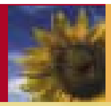
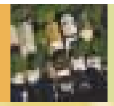
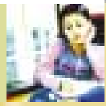
AMERICAN TRANSMISSION COMPANY®
THE ENERGY ACCESS COMPANY

10-Year Transmission System Assessment
2004 Summary Report

ELECTRIC TRANSMISSION: a vital link

- Formed in 2001 as the **first** multi-state, transmission-only utility.
- Owner and operator of **8,900 miles** of transmission line and **450 substations**.
- Meeting electric needs of approximately **five million people**.
- Transmission facilities in **66 counties** in Wisconsin, Michigan and Illinois.
- Approximately **$1 billion** in assets.
- **Seven offices** in the communities of Cottage Grove, De Pere, Madison, Waukesha and Wausau, Wis.; Kingsford, Mich.; and Washington, DC.

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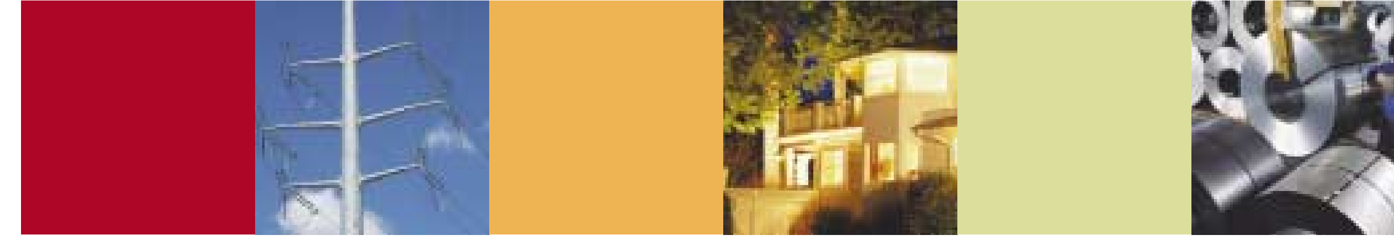


Electric Transmission: **A Vital Link...**

...To everyday life

Electric transmission serves as the vital link in bringing power to people and places — reliably, safely and affordably. At home or work; in schools, hospitals, libraries and airports, electricity quietly plays a major part in bringing convenience, automation, efficiency, technology and security to people's lives and livelihoods.

...To power producers and power users

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 your local utility.

...To the region

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 consumers will be negatively affected by planned or unplanned outages. Multiple major transmission lines also give power generators and local utilities the flexibility to access regions where they can sell and buy electricity to help keep overall costs affordable for everyone.

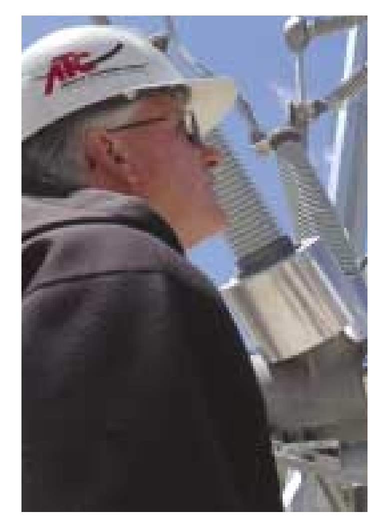
...To green power

Transmission provides the link to electricity produced by renewable resources such as solar, wind or water. The transmission system moves the electricity from remote areas where it's generated to populous urban centers where it's used.

...To economic growth

A strong transmission system plays a critical role in the vitality and growth of communities. Areas growing in the number of residents and businesses must have adequate sources and supplies of power. Electric transmission gets it there.

ATC's plan for future reliability

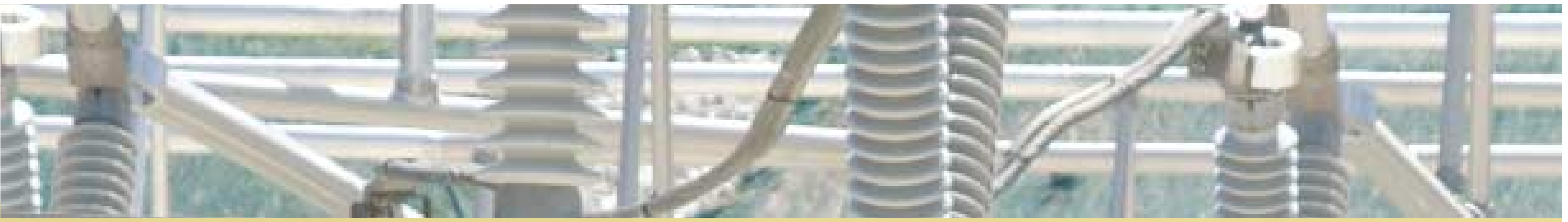


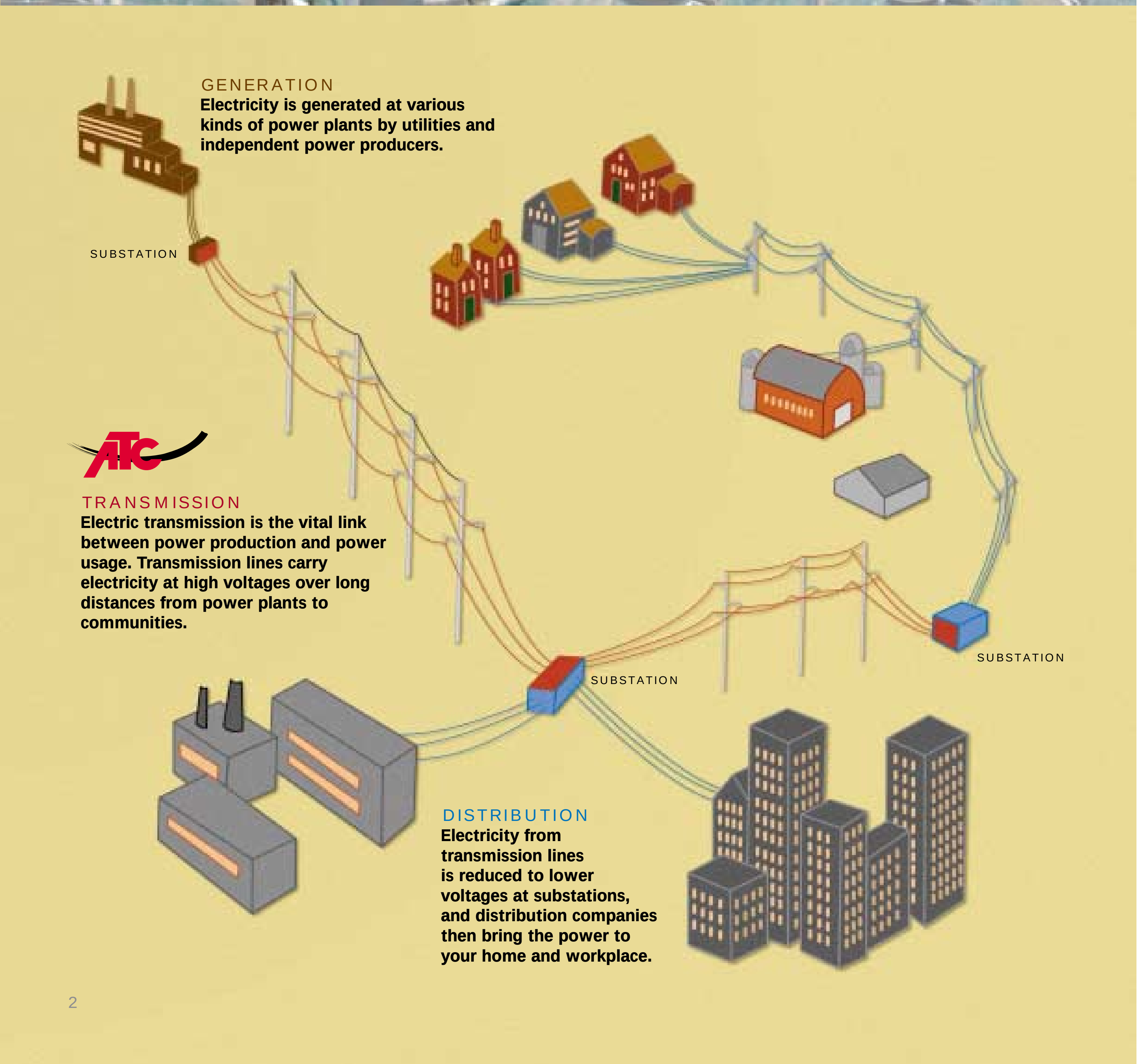
At American Transmission Company, electric reliability is our primary focus. We understand the important role electricity plays in people's lives, and we operate, assess, plan, construct and maintain the electric transmission system with our fullest attention.

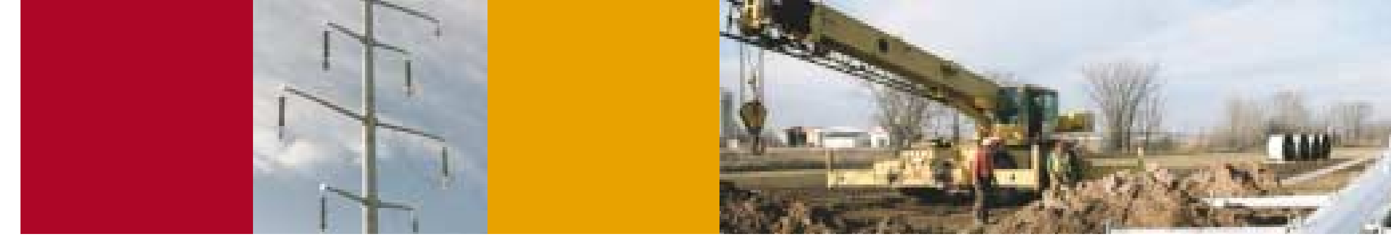
In preparing our annual 10-Year Transmission System Assessment, we evaluate the current usage and operation of the transmission network, and anticipate future needs. Through our studies, we identify solutions to strengthen the performance of the system for the millions of people and places that count on us.

In this report, you can find out about the conditions driving transmission expansion, projects potentially impacting your community, your opportunities to influence projects, the criteria for siting transmission facilities, considerations for the environment, the cost of electric reliability and the importance of improving access on the transmission grid.

Understanding electric transmission







ATC's roles & responsibilities

As a public utility whose infrastructure serves as the link in transporting electricity to millions of energy users, ATC has 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, and
- maintain the transmission equipment and surroundings to minimize opportunity for failures.

We operate, assess, plan, construct and maintain the transmission system according to regional and national industry criteria designed to result in reliable system performance. Our transmission planners continually assess the performance of the system, focusing particularly on areas of past challenges or future growth. Twice each year we issue these Assessment reports to openly present information on needs and potential projects.

As part of the planning that occurs throughout the year, ATC proactively seeks 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. We also are actively participating in the evolution of the electric industry, working to shape it in a way that is beneficial to our customers and the states we serve.

We have a corporate commitment to carry out these duties and responsibilities in an expert, honest and inclusive way. Our responsibility as a regional transmission company is to evaluate the transmission needs of many customers, recommend solutions that address multiple problems and lessen impacts, and do so in a cost-effective way. We strive to provide the necessary infrastructure and reliable service required to enable and support the economic development vital to the health of the communities we serve.

Our progress

Since the time ATC was formed in 2001 as a utility solely focused on electric transmission, we have invested $397 million to:

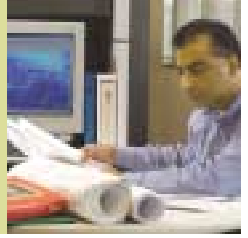
- upgrade more than 330 miles of transmission line,
- improve 64 electric substations and
- build 14 new transmission lines.

A more reliable transmission system has given ATC the ability to:

- reliably deliver up to 12,765 MW of electricity to customers in Wisconsin, Michigan and Illinois,
- maintain a 99.59 percent availability rating of transmission equipment for use in delivering power to customers,
- support 828 MW of new electric usage,
- connect 895 MW of new generation at seven sites,
- increase the ability of our system to import power by 650 MW and
- resolve problems in six specific areas to facilitate movement of power into or through our system.

ATC has made progress by actively seeking input and making public our plans and proposals. To date, ATC has:

- produced and issued six transmission system assessments to the public,
- held more than 70 major public planning and siting meetings, and
- participated in thousands of interactive local, state and industry discussions, both giving and receiving information to carry out our duties and responsibilities.



ATC's transmission planning process

During the August 2003 northeastern blackout, the nation learned that the transmission grid is interconnected, and that each element impacts another. Appropriately, ATC collaborates at many levels – locally, regionally and nationally – so the system remains balanced and operates reliably even during extreme conditions.

As a matter of practice in assessing its transmission system, ATC begins by looking at individual issues or customer requests, and then studies how those needs interact on the system in a broader planning area, then overall on the entire ATC system. We also work closely with the Midwest Independent System Operator, the organization overseeing the transmission grid in the Upper Midwest region, to coordinate our infrastructure planning efforts with those occurring on a regional and national level. Our analysis further considers the needs and impacts of neighboring utilities.

