10-Year Transmission System Assessment

Summary Report

September 2003

AMERICAN TRANSMISSION COMPANY®
THE ENERGY ACCESS COMPANY

American Transmission Company

Providing the pathway for power

There is a common thread running through homes, offices, manufacturing plants, farms, hospitals, schools and public services. It's electricity. Electricity enables us to live our lives comfortably and conduct our business efficiently.

As our quality of life improves, the need for electricity grows. So does the need for a safe, reliable and growing transmission system to supply our growing need for electricity. Transmission provides the pathway for power between those who create power and local distribution companies that distribute it for use in homes and businesses (see graphic on p. 3).

Everything we do at American Transmission Company is designed to ensure and improve the reliability of electric transmission. Formed in 2001, ATC is a transmission-only utility that owns, operates, monitors and maintains more than 8,900 miles of electric transmission line and approximately 450 substations in portions of Wisconsin, Upper Michigan and Illinois. With electric usage growing 2-3 percent annually in much of our service area, the current transmission system is increasingly limited in its ability to move power to satisfy this growing electric demand.

As a public utility, ATC has a duty and responsibility to operate, maintain, plan and expand the transmission system to adequately and reliably meet the needs of all users dependent upon it.
Our priorities are to:

- Serve the needs of our customers and communities with expertise,
- Conduct our business fairly and honestly, and
- Solicit a diversity of opinions to achieve better business results.

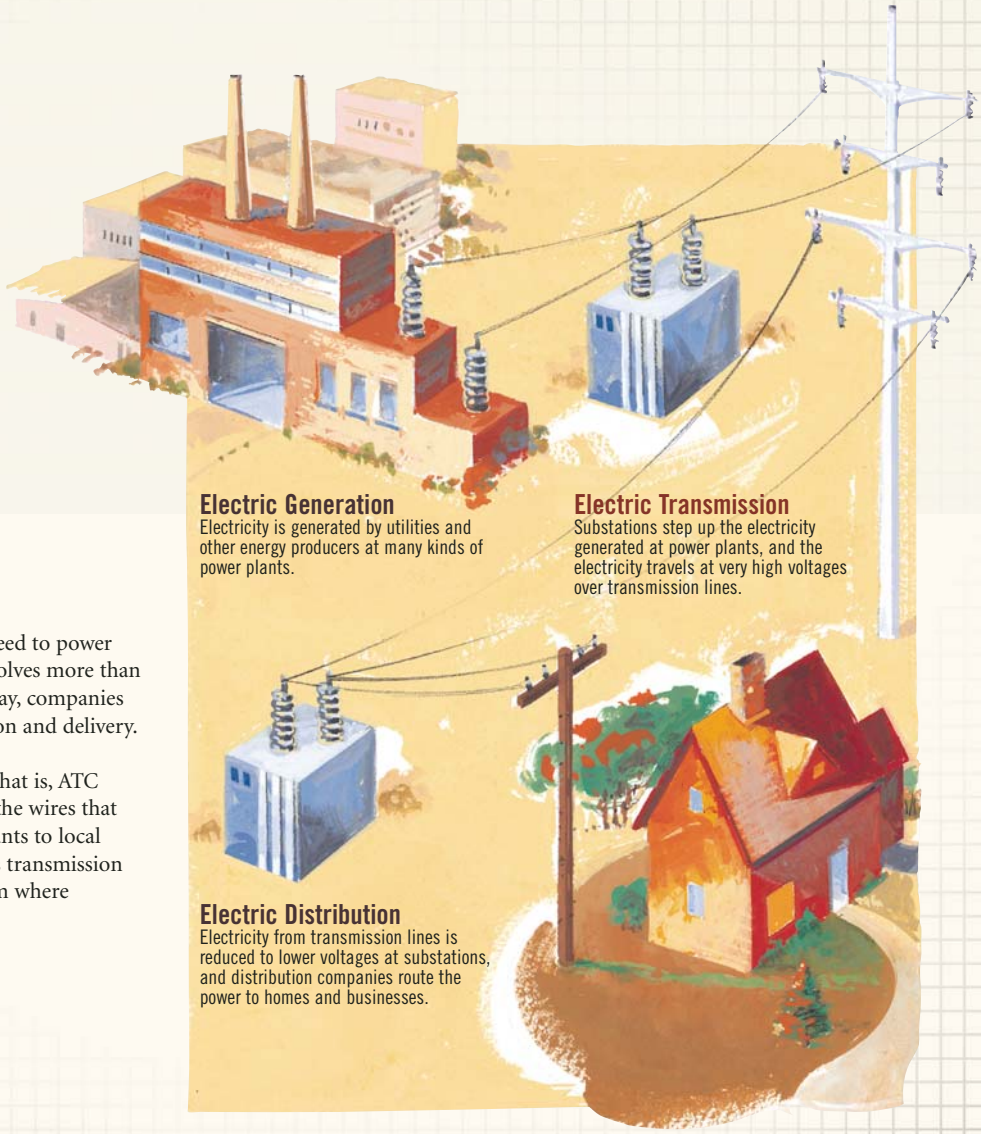
With expertise

Our customers depend on us to deliver power where and when it's needed. Communities count on us to have the infrastructure in place to meet the electric needs of their residents and businesses, and to support economic growth initiatives. Since providing transmission service is all we do, the expectation is that we do it well. Our system operators expertly monitor and manage the electric system around the clock, while our transmission planners continually evaluate future electric needs and make recommendations for improving the reliability and adequacy of the system for our customers and communities.

Understanding electric transmission

Ensuring that people have the electricity they need to power the essentials in their homes and businesses involves more than just your local electric company these days. Today, companies specialize in various aspects of energy production and delivery.

ATC's role is exclusively electric transmission. That is, ATC owns, operates, plans, monitors and maintains the wires that carry electricity at high voltages from power plants to local utility companies. As the illustration shows, this transmission equipment provides the pathway for power from where electricity is generated to where it is used.



With honesty

Where there is a need, ATC builds transmission infrastructure that is safe and environmentally sound. We are fair and honest with the landowners and communities impacted by our facilities – balancing their concerns with the need to keep the lights on for millions of people.

With your input

Throughout it all, we make an extra effort to be inclusive – to share our proposals openly and invite a broad spectrum of interested individuals in their review. This 10-Year Transmission System Assessment illustrates our commitment. In it, we share our proposals for strengthening the transmission system to meet anticipated energy delivery needs. We recognize our proposals potentially impact many communities, and appropriately, we welcome public input so that the ultimate solutions are mutually beneficial.

The development of this third annual assessment reflects feedback we've received in past years. We strived to make it user-friendly. In doing so, we have organized our findings and project proposals so readers can easily find information related to specific areas – as well as information about ATC and how our planning process works.

For more detailed information than what's presented in this Summary Report, please refer to our Full Report, which can be accessed on our Web site at: **www.atcllc.com**.

If you have questions or comments, please be sure to let us know. There is feedback information on the final page of this booklet. ■

ATC
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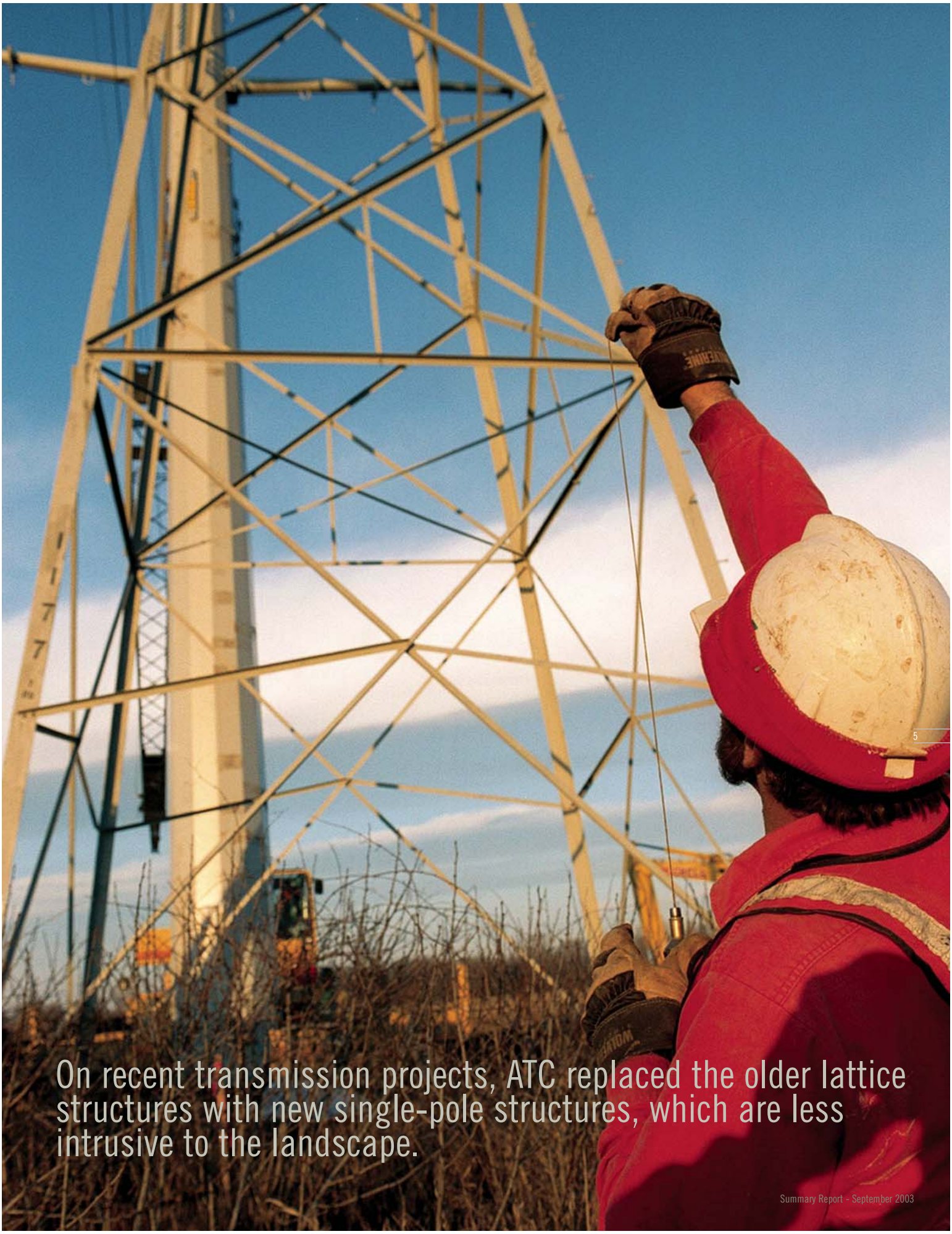


