rita
Tichigan
Racine
Tibbits
Racine
Hayes
Sugar Creek
Lafayette
Burlington
Air Liquide
Paris
Somers
Elkhorn
Walworth
North Lake Geneva
Albers
Lake Geneva
Williams Bay
South Lake Geneva
Kenosha
Bain
Zenda
Twin Lakes (WE)
Spring Valley (WE)
Pleasant Prairie SW YD
Katzenberg
Lakeview
System Limitations
Low voltages
Overloaded facility
New generation/stability
Transmission needed for load growth
Transmission service limiter

Southeast Wisconsin

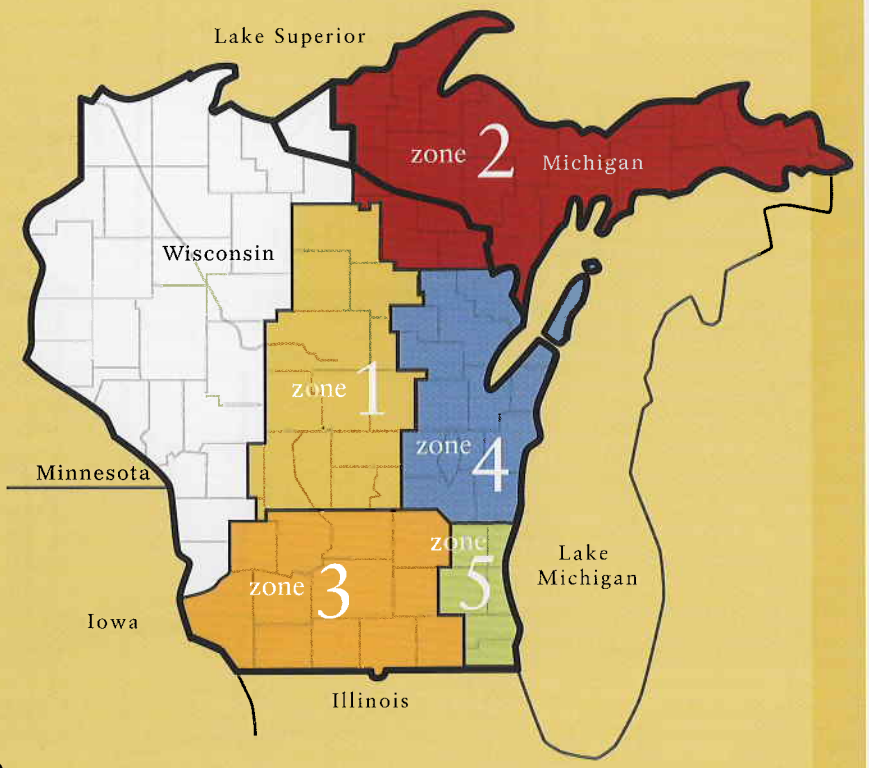
Our current plans in Zone 5 include 22 projects between 2007 and 2016, 11 of which are needed for the new generation planned at Oak Creek Power Plant. These projects are in various stages of development. The most notable planned, proposed and provisional projects in Zone 5, along with their projected 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	St. Lawrence-Pleasant Valley-Saukville 138-kV line reconductor	2008	Accommodates new generation at Port Washington Power Plant
2	Expand 345/230/138-kV substation at Oak Creek	2009-10	Accommodates new generation at Oak Creek Power Plant


System Solutions
New substation
Substation modifications
Phase shifter
Transformer
Capacitor bank
Reactor
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
1
2
Dodge
Ozaukee
Waukesha
Racine
Kenosha
Jefferson
Walworth
Lonmira
Auburn
Random Lake
Cedar Grove
Kekoskee
Theresa
Kewaskum
Mayville
Spring Brook
Fredonia
Belgium
Hubbard
Barton
Glacier
West Bend
Charter Steel
Iron Ridge
Port Washington
Saukville
Arthur Road
Rolle
Pleasant Valley
Hustiford
Hartford
Slinger
Jackson
Grafton 8.32
Grafton
Rubicon
Cedarburg
Maple (WE)
Mequon
Germantown
Germantown SW YD
Water St
Swan
68th St
Brown Deer
River Hill
Parkland
Fox Point
Bark River
Menomonee Falls
Lac La Belle
Merton
Lannon
Sussex
Mill Rd
Douglas
Cameron
Chenequa
Cooney
Oconomowoc Lake
Nashotah
Cottonwood (WE)
Oconomowoc
Summit
Hartland
Butler
Tosa
Whitefish Bay
Glendale
Sidney Term
Fiebrantz
Shorewood
Center
Delafield
Duplainville
Brookfield
Wauwatosa
Milwaukee
Haymarket Square
Bluemound
Greves
Walker
Bruce
Wewauk
Waukesha
Arcadian
Rogers
West Allis
West Junction
Lincoln
Dewey (WE)
Dousman
Wales
Merrill Hills
Waukesha
New Berlin
Kansas
Layton
Greenfield (WE)
Greenfield
Abbey
St Francis
Ramsey
Hales Corners
Greendale
Branch
North Prairie
St Martins
Nicholson (WE)
Big Bend
Edgewood
Franklin
Pennsylvania
Palmyra
Eagle
Muskego
Mukwonago
Root River
Oak Creek 230kV SW YD
Oak Creek 138kV SW YD
St Rita
East Troy
Tichigan
Wind Point
North Bay
Waterford
Racine
Tibbits
Rochester
Racine
Sturtevant
Hayes
Sugar Creek
Lafayette
Elmwood Park
Burlington
Union Grove
Elkhorn
Air Liquide
Paris
Somers
North Lake Geneva
Lake Geneva
Williams Bay
Lake Geneva
South Lake Geneva
Albers
Kenosha
Paddock Lake
Bain
Zenda
Twin Lakes (WE)
Silver Lake
Spring Valley (WE)
Pleasant Prairie SW YD
Walworth
Katzenberg
Twin Lakes
Genoa City
Pleasant Prairie
Lakeview

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.

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

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