Opportunities for public input

- Project open houses
- Regulatory public comment period
- Contact with our employees

How to get involved

As a natural extension of the involvement of transmission system customers in the planning process, ATC also involves the broader public in its planning. We believe that it is beneficial to solicit input from individuals and communities that may be impacted by transmission system improvements and additions. Even for projects subject to public discussion and review as part of a state's formal regulatory process, opportunities for the public to help shape decisions prior to the start of the official regulatory process can be helpful. Public examination and discussion of transmission plans in advance of the commencement of work enhances awareness of the needs for transmission system improvements, helps eliminate surprises and can improve projects by involving the perspectives of those most familiar with impacted areas.

Our public outreach efforts may involve sharing and exchanging information about specific planned transmission line work. Depending on the work to be done, potentially impacted parties may include landowners or other community residents in the vicinity of an existing or a proposed transmission line, local public officials, utility regulators and natural resource agencies, environmental or conservation groups, customers, and other interested members of the public.

Our public outreach efforts with various stakeholders can include a variety of interactions such as one-on-one or small group meetings, public open houses, newsletters and other communication activities. The overall goal is to maintain communication with those who may benefit or be impacted by transmission system plans with respect to needs, possible alternative solutions, or the tailoring of specific project initiatives as they proceed through the planning, siting and regulatory review stages leading to construction. We believe that by working with the people and communities we serve, we can find better solutions that provide access to the energy they need.

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Siting transmission facilities

When transmission infrastructure additions are necessary, the process of siting facilities is a sensitive one. ATC follows a careful and deliberate process that provides guidance for identifying and analyzing potential options for siting and routing transmission facilities. Through input received from agencies, the public and other stakeholders, we consider options that are appropriate for the location and issues associated with a particular project, consistent with the requirements of applicable state laws.

State legislation (2003 Wisconsin Act 89) outlined priorities for considering routes for new transmission lines in Wisconsin. In order of priority, consistent with economic, engineering, reliability and environmental considerations, ATC must consider using:

1. existing utility corridors (like transmission lines)
2. highway and railroad corridors
3. recreational trails
4. new corridors

In siting and evaluating potential routes for transmission lines, consideration also must be given to sensitive areas, which generally involve public or environmental issues. While Wisconsin law requires these siting guidelines, we apply the same principles to projects in other states.

Environmental considerations

We understand that the siting and construction of transmission infrastructure is not without impacts. There are impacts to the environment, the landscape and land use.

Well before ATC files an application with a state regulatory agency, we consult with agencies regarding environmental impacts of the proposed projects, develop resource protection goals, identify areas of special interest and conduct studies of the potential environmental impacts of transmission line construction. ATC submits a construction plan for the project with the state regulatory agency. When approving a project, the agency issues a written order that identifies construction methods to meet goals established for the protection of environmental, agricultural and other important features.

As noted in the previous section, when identifying potential routes for a transmission line, we attempt to use existing corridors wherever possible to reduce impacts. Our recommendations take into account input we receive from stakeholders including local property owners and state and federal officials and agencies.

When a project advances to the construction phase, we must adhere to specific laws regulating construction practices for building transmission lines. Permits also may be required from state environmental regulatory agencies, which are part of the certification process. When construction activity begins, we factor in the time of the year and weather conditions as we design construction protection methods. For example, construction often is scheduled during winter months when the ground is frozen to minimize soil disturbance and impacts to sensitive animal and plant life. ATC also uses construction practices designed to reduce the spread of invasive species and agricultural pests and diseases.

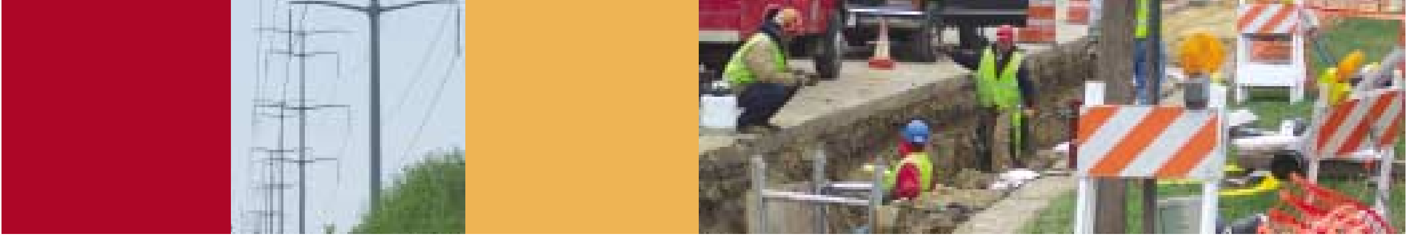
And while transmission corridors require safe clearances under the wires, ATC encourages the use of native plants, such as natural prairies, and wildlife habitats on rights-of-way, as appropriate.

Transmission system limitations

Our patterns of electric use have changed dramatically. If you consider for a moment the amount of electricity you use in your home or at work compared with just a few years ago, you wouldn't be surprised that electric usage is growing. In the residential sector, homes are larger and have computers, security systems, multiple televisions and home entertainment systems, central air conditioning, garage door openers and microwave ovens. In the workplace, businesses rely on sophisticated computer systems to function uninterrupted to run equipment, store data, and provide security and safety.

Clearly, a reliable supply of electricity is a necessity. But the reality is that ATC planning studies consistently show that the transmission system is operating at the limits of its capabilities primarily because the existing system is being used in vastly different ways than it was just 10 years ago. Throughout ATC's service territory, load growth, power transactions between utilities, new power producers and the condition of existing facilities are driving the need for new and/or upgraded facilities. In particular, ATC has found that in certain areas, new 345-kilovolt facilities are needed to resolve reliability issues and to provide a sufficient backbone network from which the system can be expanded to meet needs effectively in the future. ATC is reinforcing the transmission system to serve customers reliably for years to come.

Our planning integrates requests for new transmission service and for interconnection of new power producers and consumers, as well as the needs for supporting continued safe and reliable service and accommodating growth for existing customers. Our studies have shown that, in general, it is not possible to provide for new usage, or continue to reliably meet existing usage, without new and/or significantly upgraded transmission facilities.



Assessment factors

In evaluating the transmission system and planning for what will be needed in the future, ATC considers a number of variables, such as:

- *At what rate will electricity demand increase in the future? What kind of electricity uses will drive the increases in demand?*
- *What generation is likely to be constructed; what is likely to be retired?*
- *What types of disturbances on the transmission system are particularly serious or problematic?*
- *What existing facilities need to be replaced based on their age or condition?*
- *How can ATC improve access to low-cost power outside its footprint?*
- *How can improving access between in-state utilities best be achieved?*
- *How much will it cost to provide reliable transmission service and improve access?*
- *What are the benefits associated with transmission system expansion plans and how can they be measured?*
- *What are the social and environmental impacts of transmission system expansion plans?*
- *What effect will changes in the operation of the electricity markets have on the use of the transmission system?*
- *What new, proven technologies may be available to help meet the needs more effectively and efficiently?*

There are numerous factors that drive the need for transmission system expansion. In some cases, more than one factor will signal the need for system expansion. The most common expansion drivers are described below along with a summary of solutions that ATC has completed or has planned to address transmission system issues.

Load growth

Demand for electricity during peak usage periods is projected to grow at a rate of just under 2 percent across ATC's service territory from 2004 through 2013. However, load growth in some areas is projected at as much as 8 percent, while no growth is projected in other areas. Many areas of high growth correspond to areas where system expansion is being proposed by ATC. In particular, Madison, Lake Geneva, Green Bay and Rhinelander areas are experiencing high growth rates. ATC has identified more than 150 projects in this Assessment that are planned for assuring reliability in response to load growth.

Interconnections

A natural extension of load growth is the need for additional transmission to distribution interconnections (TDIs). Similar to capacity issues on the transmission system as a result of load growth, the electric distribution system also reaches full utilization, requiring new interconnections to the transmission system. ATC already has constructed 41 new or improved TDIs since 2001 and expects to construct another 233 TDIs in the next 10 years.

Transmission service requests

Virtually all entities that own power plants or provide electric service to customers, or both, will seek to buy and sell electricity with other entities. In such cases, these entities must make a transmission service request to gain access to the transmission system. ATC evaluates those requests to determine whether the transmission system will operate reliably if the request is granted. If the request can't immediately be granted, we will identify transmission system reinforcements needed to grant the request. ATC currently has 42 projects being planned or constructed to meet transmission service requests and has completed 13 projects to meet requests since 2001.

Transmission service limitations

Various situations exist on the transmission system that limit ATC's ability to provide power delivery service. For example, due to system issues, TSRs may be denied outright or granted but then curtailed or interrupted; higher-cost generation facilities may have to be operated, or the system may have to be reconfigured to avoid

curtailing or interrupting existing electric service. Depending on the frequency, the cost and/or the risk of reconfiguring the system, it may be prudent to expand the transmission system to avoid these types of events. ATC has constructed six projects addressing transmission service limitations since 2001, and is in the process of planning and/or constructing 30 projects in response to chronic transmission service limitations.

New generation

When a new generating facility is proposed, ATC conducts an interconnection study and, if requested, a transmission service study. If the existing transmission system is inadequate to ensure generator stability or reliable transmission service, we will determine what system expansion will be needed. ATC has constructed transmission facilities to interconnect and provide transmission service for five new generators since 2001, and is in the process of planning and/or constructing transmission facilities that are needed to interconnect and/or provide transmission service from 25 planned generators.

System repair or replacement

Many components of the transmission system will need to be repaired or replaced in the coming years due to condition or obsolescence. In some cases, the need to reconstruct a transmission line may provide opportunities to increase the capacity of those components and provide reliability benefits to the system. ATC has 14 projects in its current plans that are being planned or constructed to address condition or obsolescence issues.

Economic or strategic system expansion

In recent years, wholesale electricity markets have continued to evolve, renewable generation has gained a larger market share and the generation market, in general, has become more competitive. Because customers, both residential and business, are more mobile, migration of electric customers to other areas is a greater risk consideration for utilities. To remain cost competitive, utilities must have the flexibility to take advantage of trends that have the potential to lower costs. To the extent that lower-cost generation is existing or planned in an adjacent state, it may make sense for a transmission provider to construct transmission facilities that would allow its utility customers to access lower-cost generation. Along these lines, ATC has been investigating ways to take advantage of certain potential developments in the electricity industry to give our customers ways to lower costs. The primary outgrowth of this effort is our Access Initiative.

Our Access Initiative

Strengthening electric transmission ties to areas beyond ATC's system footprint can positively impact future reliability and overall energy costs.

At the most fundamental level, the transmission system is used to deliver electricity from power plants, where it is produced, to distribution systems, where it is dispersed to and used by residential, commercial and industrial consumers. Sometimes utilities want to generate and move power locally. Sometimes it is more economical to buy power from adjacent utilities or other wholesale energy markets and import the energy via the transmission system. Sometimes emergency power is needed. The ability of a transmission system to move power is known as its transfer capability. Access refers to the ability of customers to use the system's transfer capability to access power available in those adjacent utilities or energy markets.

ATC's system has many limitations preventing unimpeded flow of power inside system boundaries. With ATC customers historically importing approximately 15 percent of their energy needs, the limited ability to access other energy markets is an added disadvantage. In fact, Wisconsin has just four major high-voltage transmission lines carrying energy into and out of the state. In comparison, Illinois has 24 and Minnesota has 18. As a result, ATC customers are unable to reap the economic or reliability benefits that could be achieved through expanded connectivity with adjacent regions and better internal transfer capability.

Additionally, the structure of the electric industry is evolving from many small pockets of local electricity production within a state to a system feeding into broader regional energy markets involving many states. The Midwest Independent System Operator is working to develop such a market that will impact ATC's utility customers. ATC's customers are concerned that their consumers may be economically disadvantaged if the market develops and they are unable to effectively participate in the market because of insufficient access. Accordingly, in 2004, ATC began expanding its public planning activities to encompass a new Access Initiative.

ATC began studying ways to improve transfer capability and assess the benefits and costs associated with developing a major new 345-kV interconnection with an adjacent area. We collaborated with customers and other stakeholders to explore the different facets and the feasibility associated with developing and integrating such a major new interconnection project into the current ATC transmission plan. The goal was to develop the Access Value Case – a composite assessment of the full array of benefits and potential costs associated with a new access-driven project. Extensive information on ATC's 2004 Access Initiative can be found online at (case sensitive): http://www.atcllc.com/oasis/Customer_Notices/Access.html. A discussion of Access Initiative findings to date is detailed in the 2004 10-Year Transmission System Assessment Full Report, which is available on a CD from ATC.