On recent transmission projects, ATC replaced the older lattice structures with new single-pole structures, which are less intrusive to the landscape.

Understanding transmission today

Our duty and responsibility

ATC takes very seriously its public utility duty and responsibility to plan, construct, operate, monitor and maintain the critical energy infrastructure in the states we serve. ATC's duty and responsibility is to ensure that the electric transmission system is adequate to meet the needs of its customers for safe, reliable and economic power delivery service, and to meet those needs while balancing societal and environmental concerns. In order to achieve this, we adhere to a public planning process where we continually evaluate and analyze system performance, identify needs and problems, develop possible solutions, inform stakeholders of our findings, seek input, discuss options, tailor projects to mitigate identified impacts, and strive to license and construct needed projects on time.

Accordingly, we are making you aware of transmission system issues via this report as we continue to invest substantially in improving the transmission system infrastructure. We want to work with people to plan and implement transmission improvements in a reasonable way so we can continue to provide the reliable energy delivery service that benefits everyone.

Protecting the environment

One of the most important considerations we apply in our planning decisions is environmental protection. In all aspects of our business, ATC seeks to demonstrate a commitment to environmental sustainability by:

- Applying best practices, cost-effective technologies and, where appropriate, environmental mitigation and enhancement to reduce environmental impacts associated with construction and maintenance of transmission facilities.
- Developing and implementing an environmental appraisal process that ensures ATC's ability to meet its environmental goals.
- Involving employees in environmental stewardship.
- Providing employees with education and training to be effective environmental stewards.
- Addressing transmission-related environmental issues with regulators and other stakeholders through partnerships and collaborative working relationships.
- Complying with all applicable laws, regulations and orders.

Public planning process

The transmission system is part of the nation's overall electrical infrastructure. Transmission moves electricity from power plants, where it is produced, to local utility distribution systems, where it is delivered to electricity users. Each electrical system element is connected to the others via a network of wires, and each element therefore has an impact on all the others. How much and where electricity is put into or taken out of the transmission system impacts the need for reinforcement and expansion to reliably provide new and maintain existing service.

The transmission planning process has a series of detailed technical analyses as its core. ATC assesses the needs of its existing and potential system users on an individual and collective basis, according to accepted industry system performance criteria and practices, in order to determine the best transmission projects responsive to those needs. We look at individual issues or customer requests on a case-by-case basis, and then incorporate those into broader ATC Planning Zone and overall ATC system analyses. We then work closely with the Midwest Independent System Operator to coordinate our infrastructure planning efforts with those occurring on a regional and national basis. Additional information on the regional-level transmission planning may be found in the Transmission Expansion Plan issued by MISO at www.midwestiso.org. As a member of MISO, ATC's plans, as discussed in our assessments, are incorporated into the MISO regional plan.

ATC's transmission assessment process complies with regional and national guidelines for reliable operation of the transmission system, development of transmission system models for future years and seasons, and exchange of information related to these issues. For ATC, these guidelines are established at the regional level by the Mid America Interconnected Network Regional Reliability Council, and at the national level by the North American Electric Reliability Council.

ATC's analyses also consider the needs and impacts of neighboring utilities. As part of a larger transmission system that is interconnected and interdependent, ATC has periodic planning discussions with neighboring transmission utilities to develop joint evaluations of common system needs, constraints and alternative solutions, where appropriate.

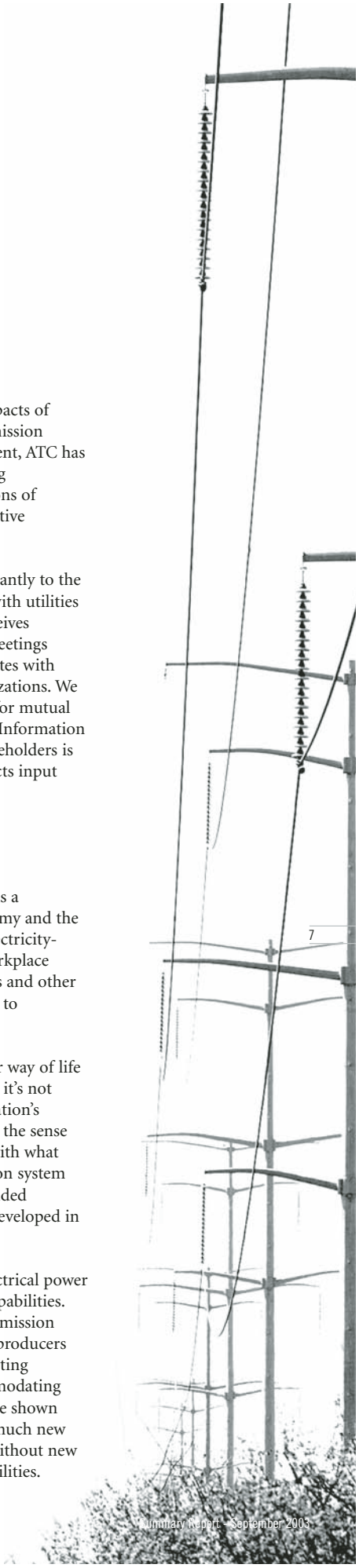
Participation and coordination extends importantly to the public as well. In addition to working closely with utilities and others in the industry, ATC shares and receives information at various public and customer meetings throughout the year, and regularly communicates with governmental agencies and community organizations. We believe the more information that is available for mutual planning efforts, the better the ultimate plans. Information from our interactions with customers and stakeholders is given full consideration. Our 2003 report reflects input received from these audiences.

System limitations

A sound and reliable electricity infrastructure is a fundamental underpinning of a region's economy and the daily life of its citizens. Consider how many electricity-powered devices you have in your home or workplace now, or how many new homes, office buildings and other developments are in your town now compared to 25 years ago.

A reliable supply of electricity is so basic to our way of life today that we only tend to think about it when it's not there. The excellent past performance of the nation's electrical system and its operators have created the sense that we can continue to progress indefinitely with what we have now. However, the existing transmission system was not built to accommodate the vastly expanded amounts and types of energy flows that have developed in recent years.

ATC planning studies consistently show an electrical power delivery system operating at the limits of its capabilities. 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 it generally is not possible to provide for much new usage, or continue to support existing usage, without new and/or significantly upgraded transmission facilities.



Transmission benefits to society

As part of the electric infrastructure, transmission supports two key benefits to society – reliability and economy of electric supply. These two benefits are tightly intertwined. Fundamentally, transmission connects power producers to power consumers. Without transmission, every consumer would have to generate their own electricity on site, and exactly match their production to their usage at all times. This is not economically or logistically feasible or socially desirable, and in fact is why the transmission system evolved in the first place. Transmission allows for the development of efficient generating plants, and for the movement of power to many consumers.

Transmission is a network of wires with many power plants and distribution substations interconnected at various locations. This network provides multiple paths to get power from producers to consumers. Having multiple paths to move power lessens the chance that consumers will be negatively affected by outages of various network elements. Transmission provides the ability for an area to access more distant sources of electricity when local sources are unavailable or are more expensive to run. Transmission provides the means to balance constantly varying electricity production and usage over broad areas, allowing uninterrupted electricity supply on demand for consumers. Because of transmission's network configuration and ability to provide access to more distant sources of power, not as many local sources are required to provide the same level of electrical service reliability to consumers.

Transmission also provides the ability to transport emerging "green" sources of power, like wind energy from large wind farms developing in remote areas, to populous areas where the consumers are. Transmission infrastructure in a community also provides the opportunity for area economic development and growth; without local transmission it is difficult to provide the necessary electrical services to support growth in a timely or economic fashion.