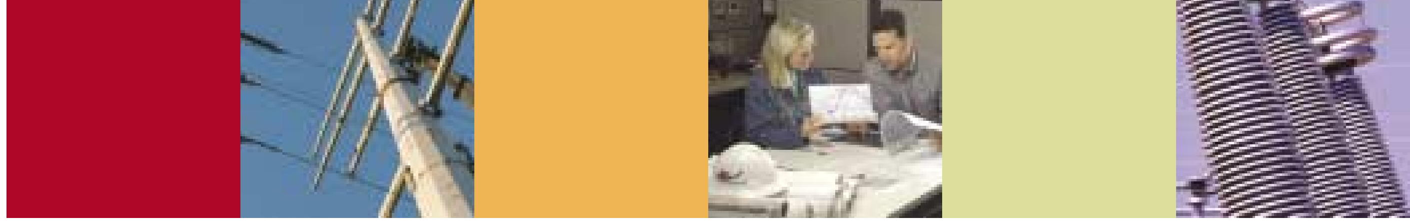
New directions for transmission

In the Access Initiative, ATC has been evaluating five geographic directions for a potential new high-voltage transmission line project to improve access by better connecting ATC's system to an adjacent region:

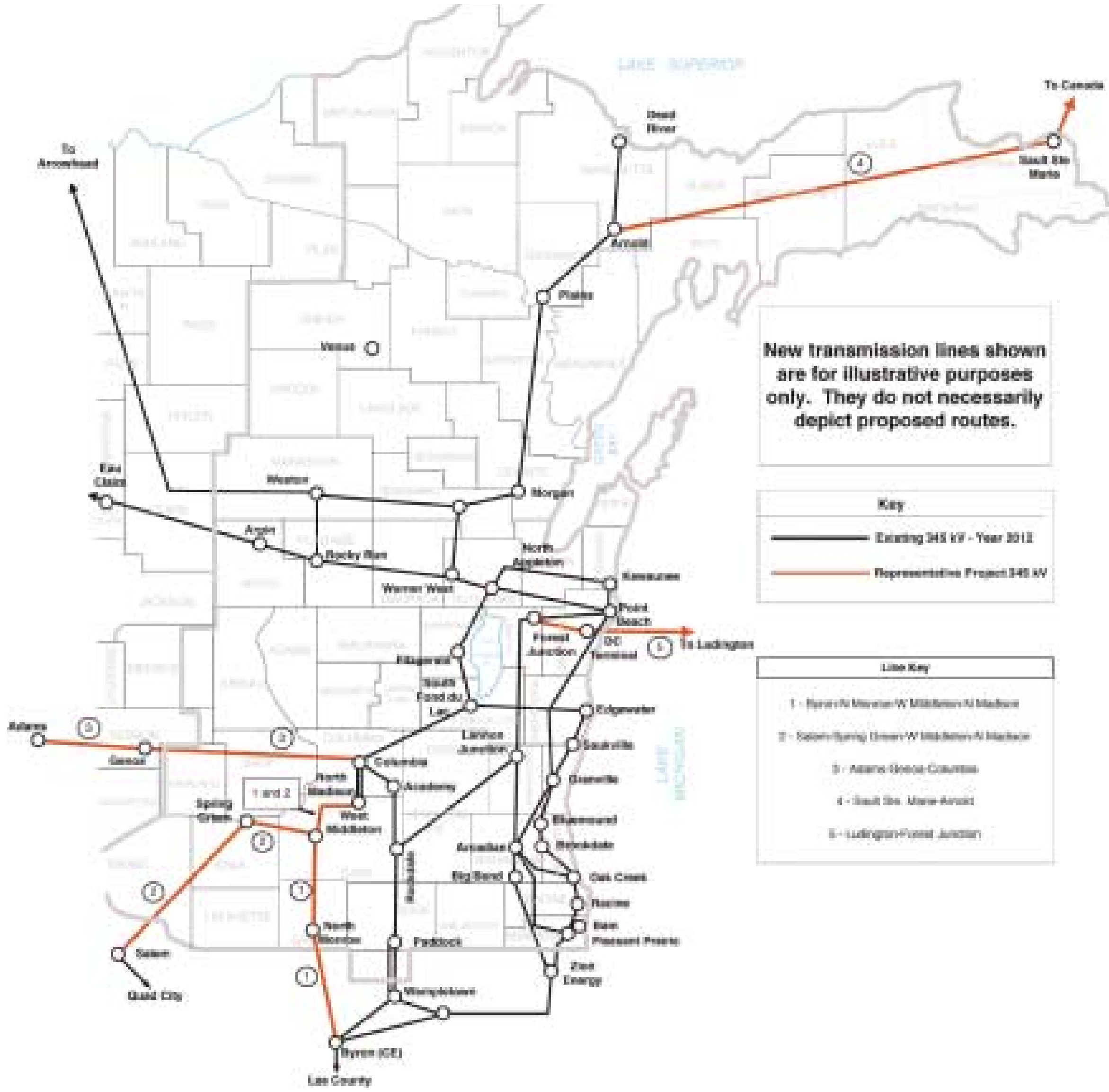
- South (Illinois),
- Southwest (Iowa),
- West (Minnesota),
- North (Ontario) and
- East (Michigan).

The map at right shows a proxy project for potential expansion in each direction. These do not indicate specific routes; none exist at this time.

We are identifying transfer limitations associated with each of these proxy projects to assess the feasibility of further improving access in each direction. In addition, we are assessing past chronic limiters to the free flow of power within our system as well as potential future limiters that might be associated with expansion in one of these five directions.



Access Initiative — Representative Proxy Projects



ATC held meetings with customers and interested participants in the first half of 2004 to report on ongoing analyses and to solicit input. By the end of 2004, we intend to define an access package that balances the costs and benefits of improved access on the ATC transmission network.

Based on the results of analyses completed to date, the following findings have been made:

- With projects already being planned for completion by 2012, we estimate that simultaneous import capability will increase from approximately 2,300 MW today to approximately 3,050 MW by 2012, an increase of 750 MW.
- Interconnection projects to the south and southwest appear to yield the greatest improvement in access, the greatest level of energy production savings and have the lowest cost/benefit ratios.
- Interconnection projects to the south and southwest appear to yield the greatest reduction in system losses and the greatest projected loss cost savings.

Transmission costs

Improving the reliability of the transmission system and expanding its ability to access other markets for the economic benefit of all users has a price. The series of projects that ATC is considering over the next 10 years is estimated at approximately $2.8 billion. The financial investment and the amount of work are considerable, but the need basis is strong and justified.

Three elements in electricity

The price of transmission infrastructure improvements is a fraction of overall energy costs. The electrical infrastructure system is made up of three major elements–generation, transmission and distribution. ATC's direct customers are utilities, independent power producers and power marketers–those who currently are allowed by law to engage in wholesale power transactions. These entities pay ATC, through the Midwest Independent System Operator, for transmission delivery service to move their power between generators and distribution systems. Some contract to use a certain amount of transmission system capacity in order to serve their peak loads. Others pay for using the transmission system for specific transactions to import or export power. Retail access to the transmission system currently is not allowed in Wisconsin, but is allowed in Michigan and Illinois. ATC has no direct retail transmission service customers at this time.

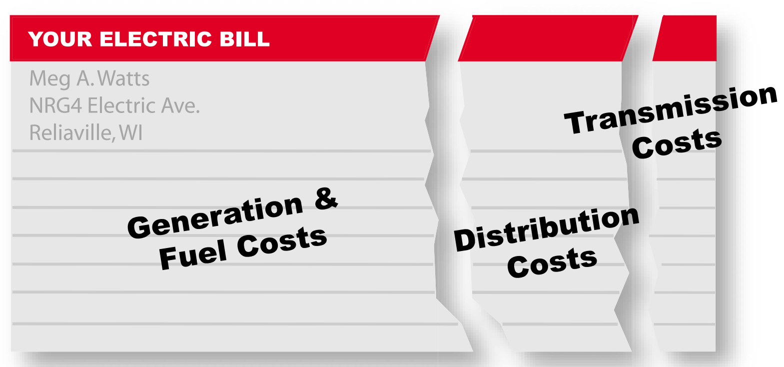
Paying for electricity

Retail electricity consumers, through the regulated utility rate structure, pay for all three elements of electrical infrastructure, plus fuel costs, via their monthly electric bill. The distribution utility passes along to its retail customers the costs for the fuel and generation, transmission and distribution facilities required to supply the electricity used by each consumer. In ATC's footprint, the transmission costs are the smallest component of a retail consumer's electric bill, currently representing approximately 4 percent of the total bill. Generation and fuel costs make up the major portion, followed by distribution.

The transmission costs are proportionately small, in part, because ATC's costs are spread over many utilities' retail consumers through a large geographic region. Under a stand-alone transmission company structure like ATC, this is a significant advantage because the costs for needed upgrades can be spread over the full array of customers who benefit from them. A single utility's retail customers must no longer bear the burden of paying for transmission investment that benefits others who do not also contribute to the costs.

Construction cycle

Infrastructure investment tends to occur in cycles of major and minor construction. We currently are moving into a major construction cycle. ATC's studies show significant transmission system reinforcements are needed in the coming years. Our system currently is operating at its limits, and is not able to continue to reliably serve customers and accommodate growth into the future without significant reinforcement. However, transmission is not the only element requiring reinforcement; utilities in our footprint also are projecting major generation and distribution investments in cumulative amounts that dwarf the total transmission investment required to support them. Because costs are increasing for all of the electric rate elements–generation, transmission and distribution–transmission costs are projected to remain at about 4 percent of the total retail electric bill.



The table at right illustrates the start of this major construction cycle. In our 2003 10-Year Transmission System Assessment Summary Report, we showed the 12/31/02 net book value (historical costs less depreciation) of "electric plant in service." Those figures are repeated at right, along with the 12/31/03 figures. Note the investment increases, some significant, in almost every case.

The cost for transmission is proportionately small and brings high value with respect to enabling reliability, economic opportunity and the potential for overall lower energy costs. For example, referring back to the Access Initiative discussion, since energy costs make up the highest proportion of a retail consumer's bill, significant savings might be enabled by increasing access to adjacent energy markets, allowing lower-cost energy to be obtained and delivered to consumers.

Electric infrastructure cost components

Utility	Production		Distribution		Transmission	
	12/31/02	12/31/03	12/31/02	12/31/03	12/31/02	12/31/03
Edison Sault	$ 7,678,912	$ 7,199,439	$ 30,036,781	$ 31,278,408	—	—
Madison Gas and Electric	$ 115,338,930	$ 121,232,744	$ 154,121,121	$ 171,815,761	—	—
Upper Peninsula Power	$ 20,459,638	$ 20,801,730	$ 51,647,759	$ 52,665,482	—	—
Wisconsin Electric Power	$ 849,489,422	$ 1,535,757,695	$ 1,586,951,095	$ 1,692,394,195	—	—
Wisconsin Power and Light	$ 144,533,368	$ 315,706,372	$ 577,137,361	$ 634,471,446	—	—
Wisconsin Public Service	$ 136,279,288	$ 514,759,456	$ 386,184,825	$ 411,564,001	—	—
American Transmission Company	—	—	—	—	$ 661,415,001	$ 770,974,915
TOTAL	$ 1,273,779,558	$ 2,515,457,436	$ 2,786,078,942	$ 2,994,189,293	$ 661,415,001	$ 770,974,915

Source: Federal Energy Regulatory Commission Form No. 1: Annual Report of Major Electric Utilities, Licensees and Others.

Capital cost of ATC's expansion plan

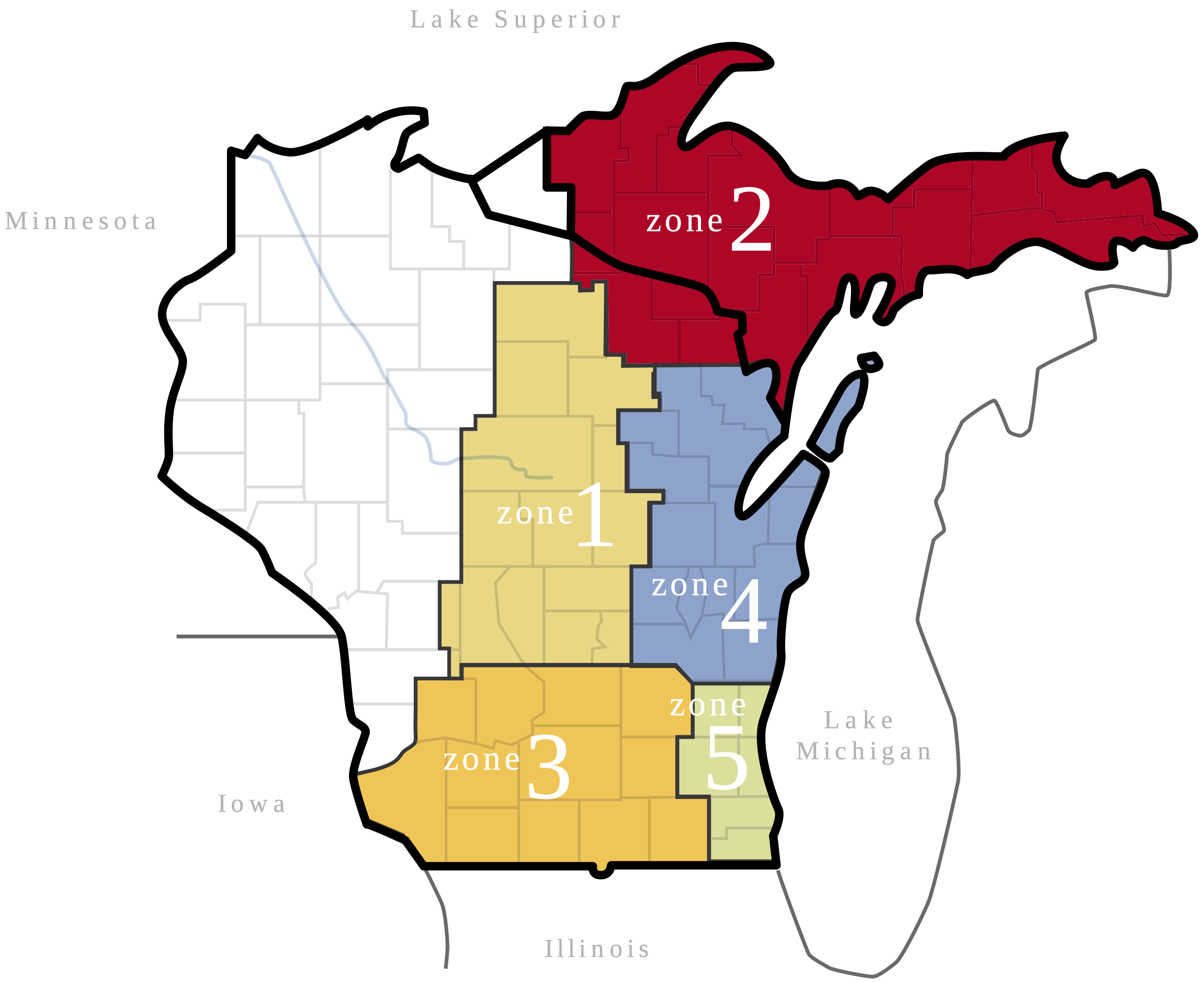
In the 2003 Assessment, ATC estimated it would cost about $2.8 billion over the next 10 years to construct the transmission system improvements necessary to meet current and projected needs. Projects totaling $1.7 billion were specifically detailed in the 2003 Assessment; the remaining $1.1 billion included projections for interconnecting other proposed generators, asset renewal projects, infrastructure replacements and relocations, and other smaller network reliability improvements.

Based on this 2004 Assessment, the total cost estimate for necessary transmission system improvements remains at about $2.8 billion over the next 10 years (through 2014). Further study and information has brought additional specificity to some of the need projections and estimates made in 2003, and although significant investment has begun, needs now emerging at the later end of this 10-year period, plus projections associated with the Access Initiative and emerging energy market, keep the rolling 10-year estimate at about $2.8 billion at this time. Projects totaling $2.1 billion are now specifically detailed in the 2004 Assessment; the remaining $700 million covers other projects as noted above.

Plans & proposals for the transmission system

In preparing the annual 10-Year Transmission System Assessment, ATC evaluates the current and future usage and operation of the transmission network. We take a comprehensive look at various factors affecting electricity utilization, such as business development and employment trends, proposed new generation and projected growth in electric use.

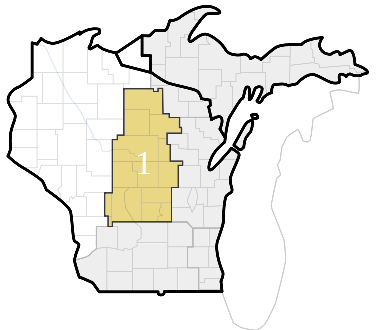
We conduct planning studies at four levels – individual issues, planning zone, ATC system and regionally/nationally. For the zone level, ATC has defined five planning zones representing distinct geographic or usage areas within our overall service area. ATC's five planning zones are shown below. Within each level, ATC compiles and assesses the transmission system needs in order to determine the best set of solutions responsive to all identified needs.



Project classifications

Within each zone, ATC has recommended projects to address system limitations. These projects are classified into one of three possible categories–Planned, Proposed or Provisional–depending upon the stage a project may be in. These categories generally are consistent with those used by the Midwest Independent System Operator.

	Planned	Proposed	Provisional
Status of ATC planning activities	Studies complete	Studies not complete	Studies not complete
Application for regulatory approval	Application pending or issued	None	None
Project status	Project in construction planning phase or under construction	Project identified as preferred alternative	Placeholder project; not necessarily a preferred project alternative
System solution included in power flow models	Project included	Project not included	Project not included



NORTH CENTRAL WISCONSIN

zone 1

ZONE 1 INCLUDES THE COUNTIES OF:

- ADAMS, WIS.
- GREEN LAKE, WIS.
- JUNEAU, WIS.
- LANGLADE, WIS.
- LINCOLN, WIS.
- MARATHON, WIS.
- MARQUETTE, WIS.
- MONROE, WIS.
- ONEIDA, WIS.
- PORTAGE, WIS.
- SHAWANO, WIS. (WESTERN PORTION)
- VERNON, WIS.
- WAUPACA, WIS.
- WAUSHARA, WIS.
- WOOD, WIS.

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 growth in certain areas, ATC customer needs to import additional power, a new power plant under construction and another power plant application under review by the Public Service Commission of Wisconsin.

Transmission system limitations in Zone 1

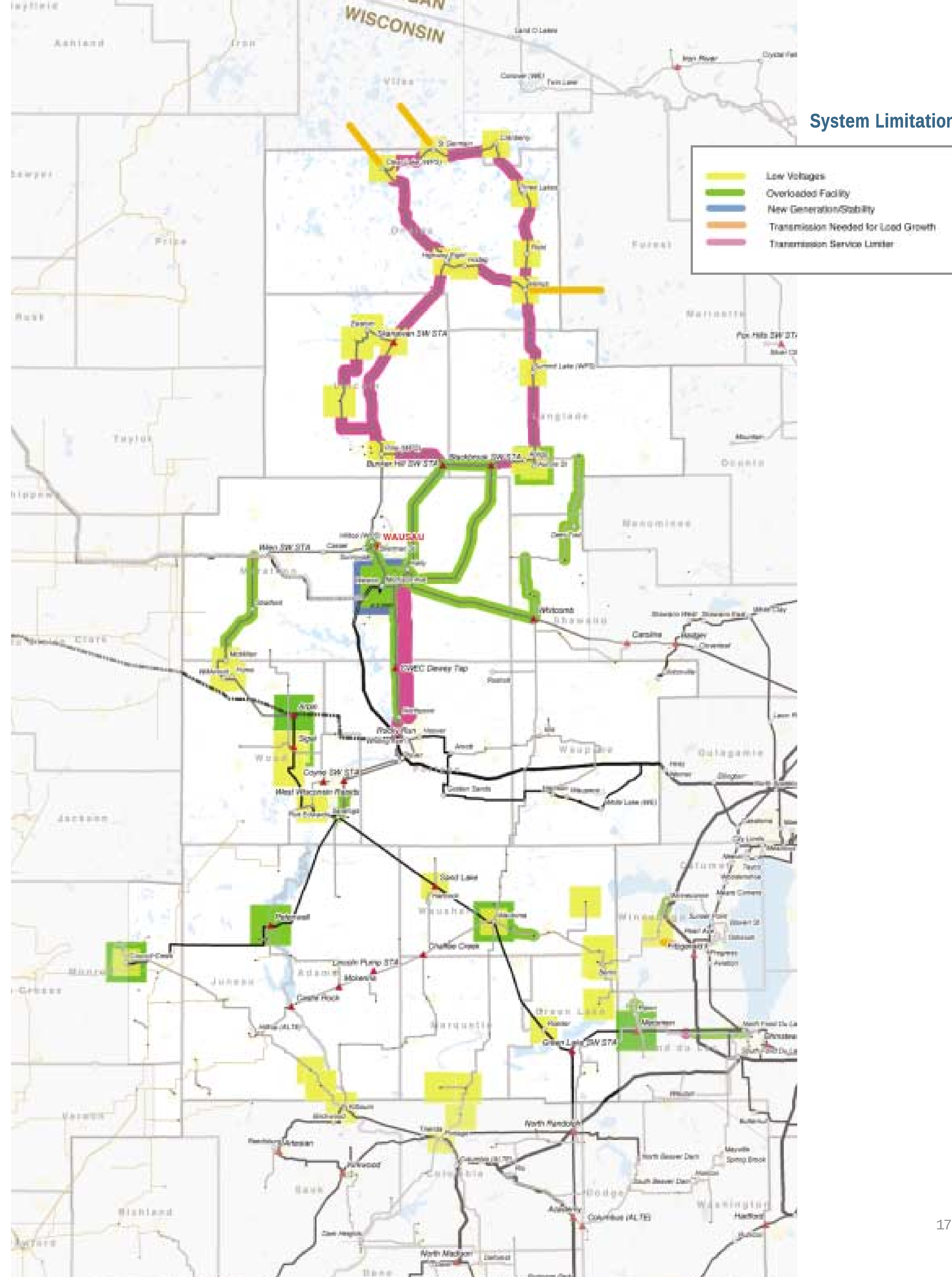
In the analysis of Zone 1 for 2005, ATC identified low voltages, transmission facility overloads and potential generator instability. In addition, when power imports from Minnesota are high, heavily loaded facilities continue to result in the system operating with very little margin.

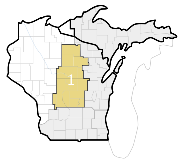
The most notable low voltages occur in the area north of Wausau toward the Michigan border (the Rhinelander Loop). The most notable facility overloads occur on 115-kV lines, also in the Rhinelander Loop. ATC is implementing a number of projects to reinforce the Rhinelander Loop. A new transmission line providing a new source to the area will be needed by 2008 and a second source will be needed beyond the 2013 timeframe.

Studies for this Assessment confirmed earlier findings that indicate the potential for generation at Weston Power Plant to become unstable if certain disturbances on the transmission system occur. The expansion of the Weston Substation to accommodate the planned Arrowhead-Weston 345-kV line will remedy this issue by 2006.

Accommodating proposed new generation 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.

System Limitations





NORTH CENTRAL WISCONSIN

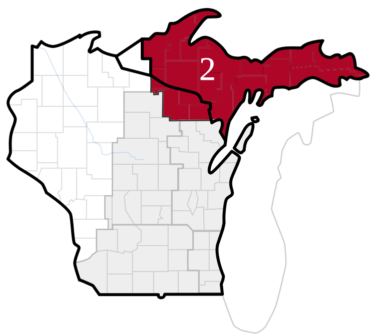
zone 1

Transmission projects in Zone 1

ATC has implemented four projects in Zone 1 since the 2003 Assessment, most notably conversion of the Pine-Eastom 46-kV line to 115 kV to improve reliability in the system north of Wausau.

ATC's current plans in Zone 1 include more than 40 projects between 2004 and 2015. 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	Skanawan-Hwy 8 115-kV line	2005	Addresses low voltages/voltage collapse in in Rhinelander Loop area
2	Expansion of Weston (Gardner Park) Substation	2006	Accommodates Arrowhead-Weston line and Weston 4 generator; addresses stability limitations for existing Weston generation and load growth
3	Arrowhead-Stone Lake-Weston 345-kV line	2006-08	Improves reliability, helps increase import capability, reduces reliance on operating guides, lowers system losses
	Proposed projects		
4	Stone Lake 345/161-kV Substation	2008	Improves operation of Arrowhead-Weston line, improves reliability in northwestern Wisconsin
5	Venus-Metonga 115-kV line	2007	Transmission-distribution interconnection
6	Weston-Sherman St.-Hilltop 115-kV line rebuild	2007	Addresses potential overloads of existing line, needed to accommodate output of Weston 4 generation
7	Cranberry-Conover 138-kV line	2008	Along with the 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
8	Gardner Park-Central Wisconsin 345-kV line	2009	Needed to deliver output of Weston 4 generation
	Provisional projects		
9	Monroe County-Council Creek 161-kV line	2009	Addresses low-voltage situation in the area, improves import capability, avoids need to reconfigure system during emergencies
10	Fitzgerald-Omro Industrial 69-kV line	2015	Improves reliability in the area



MICHIGAN'S UPPER PENINSULA AND NORTHERN WISCONSIN

zone 2

ZONE 2 INCLUDES THE COUNTIES OF:

- ALGER, MICH.
- BARAGA, MICH.
- CHIPPEWA, MICH.
- DELTA, MICH.
- DICKINSON, MICH.
- FLORENCE, WIS.
- FOREST, WIS.
- GOGEBIC, MICH. (EASTERN PORTION)
- HOUGHTON, MICH.
- IRON, MICH.
- KEWEENAW, MICH.
- LUCE, MICH.
- MACKINAC, MICH.
- MARINETTE, WIS. (NORTHERN PORTION)
- MARQUETTE, WIS.
- MENOMINEE, MICH.
- ONTONAGON, MICH. (EASTERN PORTION)
- SCHOOLCRAFT, MICH.
- VILAS, WIS.

Transmission system characteristics of Zone 2

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

- a north-south 345-kV line from near Marquette extending to the Iron Mountain 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, voltage 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.