Impacts of transmission choices

Just like other choices in life, there are tradeoffs among various transmission options. ATC has identified three main tradeoffs among transmission investment choices:

- Access – ability of the transmission system to enable utilities and other power producers to reach and participate in competitive wholesale energy markets.
- System performance – ability of the transmission system to support these energy transactions plus normal local transmission functions by delivering energy and minimizing interruption to customers.
- Total cost – represents ultimate consumer impact, or the balance between the price impacts of increased transmission investment and the savings from having access to cheaper power delivered reliably when needed.

We must find an equilibrium among these three value elements for ATC customers and stakeholders. Our customers have told us that increased access is very important to them. Our 2003 10-Year Transmission System Assessment Full Report contains information on studies looking at what kind of additional transmission reinforcements may be required to increase import capabilities into the ATC footprint to facilitate this access. This will be a focus for more intensive analysis and interaction in the months to come.

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Transmission costs in context

The consumer's electric bill contains rate elements covering the three main components of electrical infrastructure costs – generation, transmission and distribution. Generation costs come from the capital costs of power plant equipment, operation and maintenance expenses and, most significantly, the cost of the fuel used by the plants to produce electricity. Transmission and distribution costs come from the capital costs for transmission and distribution equipment, plus operation and maintenance expenses. Transmission costs currently make up approximately 4 percent of a retail consumer's electric bill. The table below contains information excerpted from the Federal Energy Regulatory Commission's Form No. 1 on the current (as of 12/31/02) net book value (historical costs less depreciation) of generation and distribution "electric plant in service" for major utilities within the ATC footprint. These figures do not include fuel and O&M costs, which are reflected in a consumer's electric bill.

UTILITY	PRODUCTION PLANT	DISTRIBUTION PLANT
Edison Sault	$ 7,678,912	$ 30,036,781
Madison Gas & Electric	$ 115,338,930	$ 154,121,121
Upper Peninsula Power Company	$ 20,459,638	$ 51,647,759
Wisconsin Electric Power Co.	$ 849,489,422	$1,586,951,095
Wisconsin Power & Light	$ 144,533,368	$ 577,137,361
Wisconsin Public Service Corp.	$ 136,279,288	$ 386,184,825
Total	**$1,273,779,558**	**$2,786,078,942**

In comparison, from the same set of FERC Form No. 1 data, note the current net book value of the transmission equipment linking and supporting these major generation and distribution assets.

UTILITY	TRANSMISSION PLANT
American Transmission Company	**$ 661,415,001**

The balance of ATC's FERC transmission plant account is not indicative of the replacement or market value of ATC's system assets. Current replacement value is approximately $2.8 billion. This replacement value is for the existing transmission system and does not include new investments necessary to address needs discussed in this report. This is one illustration of the fact that a large portion of current utility assets within the ATC footprint is heavily depreciated. A heavily depreciated asset base, from a financial perspective, indicates impending need to reinvest in assets in order to continue providing services. An infusion of new investment will thus have a large impact on the value of these utility plant accounts, which correspondingly provide the basis for electric rates.

A number of proposed utility and independent power plant projects have been discussed recently, with estimated costs for some projects at $1 billion or more per generating unit. Various distribution investment plans have been announced as well. As an example, We Energies' Power the Future plan includes at least $3 billion for new generation facilities and $2.7 billion for distribution upgrades within the current 10-year planning horizon, and other utilities within the ATC footprint also are planning various generation and distribution investments. These investments will increase the balances in the corresponding FERC production and distribution asset accounts.

ATC is considering a series of investment projects over a 10-year period that would cost approximately $2.8 billion.

Based on our assessment of existing needs, and in support of ongoing generation and distribution growth and other issues discussed in this report, ATC is considering a series of investment projects over a 10-year period that would cost approximately $2.8 billion. Holding production and distribution costs constant, this amount of transmission investment would result in transmission costs increasing to approximately 10 percent of the retail consumer's bill by 2012. With the expected accompanying increases in production and distribution investment in the same timeframe, the transmission proportion of the retail bill likely would remain about the same as it is today. In order for full value to be achieved from investments in generation and distribution, a strong and reliable transmission system must be in place to link them in order to move electricity safely and reliably from where it is produced to where it is distributed to consumers.

Typical transmission project costs and variables

For general reference, the following table lists typical costs for some transmission construction projects.

TRANSMISSION FACILITY	TYPICAL CAPITAL COST
New 345 kV single circuit line	$ 915,000 /mile
New 345 kV double circuit line	$ 1,710,000 /mile
New 138 kV single circuit line	$ 390,000 /mile
New 138 kV double circuit line	$ 540,000 /mile
New 69 kV single circuit line	$ 285,000 /mile
New 69 kV double circuit line	$ 380,000 /mile
Single circuit underground line construction (not including necessary terminal equipment)	Approximately 4 times listed single circuit cost
Rebuild 138 kV line with larger conductor, double circuit	$ 530,000 /mile
Rebuild 69 kV to 138 kV line, single circuit	$ 400,000 /mile
Reconductor 138 kV or 115 kV line, single circuit	$ 90,000 /mile
Reconductor 69 kV line, single circuit	$ 75,000 /mile

The 2003 10-Year Transmission System Assessment Full Report includes rough estimates of project costs for listed potential projects. Rebuilding existing lines can be more expensive than building new lines due to costs associated with temporarily moving or removing existing infrastructure. Any number of additional factors can cause variations in cost from one project to another including:

- Cost premium to use single steel-pole structures and caisson foundations rather than less expensive structures such as direct embedded H-frames, in order to reduce visual impact
- Environmental protection and mitigation
- Farmland construction bio-hazard prevention
- Public communication and information
- Construction outage management premium (for reusing existing right-of-way)
- Electrical interference premiums (for corridor sharing with railroads and pipelines)
- Wisconsin's environmental impact fee for 345 kV line construction
- Licensing costs
- …and so on depending on the specifics of each project.

Industry developments

The electric utility industry continues to be in a state of major evolution and change. Some regulatory proposals currently under development and debate include FERC's Standard Market Design initiative (recently renamed Wholesale Market Platform) and various Regional Transmission Organization (like MISO) market development initiatives. Various utility company and industry organization consolidations and unbundlings also are changing the electric utility industry landscape. All of these could have a significant impact on utility operations and costs. ATC continues to work with customers and stakeholders to determine and address the impacts of such changes as situations develop further. Any relevant implications of these developments will be reflected in future 10-Year Assessment Reports.

Project classifications

New for this assessment, potential projects addressing identified issues are classified into one of three possible categories – planned, proposed or conceptual. These categories are consistent with those used by MISO in its regional planning report.

Planned projects

- planning work for the project is complete
- regulatory applications have been submitted and associated approvals have either been issued or are pending
- project may be under construction or in the construction planning phase
- project is typically included in power flow models used to analyze transmission service requests

Proposed projects

- planning work for the project is not complete
- regulatory approvals have not yet been sought
- project represents ATC's preliminary preferred project alternative from a system performance perspective
- project typically is not included in power flow models used to analyze transmission service requests

Conceptual projects

- planning work for the project is not complete
- regulatory approvals have not yet been sought
- project does not necessarily represent ATC's preliminary preferred project alternative but often is a representative "placeholder" project
- project is not included in power flow models used to analyze transmission service requests

For more detailed information than what's presented in this Summary Report, please refer to our Full Report, which can be accessed on our Web site at: www.atcllc.com.

Methodology and assumptions

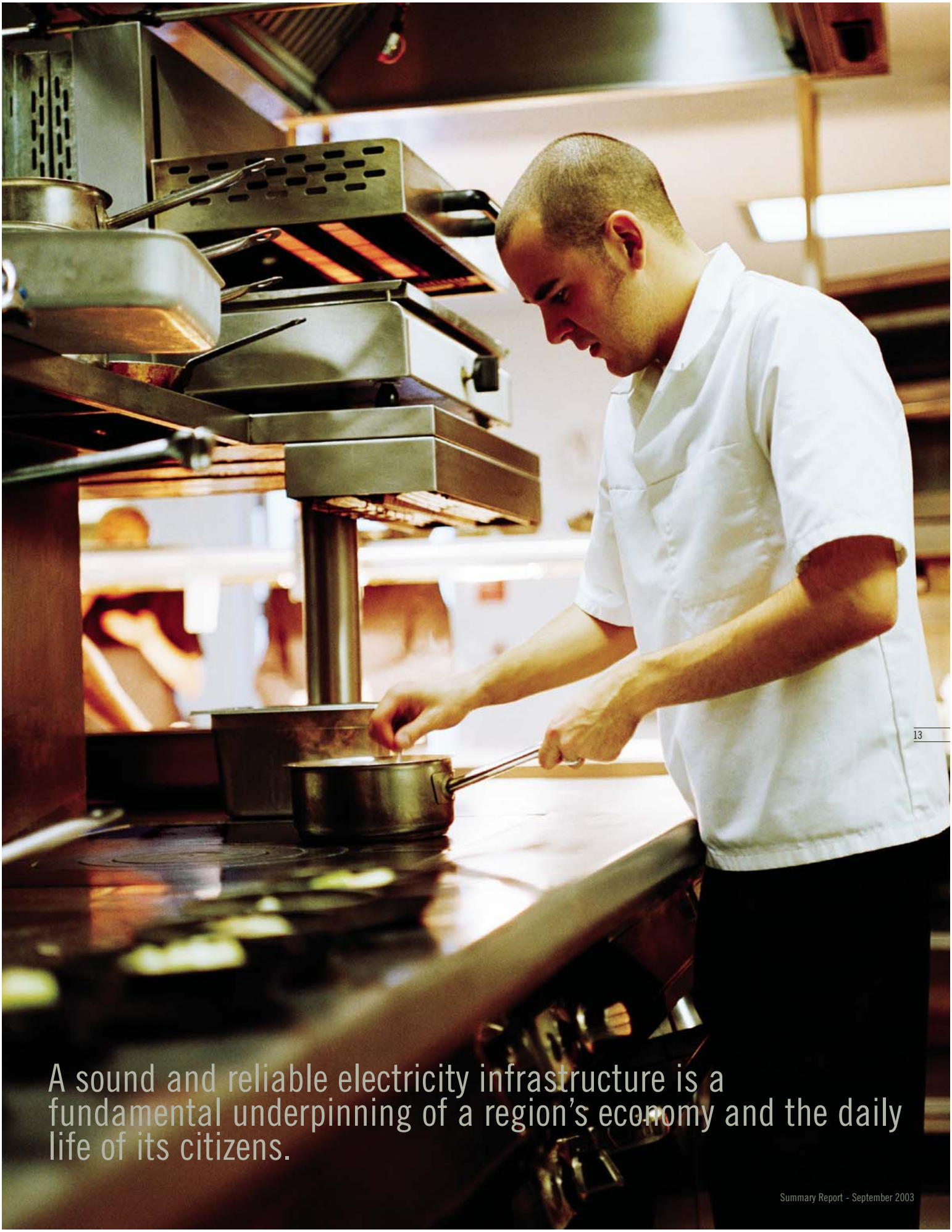
Content for the 2003 10-Year Assessment was developed by first performing a variety of transmission planning analyses to identify situations where standard industry reliability criteria would not be met and where constraints would likely appear. The baseline reliability criteria that we follow requires that no transmission facilities become overloaded and that transmission voltages remain within safe operating limits if any one transmission facility is out of service. This is known as single contingency planning.