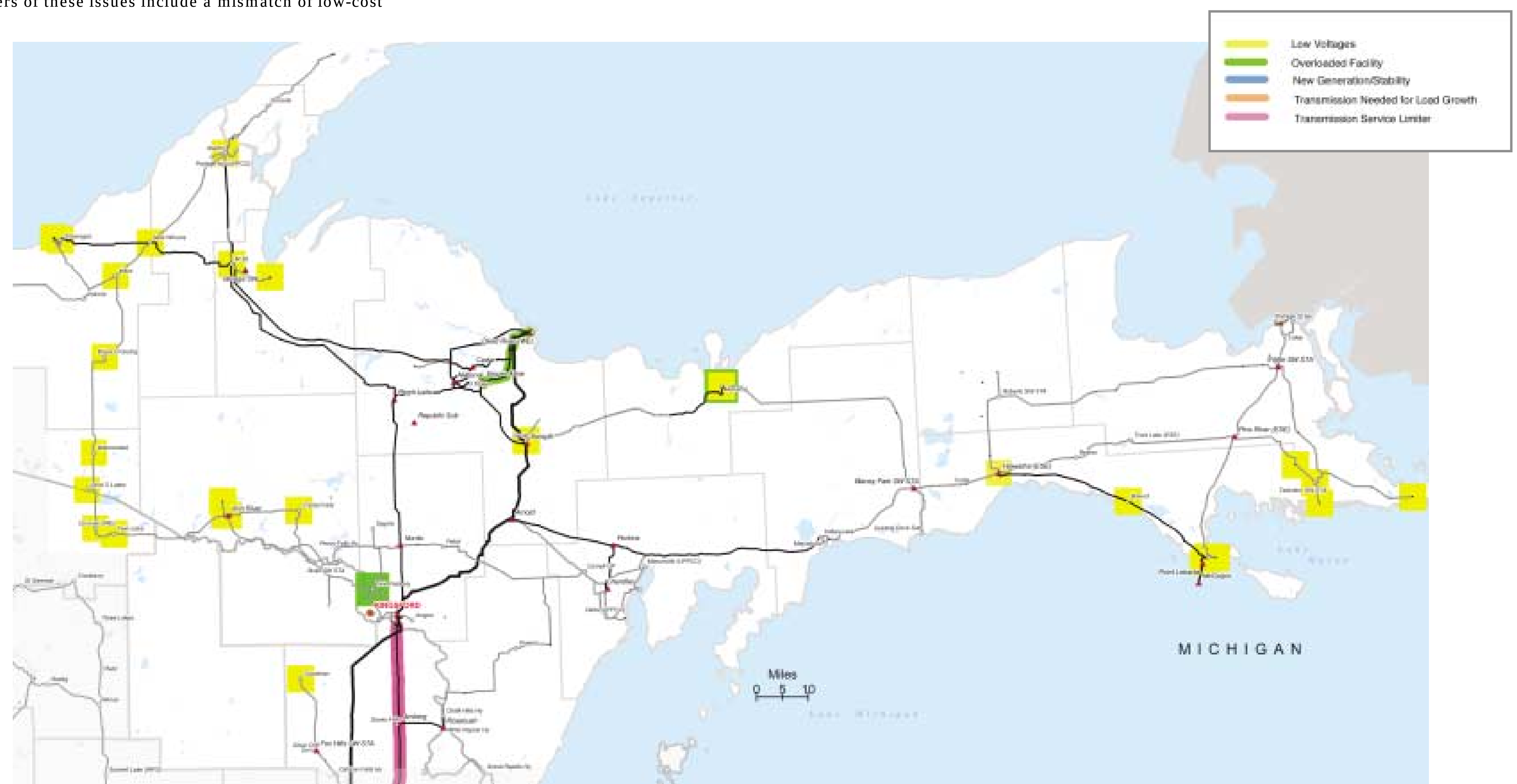
Transmission system limitations in Zone 2

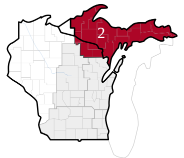
In the analysis of Zone 2 for 2005, ATC identified low voltages, transmission facility overloads and transmission service limitations. In addition, heavily loaded facilities during off-peak periods when the Ludington Pumped Storage Facility in Michigan is pumping continue to keep the system working within very small operating margins.

Areas in the western and far eastern Upper Peninsula are most vulnerable to low voltages. The most notable facilities causing transmission service limitations include the Plains-Stiles 138-kV line and the Hiawatha-Indian Lake 69-kV line. Both of these lines are being addressed in the near term with projects planned for completion in 2005-06.

The potential for generation at Presque Isle Power Plant to become unstable after certain disturbances on the transmission system has been a long-standing limitation and the reason for a remedial control scheme in place at Presque Isle. ATC is evaluating alternatives to this complex scheme.

System Limitations





MICHIGAN'S UPPER PENINSULA AND NORTHERN WISCONSIN

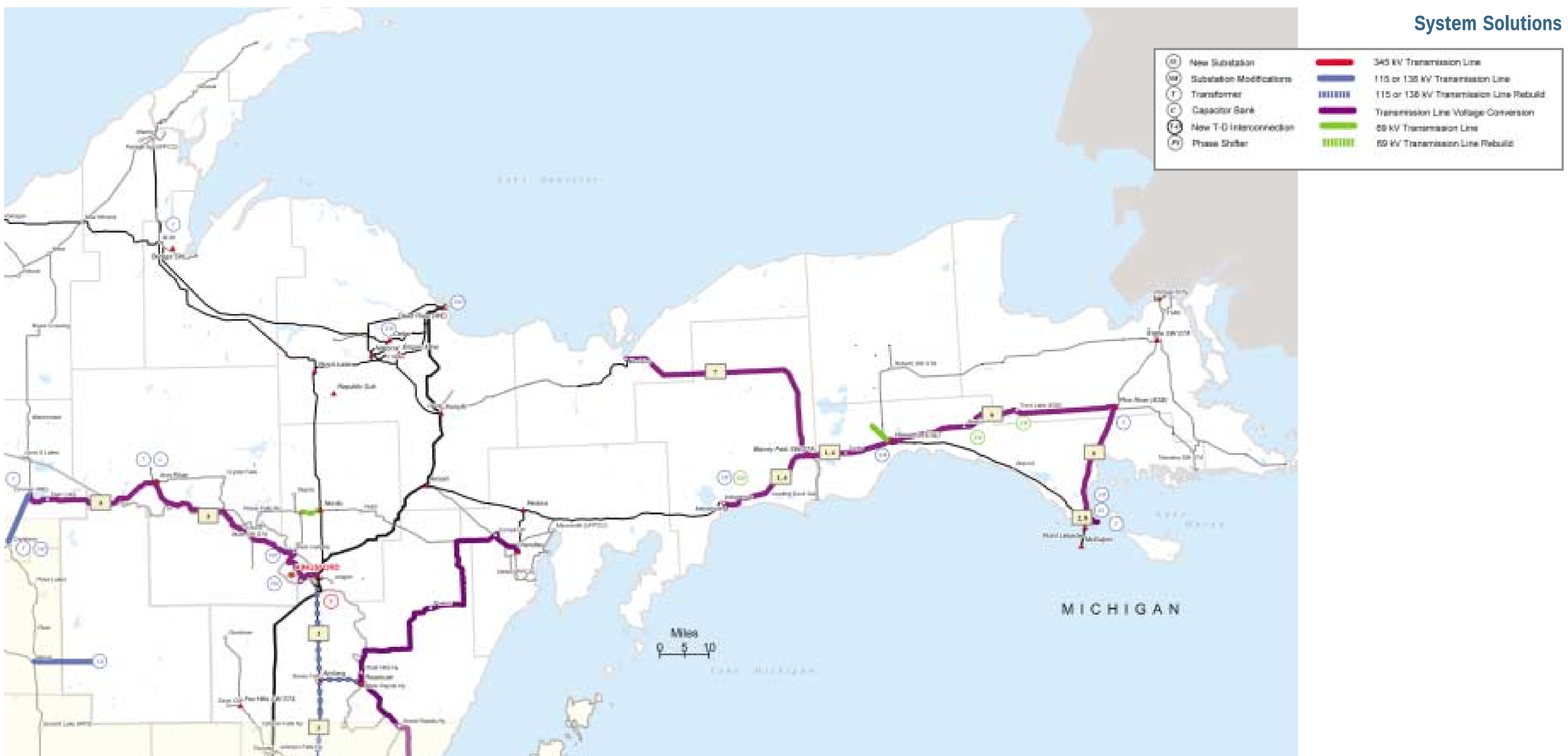
zone 2

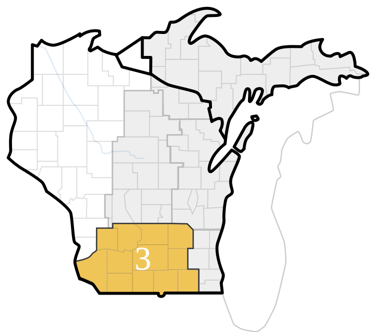
Transmission projects in Zone 2

ATC has completed four projects in Zone 2 since the 2003 Assessment, most notably uprating the Cedar-M38 138-kV line and completing the Indian Lake-Glen Jenks four-circuit transmission line.

ATC's current plans in Zone 2 include more than 30 projects between 2004 and 2013. 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, are listed at right.

	Project description	In-service year	Need driver
	Planned projects		
1	Hiawatha-Indian Lake 69-kV line rebuild	2005	Partially addresses chronic transmission service limitation, improves voltage profiles in the area, addresses line facilities in poor condition
2	Replace the existing Straits Substation	2005	Improves reliability in eastern UP, addresses substation facilities in poor condition, provides for future expansion
3	Plains-Stiles 138-kV line rebuild	2005-06	Partially addresses chronic transmission service limitation, addresses line facilities in poor condition, lowers system losses
4	String second Hiawatha-Indian Lake circuit & convert both to 138 kV	2009	Addresses chronic transmission service limitation, improves voltage profiles in the area, enhances value of another provisional project
	Proposed projects		
5	Conover-Iron River-Plains 69-kV line rebuild & conversion to 138-kV	2008	Part of Cranberry-Conover project (Zone 1) for Rhinelander Loop, improves voltage profile in the area, addresses aging facilities with condition issues
6	Hiawatha-Pine River-Straits 69-kV line rebuild & conversion to 138 kV	2009	Addresses potential overloads of existing and other lines in the area, addresses aging facilities in poor condition, improves voltage profile in the area, accommodates future expansion in the area
	Provisional projects		
7	Blaney Park-Munising 69-kV line rebuild & conversion to 138-kV	2012	Addresses low voltages in the area, improves stability of Presque Isle generation, addresses aging facilities in poor condition
8	Straits-St. Ignace 69-kV line rebuild & conversion to 138 kV	2013	Addresses aging facilities in poor condition, improves voltage profile in the area





SOUTH CENTRAL / SOUTHWEST WISCONSIN AND NORTH CENTRAL ILLINOIS

zone 3

ZONE 3 INCLUDES THE COUNTIES OF:

- COLUMBIA, WIS.
- DANE, WIS.
- DODGE, WIS.
- GRANT, WIS.
- GREEN, WIS.
- IOWA, WIS.
- LAFAYETTE, WIS.
- JEFFERSON, WIS.
- RICHLAND, WIS.
- ROCK, WIS.
- SAUK, WIS.
- WALWORTH, WIS.
- WINNEBAGO, ILL.

Transmission system characteristics in Zone 3

ATC delivers power in Zone 3 with various transmission facilities including:

- a north-south 345-kV line from Illinois extending to the Columbia Power Plant and
- 138-kV and 69-kV facilities throughout the remainder of the zone.

There are a number of transmission system performance issues in Zone 3 including voltage instability, generator instability, limited import capability, chronic transmission service limitations, overloaded lines and equipment, and low system voltages throughout the zone. Driving these issues are steady or rapid growth in certain areas, two new power plants and parallel path flows from new generation in northern Illinois.

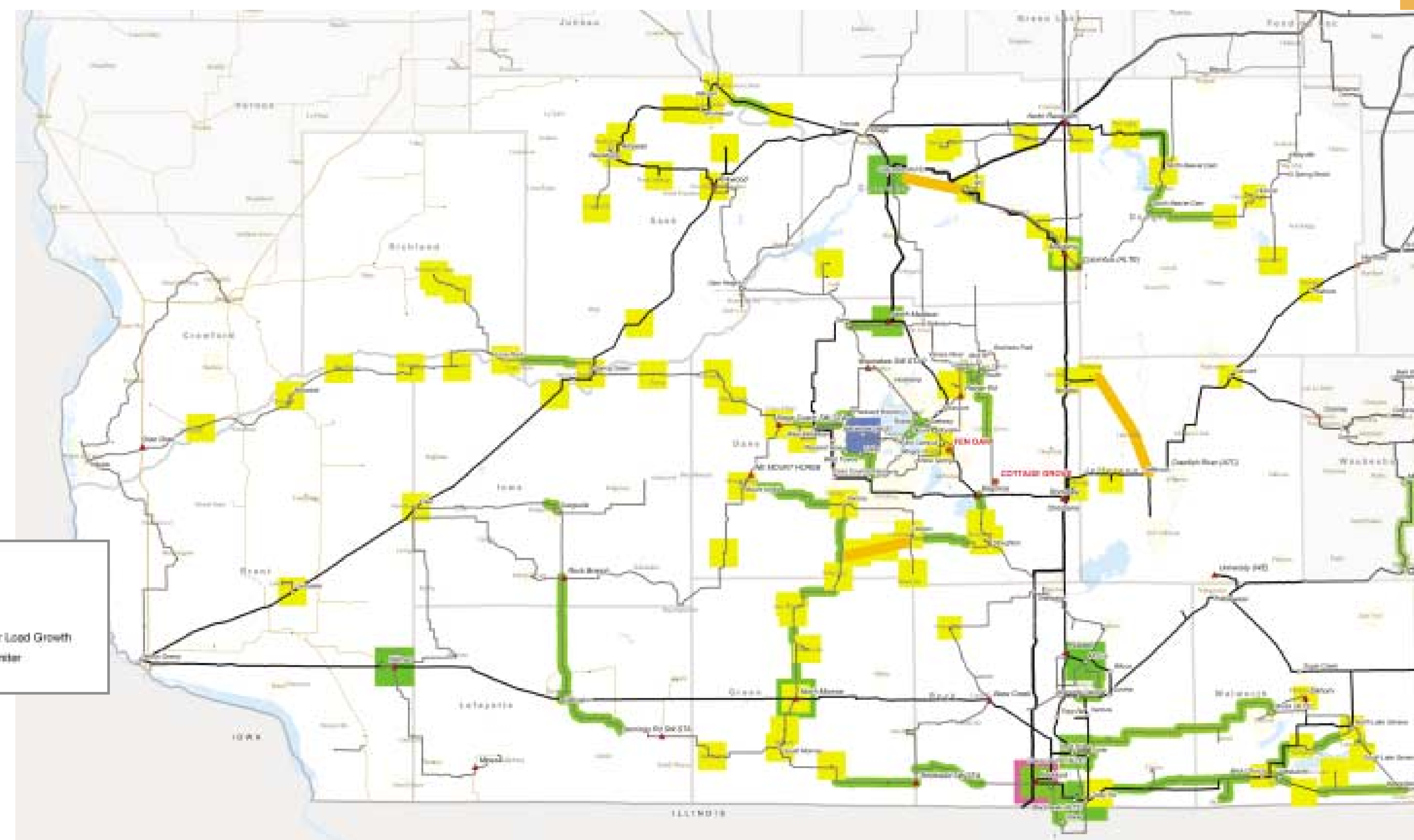
Transmission system limitations in Zone 3

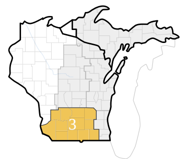
In the analysis of Zone 3 for 2005, ATC identified low voltages and transmission facility overloads. Low voltages are particularly serious in the Madison area. The potential for voltage collapse in the Madison area is emerging and will require significant transmission reinforcements within the next ten years. Facility overloads on 138-kV and 69-kV facilities throughout Zone 3 are current or emerging concerns. Load growth in Rock and Walworth counties is precipitating the need for reinforcements in those areas in the 2006-2010 timeframe. Load growth in southwestern Wisconsin will necessitate reinforcements to the transmission system in the 2009-2013 timeframe.

Changes in prevailing power flows in the region are congesting the transmission system in northeastern Iowa and the southwestern, southeastern and south-central portions of Wisconsin. This has resulted in chronic interruptions of approved transmission service and denial of numerous transmission service requests. ATC is pursuing a new 345-kV circuit to address this congestion.

In the 2003 Assessment, ATC identified generator instability at the Columbia Power Plant. This has been addressed, in part, with changes at the Columbia Substation. Further additions at the Columbia Substation to accommodate the planned Columbia-North Madison 138-kV line conversion to 345 kV will fully address this limitation.

System Limitations





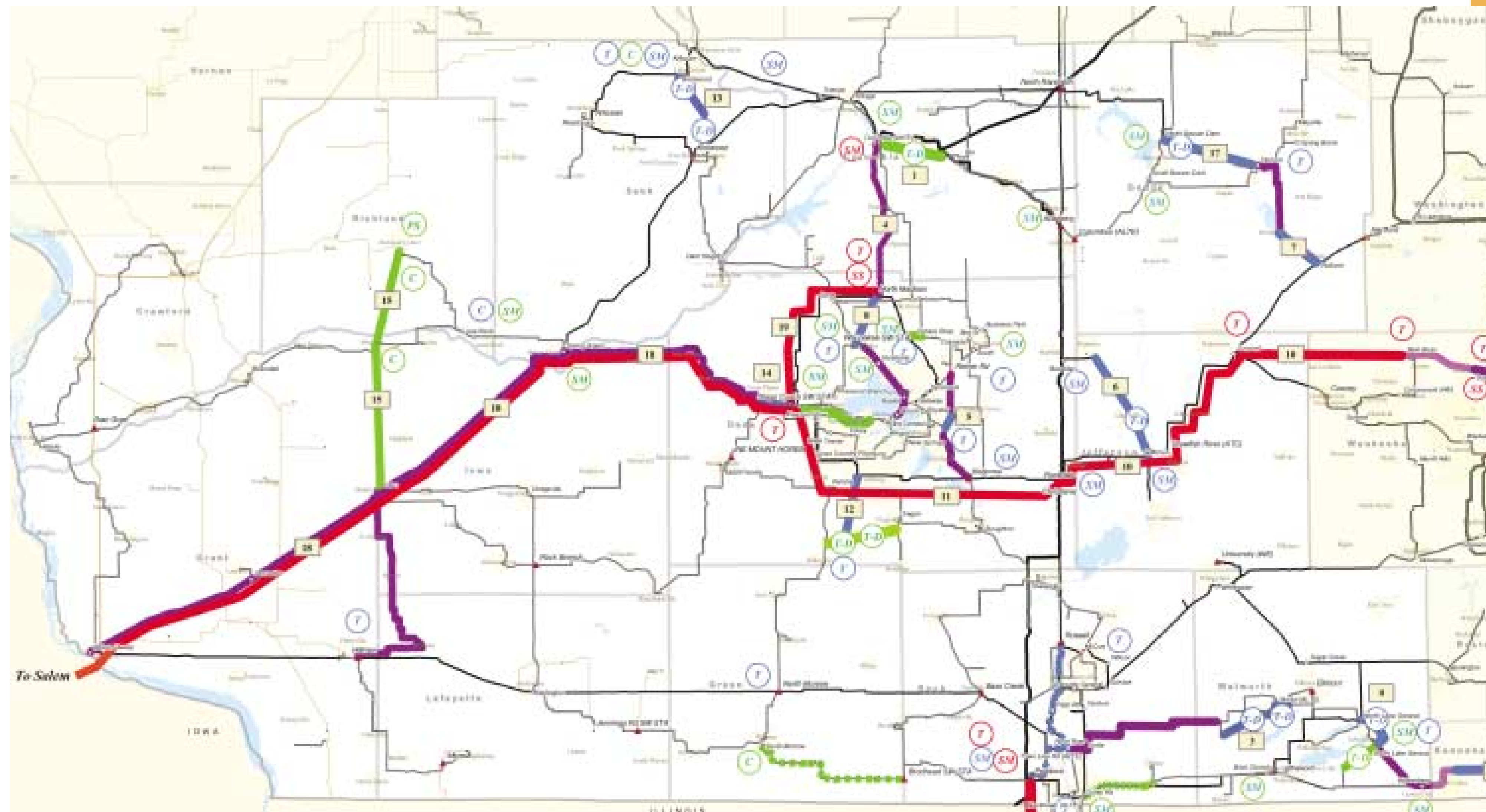
zone 3

Transmission projects in Zone 3

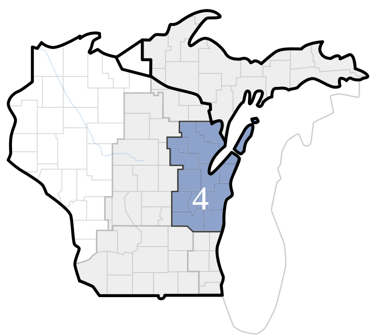
ATC has completed 21 network projects in Zone 3 since the 2003 Assessment, most notably conversion of the 69-kV lines feeding Reedsburg to 138 kV, rebuilding the Kegonsa-Femrite 69-kV line and adding an East Campus-Walnut 69-kV circuit.

ATC's current plans in Zone 3 include more than 70 projects between 2004 and 2015. These projects are in various stages of development. The most notable planned, proposed and provisional projects in Zone 3, 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	Columbia-Wyocena-Rio 69-kV line	2005	Addresses low voltages, accommodates T-D interconnection
2	Wempletown-Paddock 345-kV line	2005	Addresses chronic transfer capability limitations, improves transfer capability
3	Turtle-West Darien-Southwest Delavan-Delavan/Bristol 138-kV	2006	Addresses low voltages, accommodates T-D interconnection
4	Convert Columbia-North Madison 138-kV line to 345 kV	2006	Addresses low voltages, accommodates transmission service request
5	Sprecher-Femrite 138-kV line	2007	Addresses low voltages, accommodates transmission service request
	Proposed projects		
6	Jefferson-Stony Brook 138-kV line	2007	Addresses low voltages and overloaded facilities
7	Rubicon-Hustisford-Horicon 138-kV line	2008	Addresses low voltages
8	North Madison-Waunakee 138-kV line	2008	Addresses low voltages; averts voltage collapse
9	North Lake Geneva-South Lake Geneva 138-kV line	2008	Addresses low voltages
10	Rockdale-Concord-Bark River 345-kV line	2009	Addresses low voltages, averts voltage collapse, improves west-east transfer capability, lowers system losses
11	Rockdale-West Middleton 345-kV line	2011	Averts voltage collapse, addresses low voltages, improves transfer capability to Madison area, lowers system losses
	Provisional projects		
12	Montrose-Southeast Fitchburg 138-kV line	2010	Improves area voltages, addresses overloads and accommodates T-D interconnection
13	Lake Delton-Birchwood 138-kV line	2011	Improves area voltages, improves reliability for Lake Delton load
14	West Middleton-Stagecoach double-circuit 138/69-kV line	2012	Addresses low voltages and overloads
15	Eden-Muscoda-Richland Center 69-kV line	2012	Addresses low voltages
16	Twin Lakes-Spring Valley 138-kV line	2012	Addresses low voltages, improves reliability for area loads
17	Horicon-East Beaver Dam 138-kV line	2012	Addresses low voltages
18	Salem-Spring Green-West Middleton 345-kV	2014	Representative Access project; improves transfer capability, improves line system voltages in southwest Wisconsin, lowers system losses
19	North Madison-West Middleton 345-kV line	2014	Averts voltage collapse, addresses low voltages in the Madison area, lowers system losses, improves stability at Columbia Power Plant, improves transfer capability to Madison area



System Solutions



NORTHEAST WISCONSIN

zone 4

ZONE 4 INCLUDES THE COUNTIES OF:

- BROWN, WIS.
- CALUMET, WIS.
- DOOR, WIS.
- FOND DU LAC, WIS.
- MANITOWOC, WIS.
- MARINETTE, WIS. (SOUTHERN PORTION)
- MENOMINEE, WIS.
- OCONTO, WIS.
- OUTAGAMIE, WIS.
- KEWAUNEE, WIS.
- SHAWANO, WIS. (EASTERN PORTION)
- SHEBOYGAN, WIS.
- WINNEBAGO, WIS.

Transmission system characteristics of Zone 4

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

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

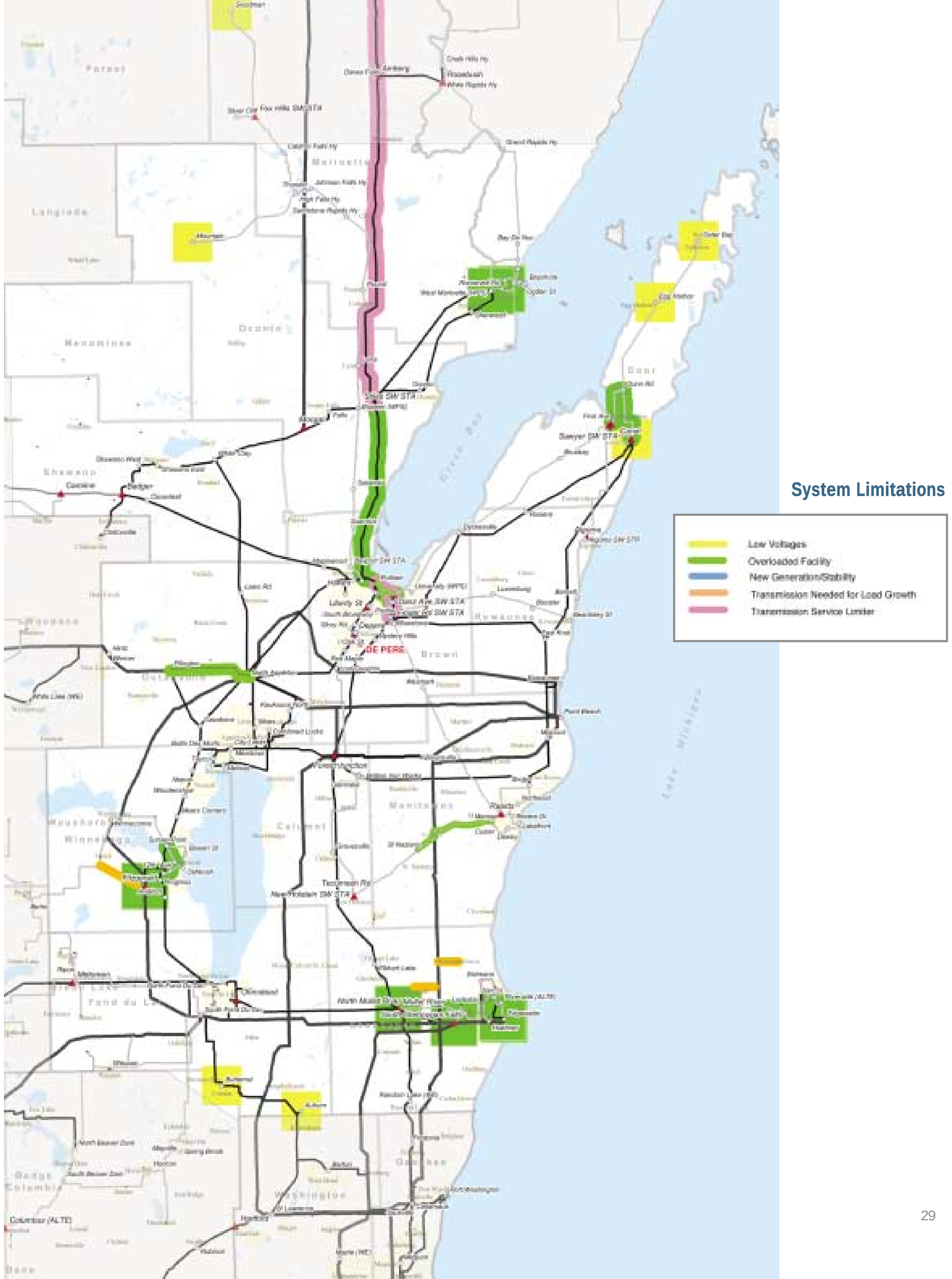
There are a number of transmission system performance issues in Zone 4, most notably insufficient transformer capability, limited transfer capability to and from Michigan's Upper Peninsula, the stability response of the Kewaunee and Point Beach nuclear plants, aging facilities in poor condition and heavily loaded facilities in the 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.