For this assessment, ATC included generators that have recently been placed in service, are under construction, or are proposed and have had interconnection and transmission service studies completed, an interconnection agreement executed, and transmission service accepted. Based on these criteria, ATC assumed a net total generation addition of 3,697 megawatts over the study period. Based on distribution utility load forecasts, peak load in 2004 was estimated at 13,453 MW, and peak load in 2012 was estimated at 15,755 MW; a net load increase of 2,302 MW which represents a compound overall annual growth rate of approximately 2 percent.

Power flow analyses were performed using system models of peak summer electricity demand in 2004, 2008 and 2012. It is standard industry practice to plan the transmission system to be able to reliably serve the expected peak electricity demand. We also conducted power flow analyses of the transmission system in 2008 during "shoulder peak" periods. During these periods the electricity demand is about 75 percent of what it would be during the peak summer periods, but much of the "peaking generation" that typically operates during peak summer periods is not operating. The shoulder peak is simulated to determine whether additional constraints to transferring power might exist.

Newly included in this assessment are selected transfer capability and dynamic stability analysis. Transfer capability analysis for 2004 and 2008 summer peak electricity demand periods and 2008 shoulder peak periods were performed. These simplified transmission service analyses illustrate the amount of power that likely could be imported into the ATC transmission system from neighboring states under certain scenarios. Dynamic stability analyses also were performed for 2004 at 70 percent of peak summer electricity demand. These analyses were conducted to ensure that generators remain stable during transmission system contingencies. Unstable generators can lead to cascading instability elsewhere on the transmission system and ultimately result in widespread interruption of service to customers.

Based on results of these analyses and other factors, ATC then evaluated various alternatives to address identified issues. For this assessment, transmission reinforcement projects that ATC plans to construct by 2004, 2008 or 2012 were modeled in the power flow simulations, the transfer capability analyses (2004 and 2008 only) and the dynamic stability analyses (2004 only). Using this method, many of the limitations on the transmission system in 2004 have been resolved by projects to be constructed by 2008 and don't show up as limitations in the 2008 or 2012 analyses.

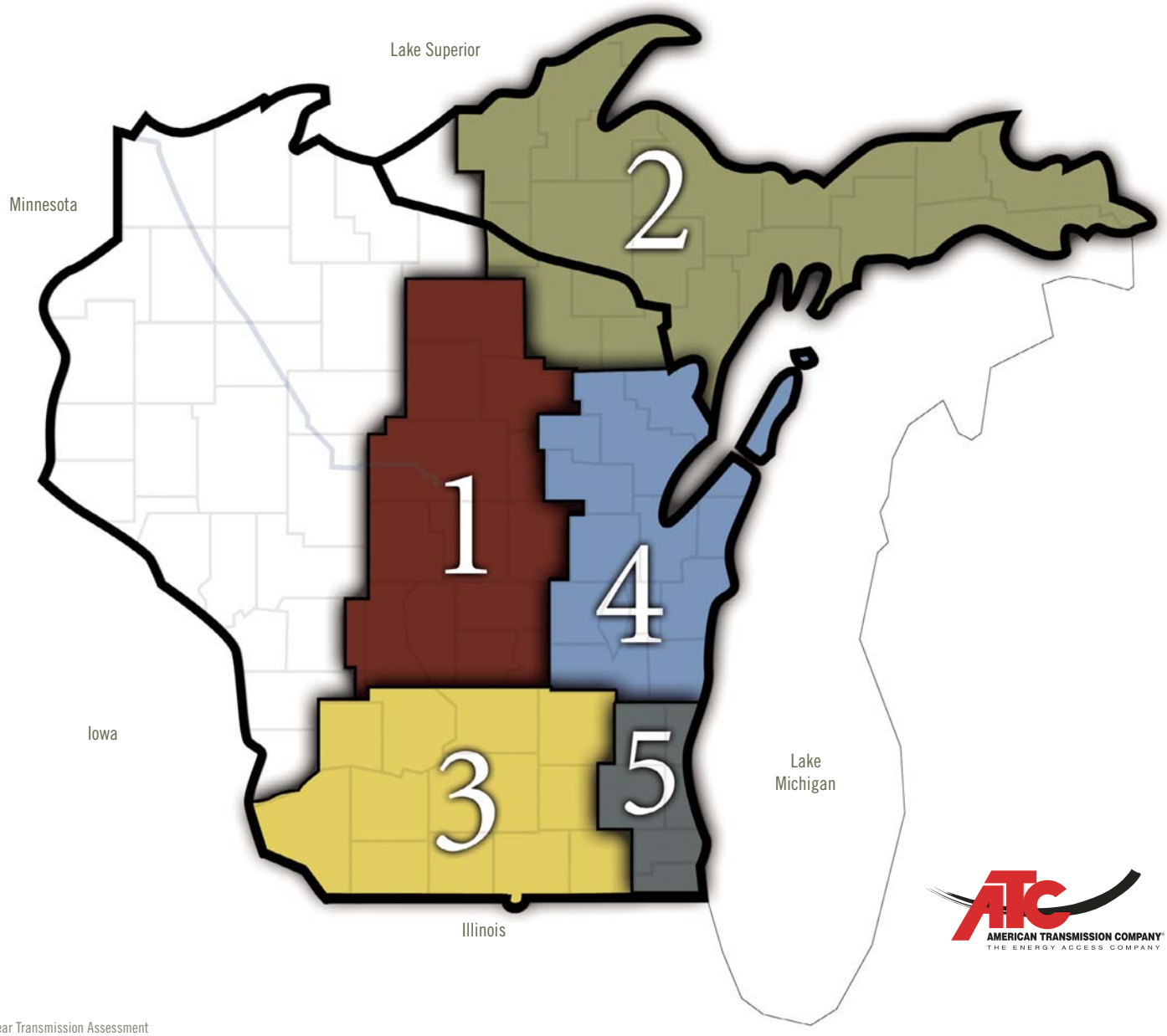


A sound and reliable electricity infrastructure is a fundamental underpinning of a region's economy and the daily life of its citizens.

ATC Planning Zones

You can read specific information regarding a community or district in the Planning Zones Section beginning on page 16. For each Planning Zone, you will find the:

- Transmission System Characteristics – The transmission system's current status.
- Transmission System Limitations – The transmission system's constraints and their effect on the network's ability to reliably meet projected demand.
- Transmission System Solution Alternatives – ATC's possible solutions for overcoming limitations and meeting current and future demand.



Counties included in each Zone

zone 1 North Central Wisconsin

Adams
Green Lake
Juneau
Langlade
Lincoln
Marathon
Marquette
Monroe
Oneida
Portage
Shawano (western portion)
Vernon
Waupaca
Waushara
Wood

zone 2 Michigan's Upper Peninsula and Northern Wisconsin

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, Mich.
Menominee, Mich.
Ontonagon, Mich. (eastern portion)
Schoolcraft, Mich.
Vilas, Wis.

zone 3 South Central / Southwest Wisconsin and North Central Illinois

Columbia
Dane
Dodge
Grant
Green
Iowa
Lafayette
Jefferson
Richland
Rock
Sauk
Walworth
Winnebago, Ill.

zone 4 Northeast Wisconsin

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

zone 5 Southeast Wisconsin

Kenosha
Milwaukee
Ozaukee
Racine
Washington
Waukesha

zone 1

North Central Wisconsin

Transmission system characteristics

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

- Rocky Run-North Appleton 345 kV line
- Weston-Rocky Run 345 kV line
- 115 kV network in the northern portion of the zone
- 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 need to be able to import more power from neighboring states.