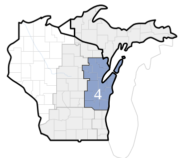
Transmission system limitations in Zone 4

In the analysis of Zone 4 for 2005, ATC 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 within very small operating margins.

The areas identified as vulnerable to low voltages are west of Appleton, Door County and Peshtigo. Most notable of the transmission service limitations are the Plains-Stiles 138-kV line and the Hiawatha-Indian Lake 69-kV line. Both of these lines are being addressed in the near term with projects planned to be completed in 2005-06.

The potential for generation at Kewaunee and Point Beach nuclear plants to become 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.





NORTHEAST WISCONSIN

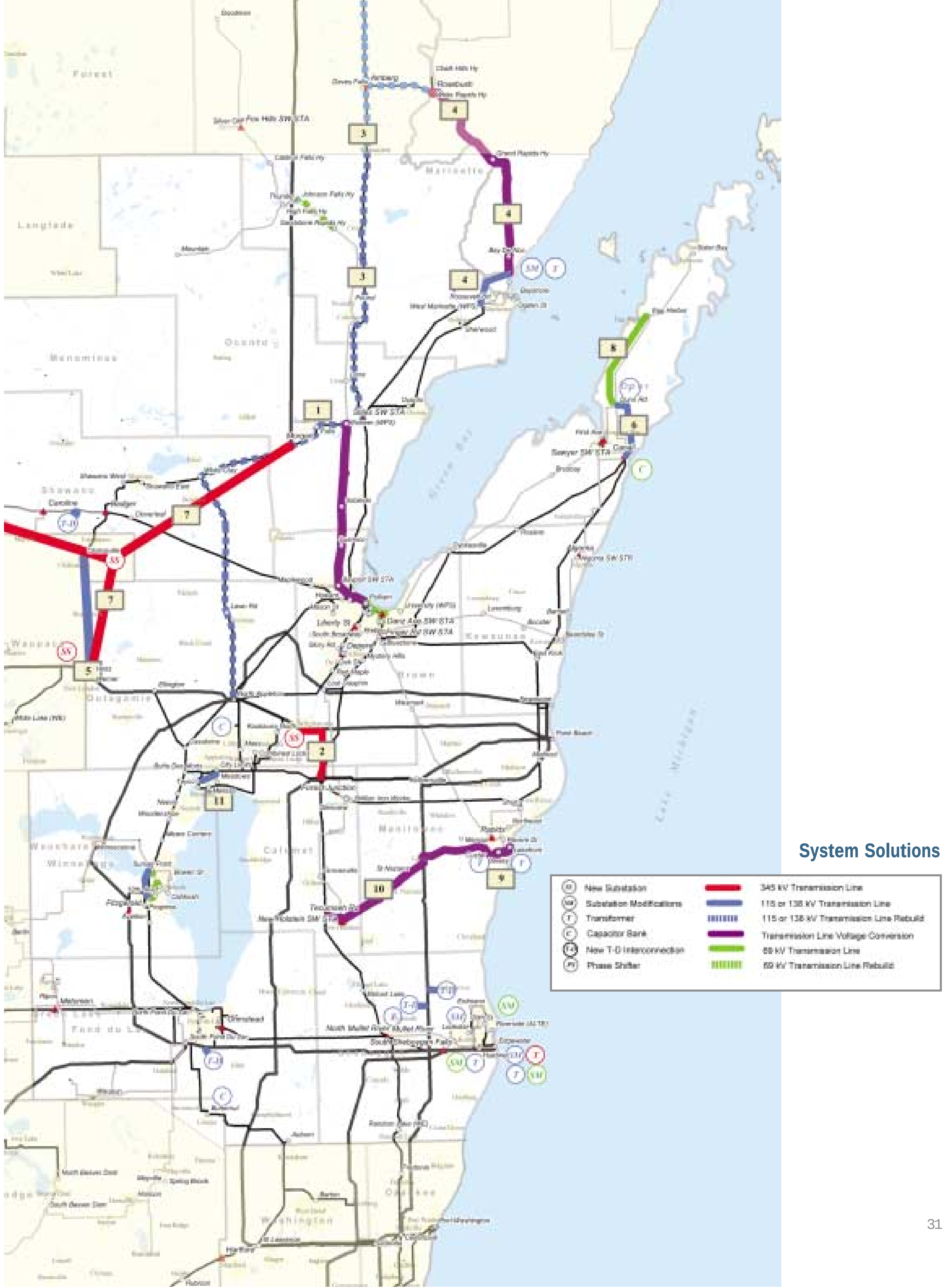
zone 4

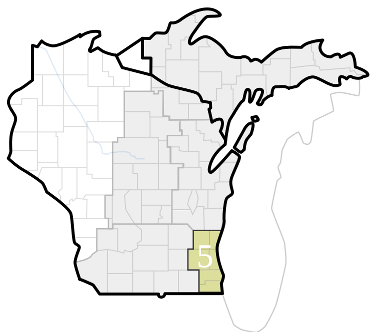
Transmission projects in Zone 4

ATC has completed two network projects in Zone 4 since the 2003 Assessment: adding equipment at the Edgewater substation and rebuilding the Pulliam-Bayport 69-kV line to double circuit 138/69 kV.

ATC's current plans in Zone 4 include more than 40 projects between 2004 and 2013. 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	Morgan-Falls-Pioneer-Stiles 138-kV line rebuild	2005	Addresses chronic transmission service limitation, addresses aging facility condition
2	Fox Energy (Kaukauna)-Forest Junction 345-kV line	2005	Interconnection of new Fox Energy Power Plant
3	Plains-Amberg-Crivitz-Stiles 138-kV line rebuild	2005-06	Addresses chronic transmission service limitation, improves voltage stability limit in the UP, addresses aging facility in poor condition
4	Amberg-West Marinette 69-kV rebuild & conversion to 138 kV	2005	Facilitates rebuild of Amberg-Stiles line, addresses aging facility line condition, accommodates potential load additions north of Marinette
	Proposed projects		
5	Werner West (New London) 345/138-kV substation,	2006	Addresses chronic transmission service limitation and facility overloads, and improves system voltages in the area
6	Canal (Sturgeon Bay)-Dunn Road 138-kV line	2007	Addresses low voltages and facility overloads
7	Werner West-Morgan 345-kV line	2009	Addresses chronic transmission service limitations in Green Bay, improves Wisconsin-UP transfer capability, lowers system losses
8	Dunn Road-Egg Harbor 69-kV line	2011	Addresses low voltages and provides network service
	Provisional projects		
9	New Holstein-Lakefront (Manitowoc) 69-kV line rebuild & conversion to 138 kV	2010	Addresses facility overload and improves transfer capability to Manitowoc area
10	Tecumseh Road-New Holstein 69-kV line rebuild & conversion to 138 kV	2010	Addresses facility overload and improves transfer capability to Manitowoc area
11	Northside-City Limits (Menasha) 138-kV line	2014	Addresses facility overloads and low voltages





SOUTHEAST WISCONSIN

zone 5

ZONE 5 INCLUDES THE COUNTIES OF:

- KENOSHA, WIS.
- MILWAUKEE, WIS.
- OZAUKEE, WIS.
- RACINE, WIS.
- WASHINGTON, WIS.
- WAUKESHA, WIS.

Transmission system characteristics of Zone 5

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

- north-south 345-kV lines extending from the Edgewater and Point Beach power plants,
- 345-kV lines from Pleasant Prairie Power Plant,
- 345-kV, 230-kV and 138-kV lines from 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 outpace the capabilities of the existing 138-kV system in those areas, signaling the need for transmission system reinforcements.

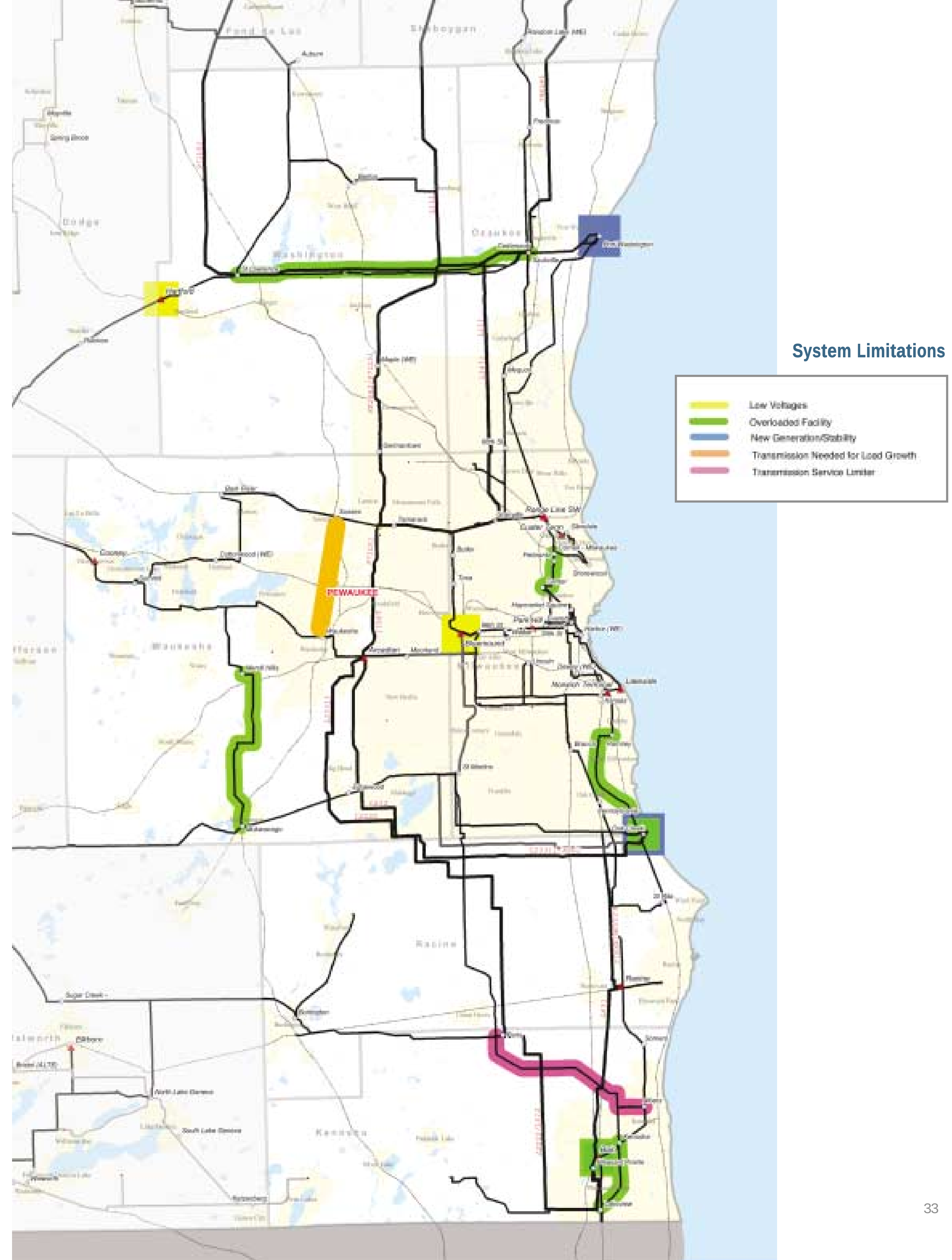
Transmission system limitations in Zone 5

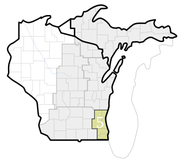
In the analysis of Zone 5 for 2005, ATC identified low voltages, transmission facility overloads and transmission service limitations. In addition, chronic transmission service limitations within Zone 5 need to be addressed.

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 are caused by outages at substations. ATC is evaluating alternatives to address these issues. The low-voltage situation west of Milwaukee is an indication that load growth is outpacing 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.

The most chronic transmission service limitations in Zone 5 are caused by the loss of the Wempletown-Paddock 345-kV line. ATC is planning to add a second Wempletown-Paddock line (see Zone 3 section) in 2005 to address these limitations.





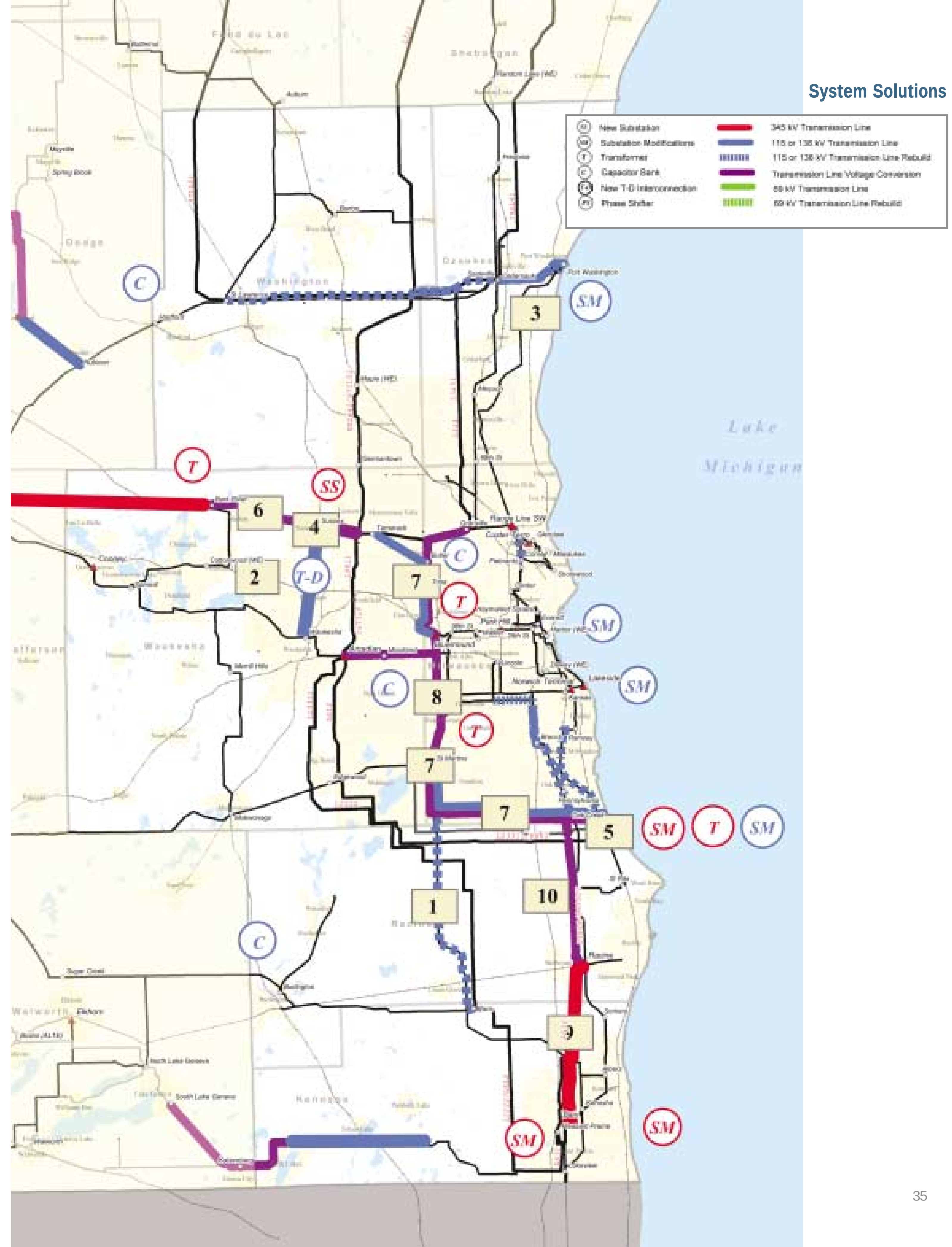
SOUTHEAST WISCONSIN

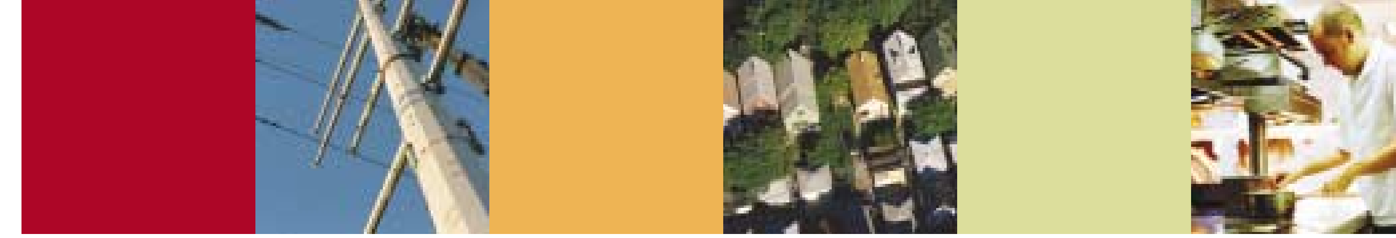
zone 5

Transmission projects in Zone 5

ATC's current plans in Zone 5 include more than 40 projects between 2004 and 2014, 14 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	Paris-St. Martins 138-kV line rebuild	2005	Addresses chronic transmission service limitation, addresses aging facility in poor condition
2	Waukesha-Duplainville-Sussex 138-kV line	2005	Accommodates new T-D interconnection
3	Port Washington-Saukville 138-kV line rebuilds	2005	Accommodates new generation at Port Washington Power Plant
	Proposed projects		
4	Lannon Junction 345/138-kV substation	2007	Improves system voltages in the area, reduces reliance on peaking generation
5	Expand 345/230/138-kV substation at Oak Creek	2009	Accommodates new generation at Oak Creek Power Plant
6	Convert Lannon Junction-Bark River 138-kV line to 345 kV	2009	Addresses low voltages, averts voltage collapse, reduces reliance on peaking generation, lowers system losses
7	Oak Creek-Brookdale-Granville 345-kV line	2010	Accommodates new generation at Oak Creek Power Plant
8	Expand Brookdale Substation	2010	Accommodates new generation at Oak Creek Power Plant
	Provisional projects		
9	Add a second Bain-Racine 345-kV circuit	2012	Addresses overloads, averts voltage collapse, improves stability response at Pleasant Prairie and Oak Creek power plants
10	Oak Creek-Racine 345-kV line	2014	Accommodates future generation at Oak Creek Power Plant





Glossary of terms

Access The contracted right to use an electrical system to transfer electrical energy.

Adequacy The ability of the electrical system to supply the aggregate electrical demand and energy requirements of the customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.

Capacitor banks System elements that support the voltages necessary to provide reliable service to customers.

Capacity The electrical load-carrying ability, expressed in megawatts (MW) of generation, transmission or other electrical equipment.

Contingency Outage of a transmission line, generator or other piece of equipment, which affects the flow of power on the transmission network and impacts other network elements.

Demand The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts (kW) or megawatts (MW), at a given instant or averaged over any designated interval of time.

Distribution An interconnected group of lines and associated equipment for the delivery of low-voltage energy between the transmission network and end users.

FERC Federal Energy Regulatory Commission; an independent agency that regulates the interstate transmission of natural gas, oil and electricity.

Generation The process of producing electricity from other forms of energy (fuel); also, the amount of electric energy produced, usually expressed in kilowatt hours (kwh) or megawatt hours (mwh).

Heavy loads High volume of electricity flowing on a line, transformer or other equipment to meet high demand.

Import/export Ability of the transmission system to bring power into or out of an area in order to serve load.

Line rebuild Removing an existing line and replacing it with a new, higher capacity line.

Line reconductor Removing the conductors (wires) from an existing transmission line and replacing them with higher capacity conductors.

Load All the devices that consume electricity and make up the total demand for power at any given moment, like factories, businesses, schools, homes, etc.

Loading relief A system reinforcement or operating action that results in lower power flows on equipment that is heavily loaded or overloaded.

Low voltages A situation that can occur in parts of the system that are heavily loaded or have high motor loads. Think of a clothesline pulled taut with nothing hanging on it, but which then tends to sag when more and more clothes (i.e. loads or motors) are attached. Low voltages negatively impact ability to serve loads reliably.

kV Kilovolt; equal to 1,000 volts.

MAIN Mid America Interconnected Network; one of the nine NERC Regional Reliability Councils.

Margin The difference between (1) generation resources and electric demand or (2) the difference between the capacity of a transmission line and the power flowing on that line. Margin is usually expressed in megawatts (MW).

MISO Midwest Independent System Operator; a not-for-profit Transmission System Operator that serves the electrical transmission needs of much of the Midwest.

MW Megawatt; equal to 1 million watts.

NERC North American Electric Reliability Council; a not-for-profit company formed by the electric utility industry in 1968 to promote the reliability of the electricity supply in North America. NERC consists of nine Regional Reliability Councils and one Affiliate whose members account for virtually all the electricity supplied in the United States, Canada and a portion of Mexico.

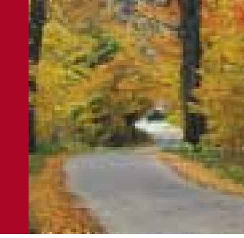
Network A system of interconnected lines and electrical equipment.

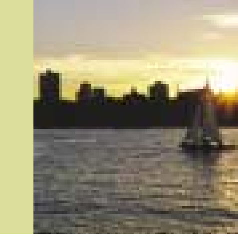
OASIS Open Access Same Time Information System; an electronic posting system for transmission access data that allows all transmission customers to view the data and request transmission service simultaneously.

Off-peak Those hours or other periods defined by contract or other agreements or guides as periods of lower electrical demand; generally nights and weekends.

On-peak Those hours or other periods defined by contract or other agreements or guides as periods of higher electrical demand; generally weekdays.

Operating guides Procedures carried out by transmission system operators when certain events occur on the system that may compromise system reliability if no action is taken.





Outage The unavailability of electrical equipment; could be planned or unplanned.

Overloads Occur when power flowing through wires or equipment is more than they can carry without incurring damage.

Parallel path flows When electricity flows from a power plant over the transmission system, it obeys the laws of physics and flows over the paths of least resistance. Though there may be direct connection between a power plant and a particular load area, some of the power will instead flow over other network lines parallel to the direct connection.

Planning The process by which the performance of the electric system is evaluated and future changes and additions or enhancements to the bulk electric systems are determined.

Power flows Electricity moving through lines or other equipment.

Reliable Meets standard industry and specific ATC system performance criteria.

Reliability The degree of performance of the elements of the bulk electric system that results in electricity being delivered to customers within accepted standards and in the amount desired.

Reserve The difference between an electric system's capability and the expected peak demand for electricity.

Security The ability of the electric system to withstand sudden disturbances such as unanticipated loss of system elements.

Serve load Reliably deliver the amounts of electricity needed to match what consumers would like to use at any given time.

Shed load Reduce the level of power flowing by disconnecting load from the network in order to prevent major equipment damage or widespread outages. This is usually a last resort emergency action.

Single contingency The sudden, unexpected failure or outage of a system facility(s) or element(s) (generating unit, transmission line, transformer, etc.). Elements removed from service as part of the operation of a remedial action scheme are considered part of a single contingency.

Stability The ability of an electric system to maintain a state of equilibrium during normal and abnormal system conditions or disturbances.

Substation Place where transmission lines connect to each other and where protective equipment like circuit breakers are located. Also where transformers are located to step the voltage up or down in order to put power into or take power out of the transmission network.

T-D interconnection Transmission to distribution interconnection; place where distribution substations connect to the transmission system.

Thermal rating The maximum amount of electrical current that a transmission line or electrical facility can carry over a specified time period before it sustains permanent damage by overheating or before it violates public safety requirements.

Thermal overloads Power flows on lines or equipment that exceed their capacity limits.

Transfer capability The measure of the ability of interconnected electric systems to move or transfer power in a reliable manner from one area to another over all transmission lines between those areas under specified system conditions.

Transformers Devices that change voltage levels.

Transmission An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.

Transmission loading relief (TLR) A procedure used to limit power flows on lines or equipment when they could overload if an outage of another system element occurred. The result is an interruption of specific power transactions that contribute to the power flow on the affected line or equipment.

Uprates Allows the transmission system element to carry more electricity than it currently can. This can include increasing line clearances or replacing limiting pieces of equipment to enable the safe carrying of more power.

Voltage collapse Can occur after a contingency where the voltage dips low enough and cannot recover quickly enough. In this situation protective equipment will automatically disconnect lines and/or transformers, causing load to be shed.

Voltage stability System is able to maintain the proper voltages needed to serve load.

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