Proposed new generation in Zone 1 could have a significant effect on the need for new transmission lines in this zone. While two previously planned generation projects are apparently no longer moving forward, two other large potential generation projects are planned and will require new transmission lines if they are constructed.

The diagram on the next page shows the existing transmission lines and substations in Zone 1. ATC completed reinforcement projects at five different substations since summer 2002 and is planning to complete five additional reinforcement projects by summer 2004, most notably, converting a 46 kV line between Pine and Eastom substations to 115 kV.

Environmental considerations

Zone 1 spans a wide range of ecological landscapes varying from the Northern Highland and North Central Forest regions in the northern part of the zone through the Forest Transition, Central Sand Plains and Central Sand Hills regions to the Western Coulee and Ridges region in the southern portions of the zone. The northern portion of the zone contains numerous lakes and woodlands while the southern portions are more agricultural in nature. Lands in this zone primarily are located in the Upper & Central Wisconsin River drainage basins with smaller portions of the zone located in the Fox and Wolf River drainage basins. The Necedah & Fox River National Wildlife Refuges and a small portion of the Nicolet National Forest are located in this planning zone. Several Native American tribal reservations are located in this zone.

North Central Wisconsin
Transmission system

zone 1

North Central Wisconsin

Transmission system limitations

In Zone 1, low voltages, transmission facility overloads and potential generator instability were identified in the 2004 analyses. In addition, when power imports from Minnesota are high, heavily loaded facilities continue to result in the system working with very little operating margin.

Three areas experience low voltages: the area in the southeast portion of Zone 1 between Green Lake and Wautoma; the area southwest of Wausau, from Marshfield to Port Edwards; and, most notably, the area north of Wausau up to near the Michigan border (the Rhinelander Loop).

Facility overloads were identified on various lines and transformers throughout Zone 1 in 2004. Most notable were four 115 kV lines in the Rhinelander Loop and transformers at the Council Creek and Sigel substations.

The Rhinelander Loop has experienced, and still is susceptible to, overloads, low voltages and voltage collapse. A number of projects are being implemented to reduce the risk of those problems occurring. A new connection to the northern portion of the Rhinelander Loop is needed.

The potential for generation at Weston becoming unstable after a disturbance on the transmission system was identified in the 2004 analyses. The expansion of the Weston substation to accommodate the planned Arrowhead-Weston 345 kV line project (see pages 52-53), including the installation of two new 345/138 kV transformers, will remedy this instability issue.

ATC also will be implementing various projects to address other problems identified in the 2004 analyses. The types of projects that can be completed in the next year or two are typically not long-term solutions to identified problems, but tend to keep the system within safe operating limits until a more permanent solution can be constructed.

The 2008 analyses showed that many of the short-term solutions that ATC plans to implement to address the issues identified in the 2004 analyses become less effective; longer-term solutions are needed. For example, the lines overloaded in the Rhinelander Loop should be relieved in 2004, but by 2008 the lines supplying the Rhinelander Loop can overload – a further indication that a new connection to the northern portion of that Loop is needed. Also, certain facilities to the east of Weston will need to be rebuilt or replaced.

The 2012 analyses showed that with the projects planned to be constructed prior to 2012, many of the problems identified at that time are just emerging and do not yet require any large scale projects.

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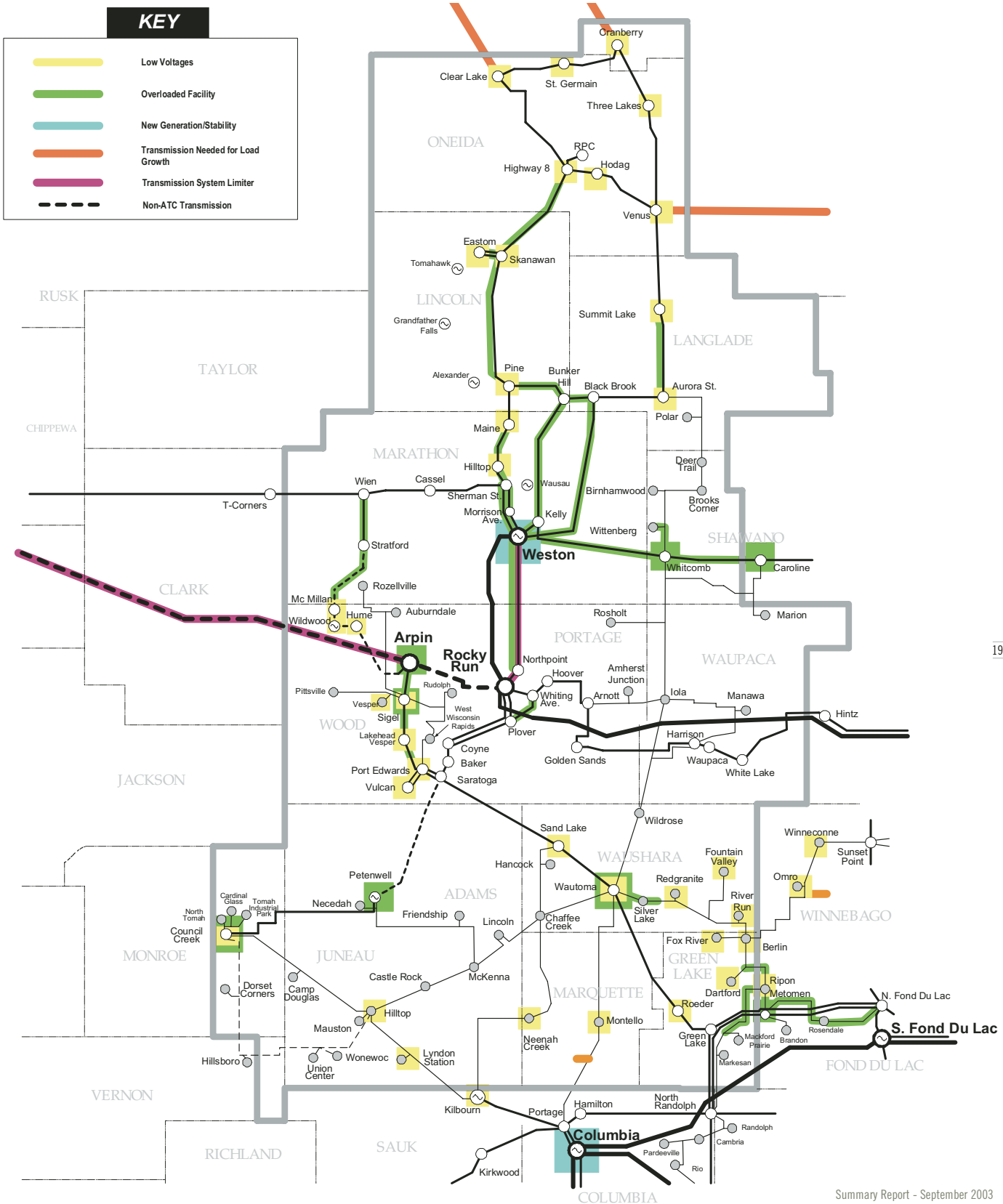
North Central Wisconsin
Transmission system limitations



zone 1

North Central Wisconsin

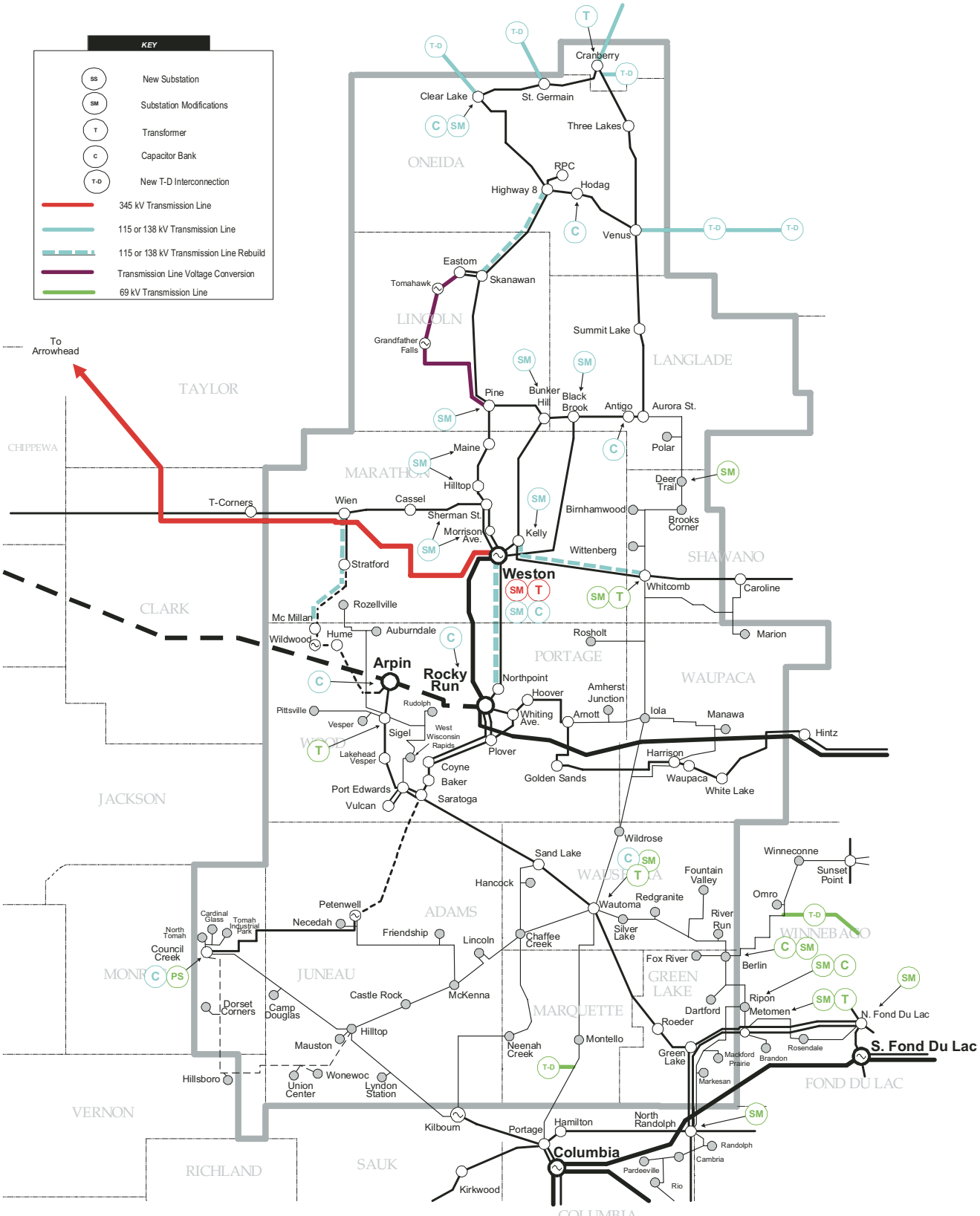
Transmission system solution alternatives

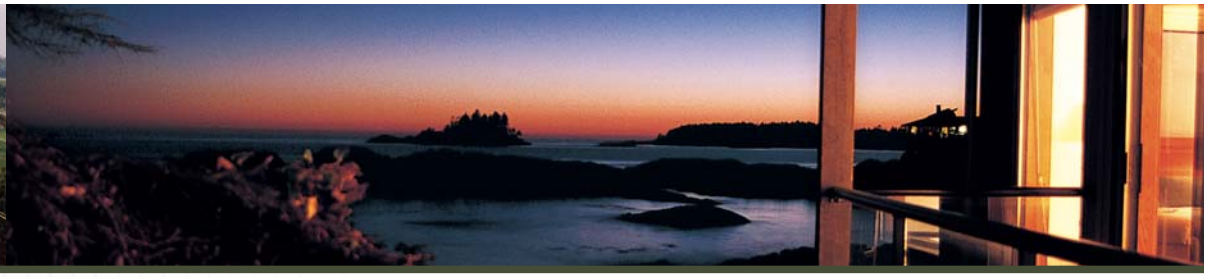
ATC has identified an integrated approach to solving projected transmission limitations within Zone 1. ATC's approach is based on the following planned and proposed solutions:

- Implement the Arrowhead-Weston 345 kV line project [from Duluth, Minn. to Wausau, Wis.] to increase import capability, lessen or eliminate the need for operating guides, improve system stability and lower system losses. This line project will involve:
  - *Constructing a 345 kV line from Weston to Stone Lake [western Sawyer County] (2006)*
  - *Installing a 345/161 kV transformer at Stone Lake (2006)*
  - *Rebuilding the existing Stone Lake-Stinson 161 kV line [near Superior] to double circuit 345/161 kV to accommodate that portion of the Arrowhead-Weston line (2008)*
  - *Constructing a 345 kV line from Stinson to Arrowhead (2008)*
- Upgrade select facilities to support the increased import capability that can be realized with the Arrowhead-Weston project, including:
  - *Constructing a 345 kV switchyard at Weston (2006)*
  - *Replacing the existing 345/115 kV transformer at Weston with two larger 345/115 kV transformers (2006 & 2008)*
  - *Reconductoring the Wein [Stratford] -McMillan [Marshfield] 115 kV line (2005)*
  - *Rebuilding the Kelly [Wausau] –Whitcomb [near Wittenberg] and Weston-Northpoint [near Stevens Point] 115 kV lines (2008)*
  - *Uprating the Weston-Kelly 115 kV lines (2006)*
  - *Installing capacitor banks at Arpin, Weston and Rocky Run [Stevens Point] (2008)*
- Install a phase-shifting transformer or series reactor at the Council Creek [near Tomah] substation
- Implement additional transmission reinforcements for the Rhinelander Loop including:
  - *Moving a 6 MVAR D-SMES device from Reedsburg (Zone 3) to Clear Lake [near Minocqua] (2004)*
  - *Converting the Pine [near Merrill] -Eastom [near Tomahawk] 46 kV line to 115 kV (2004)*
  - *Rebuilding the Skanawan [near Tomahawk] -Highway 8 [near Rhinelander] 115 kV line to double circuit 115 kV (2005)*
  - *Uprating terminal equipment on the Bunker Hill [near Merrill] -Pine 115 kV line (2005)*
  - *Moving a 10 MVAR capacitor bank from Highway 8 to Hodag [near Rhinelander]*
  - *Constructing a new 138 kV line from Cranberry [near Eagle River] to Conover (2007)*
  - *Installing a 138/115 kV transformer at Cranberry (2007)*
  - *Rebuilding a 69 kV line from Conover through Iron River to Plains [near Iron Mountain] (Zone 2) and converting the line to 138 kV (2007)*
  - *Installing a capacitor bank at Clear Lake [near Minocqua] (2012)*
  - *Constructing a second transmission line, potentially from Venus [near Monico] to Amberg, in the 2015 timeframe to address projected needs at that time*
- To address overloads elsewhere in Zone 1:
  - *Uprate the North Randolph-Ripon and Metomen [near Ripon] -North Fond du Lac 69 kV lines (2005)*
  - *Uprate the Wautoma-Berlin 69 kV line (2009)*
  - *Uprate the Weston-Morrison [Wausau] -Sherman St. [Wausau] and Weston-Sherman St. 115 kV lines (2007)*
  - *Replace the 138/69 kV transformers at Sigel [near Wisconsin Rapids] and Ripon (2008)*
  - *Other conceptual projects include replacing the 138/69 kV transformer at Metomen, constructing a new Fitzgerald [near Oshkosh] -Omro Industrial 69 kV line, uprating the Sherman St.[Wausau] -Maine 115 kV line, uprating the Weston [Wausau] -Black Brook [near Antigo] 115 kV line, uprating the Metomen-Ripon 69 kV line and installing a second 138/69 kV transformer at Wautoma. These projects would be needed in the 2008-2012 timeframe.*
- To address low voltages elsewhere in Zone 1:
  - *Install a capacitor bank at Ripon substation (2004)*
  - *Install a capacitor bank at Council Creek [near Tomah] substation (2005)*
  - *Install capacitor banks at Wautoma and Antigo substations (2006)*
  - *Install an additional capacitor bank at Ripon substation (2008)*
- To meet new distribution load interconnection requests where new transmission lines would be required:
  - *Construct a 69 kV line from a point on the Berlin-Omro 69 kV line near Omro to a new Omro Industrial substation*
  - *Construct a 69 kV line from a point on the Portage-Wautoma 69 kV line near Roslin to a new Endeavor substation*
  - *Construct a 115 kV line from the Venus [near Monico] substation to a new Crandon substation and continue the 115 kV line to a new Laona substation*
  - *Construct a 115 kV line from the Clear Lake [near Minocqua] substation to a new Arnett Road substation [near Woodruff]*
  - *Construct a 115 kV line from the St. Germain substation to a new Boulder Junction substation*
  - *Construct a 115 kV line to loop the existing Cranberry [near Eagle River] –Three Lakes 115 kV line into the new Eagle River substation*

North Central Wisconsin

Transmission system solution alternatives





zone 2

Michigan's Upper Peninsula and Northern Wisconsin

Transmission system characteristics

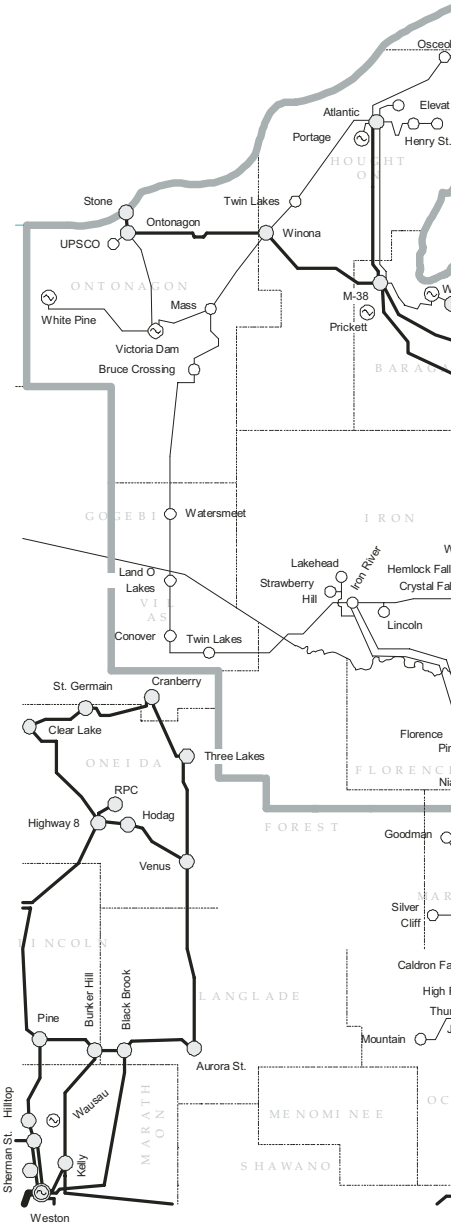
ATC delivers power in Zone 2 with the following major transmission facilities:

- Morgan-Plains-Dead River 345 kV line
- Plains-Stiles 138 kV line
- 138 kV facilities linking Michigan's Upper and Lower peninsulas

There are a number of transmission system performance issues in Zone 2. The Zone 2 system has limited import and export capability, a situation highlighted by the Dead River flooding incident occurring this spring. The flood significantly damaged the area's primary generating facility and the transmission system was not able to carry in enough replacement power to meet the full area load demand while the plant was down. Aging line and substation facilities and operating complications related to parallel path flow around Lake Michigan also are issues. Low voltages can occur during high load and contingency conditions. Special operating schemes are needed to maintain stable operation of Presque Isle Power Plant.

There presently is no proposed new generation in Zone 2. As such, the current primary generation consideration is the possibility of generation retirements. Generation in the UP supports the area transmission system and retirements could have an adverse impact on reliability and the ability of the transmission system to transfer power to the UP.

The diagram at right shows the existing transmission lines and substations in Zone 2. ATC completed reinforcement projects at two different substations since summer 2002 and is planning to complete ten additional reinforcement projects by summer 2004, including one new 69 kV line, five capacitor bank installations and four transmission line uprates.

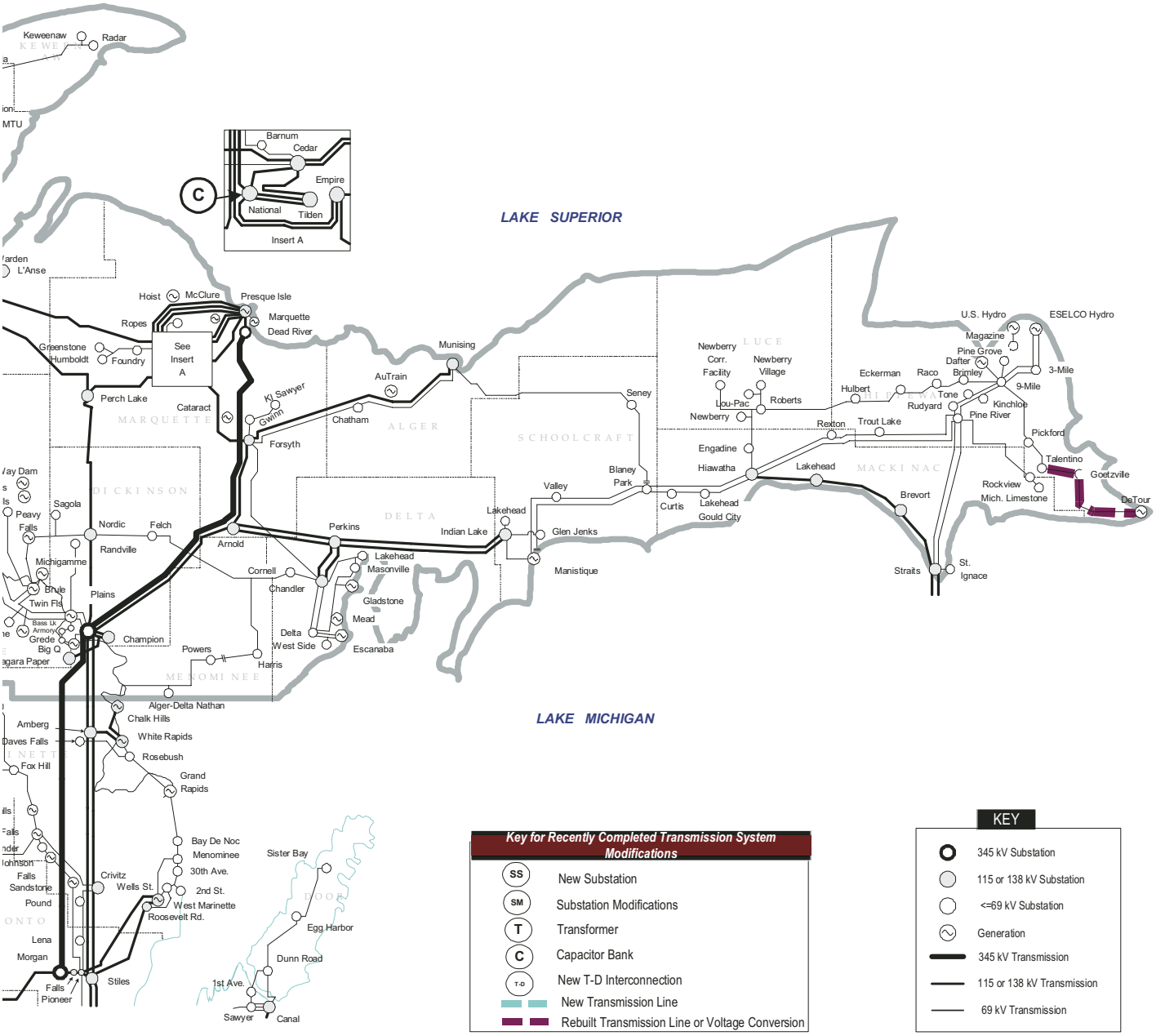


Environmental considerations

This planning zone includes a small part of the far northeast portion of Wisconsin and the eastern two-thirds of the Upper Peninsula of Michigan. The Wisconsin portions of the zone fall into the Northeast Sands and North Central Forest ecological landscape regions. The portions of the zone located in Michigan are part of the Eastern Upper Peninsula eco-region. Large expanses of this zone are forested and there are large numbers of streams, lakes and wetlands throughout the zone. The Niagara Escarpment runs through the Eastern Upper Peninsula. Lakes Superior, Huron and Michigan form the northern and eastern boundaries of the zone. Two Michigan State Natural Rivers (Fox and Two-Hearted) and nine National Wild and Scenic Rivers (Tahquamenon, Indian, Sturgeon, Whitefish, Yellow Dog, Ontonagon, Paint, Carp, Sturgeon north) are found in this zone. Portions of the Nicolet, Ottawa and Hiawatha national forests and numerous state forests and parks are found in this zone. Several Native American tribal reservations are found in this zone. The Seney National Wildlife Area, Pictured Rocks National Lakeshore and numerous federal wilderness areas also are found in this area.

Michigan's Upper Peninsula and Northern Wisconsin

Transmission system



Key for Recently Completed Transmission System Modifications

SS	New Substation
SM	Substation Modifications
T	Transformer
C	Capacitor Bank
T-D	New T-D Interconnection
	New Transmission Line
	Rebuilt Transmission Line or Voltage Conversion

KEY

	345 kV Substation
	115 or 138 kV Substation
	<=69 kV Substation
	Generation
	345 kV Transmission
	115 or 138 kV Transmission
	69 kV Transmission

zone 2

Michigan's Upper Peninsula and Northern Wisconsin

Transmission system limitations

In Zone 2, low voltages, transmission facility overloads and transmission service limitations were identified in the 2004 analyses. In addition, heavily loaded facilities during off-peak periods when the Ludington pumped storage facility in the Lower Peninsula of Michigan is pumping continue to keep the system working with very little operating margins.

In 2004 results, impending low voltages were prominent along the 138 kV system between Hiawatha and Straits, and also were identified at the Lincoln substation in the western UP. Facility overloads were identified on the Cedar-M-38 138 kV line.

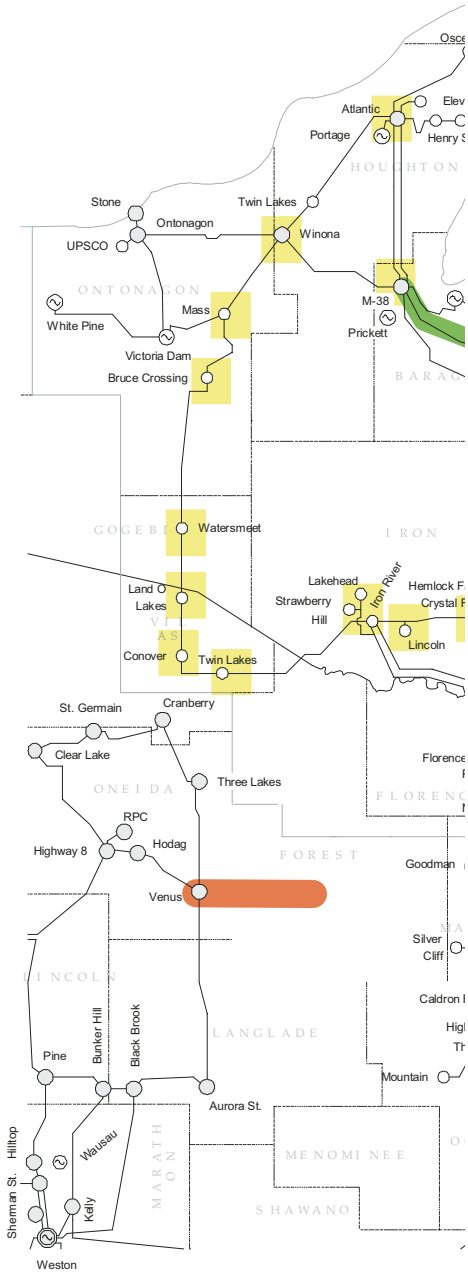
The key transmission system limitations in the UP are the Morgan-Stiles 138 kV line and Stiles-Plains 138 kV double circuit line, both which limit transfer of power between Wisconsin and the UP, and the two Hiawatha-Indian Lake 69 kV lines, which are incapable of carrying the amount of power that often flows west-to-east across the UP during off-peak periods. Three of these lines (Morgan-Stiles, Plains-Stiles and one of the Hiawatha-Indian Lake lines) will require near-term reinforcements.

ATC also plans to implement various projects to address other problems identified in the 2004 analyses, including adding a new 138/69 kV transformer at Straits, rebuilding the Nordic-Randville 69 kV line to double circuit and installing a total of 35 MVAR of capacitors at five different substations. The types of projects that can be completed in the next year or two typically are not long-term solutions to identified problems, but are intended to keep the system within safe operating limits until more robust solutions can be constructed.

The 2008 analyses showed that many of short-term solutions that ATC plans to implement to address the issues identified in the 2004 analyses become less effective over time indicating longer-term solutions are needed. For example, low voltages again were identified along the Hiawatha-Straits portion of the system and throughout the western UP. Overloaded lines were identified as well, including the Nordic-Chandler 69 kV line and throughout the 69 kV system between Hiawatha and Indian Lake.

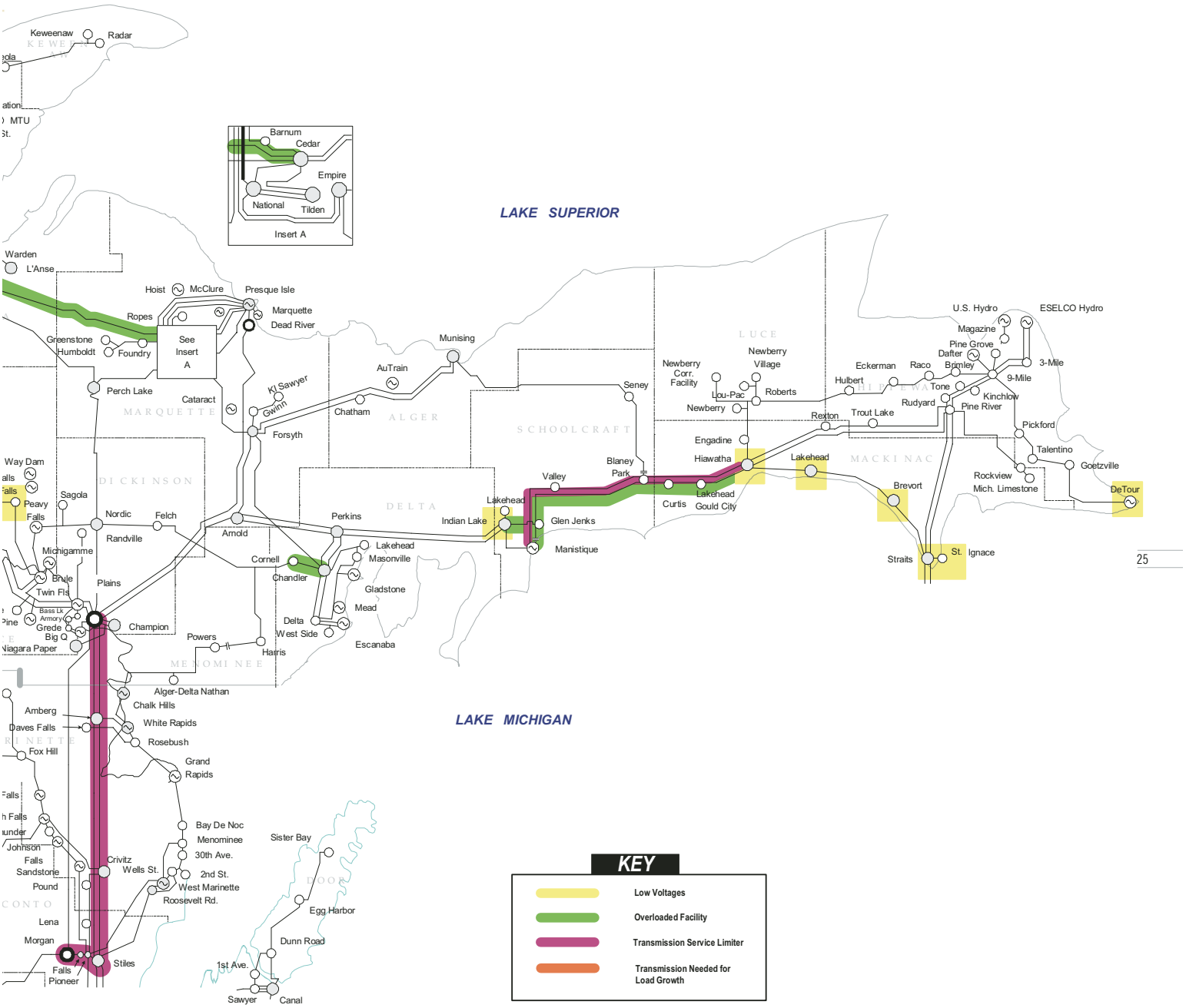
Completing a rebuild or reconductor of the Plains-Stiles line, rebuilding one of the Hiawatha-Indian Lake lines to double circuit 138 kV and rebuilding the Hiawatha-Pine River-Straits 69 kV lines to 138 kV, along with other reinforcement projects in Zone 4, will address the transmission service limitations experienced in recent years while addressing the low voltages along the Hiawatha-Straits 138 kV system. Completing a new 138 kV line from Cranberry to Conover and converting 69 kV facilities from Conover to Plains to 138 kV will address the voltage problems in the western UP.

The 2012 analyses showed that with the projects planned to be constructed prior to 2012, many of the problems identified then are just emerging at that time and do not require any large scale projects to address them. Many of the residual issues identified in 2012 can be addressed with the conversion of the Munising-Blaney Park 69 kV line to 138 kV.



Michigan's Upper Peninsula and Northern Wisconsin

Transmission system limitations



zone 2

Michigan's Upper Peninsula and Northern Wisconsin

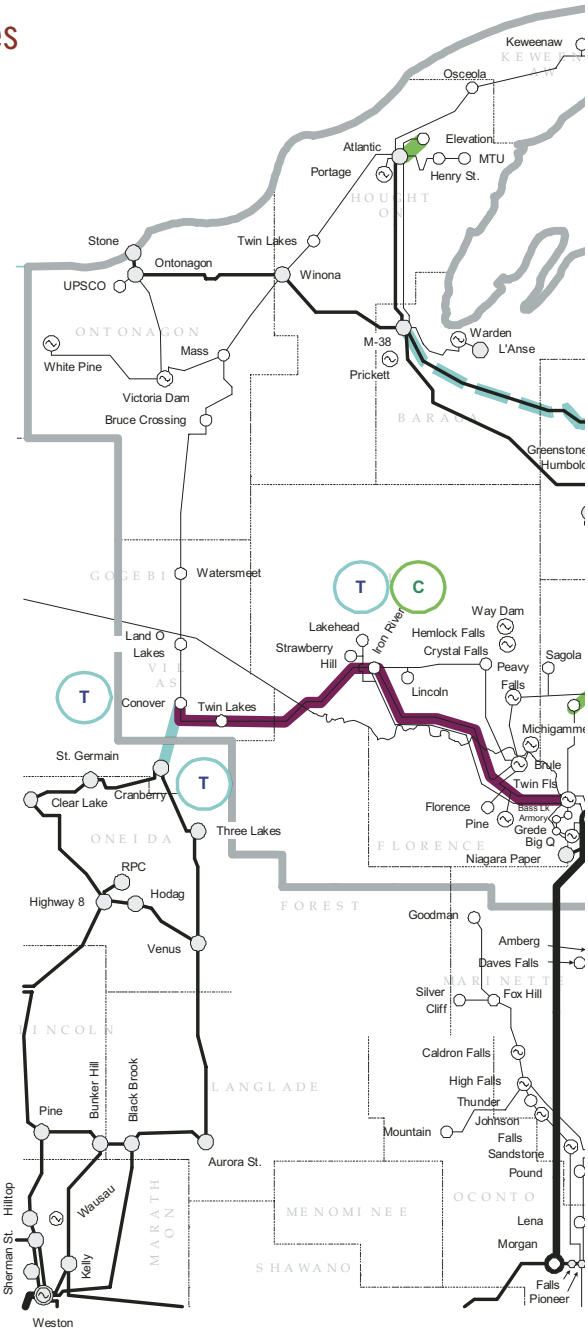
Transmission system solution alternatives

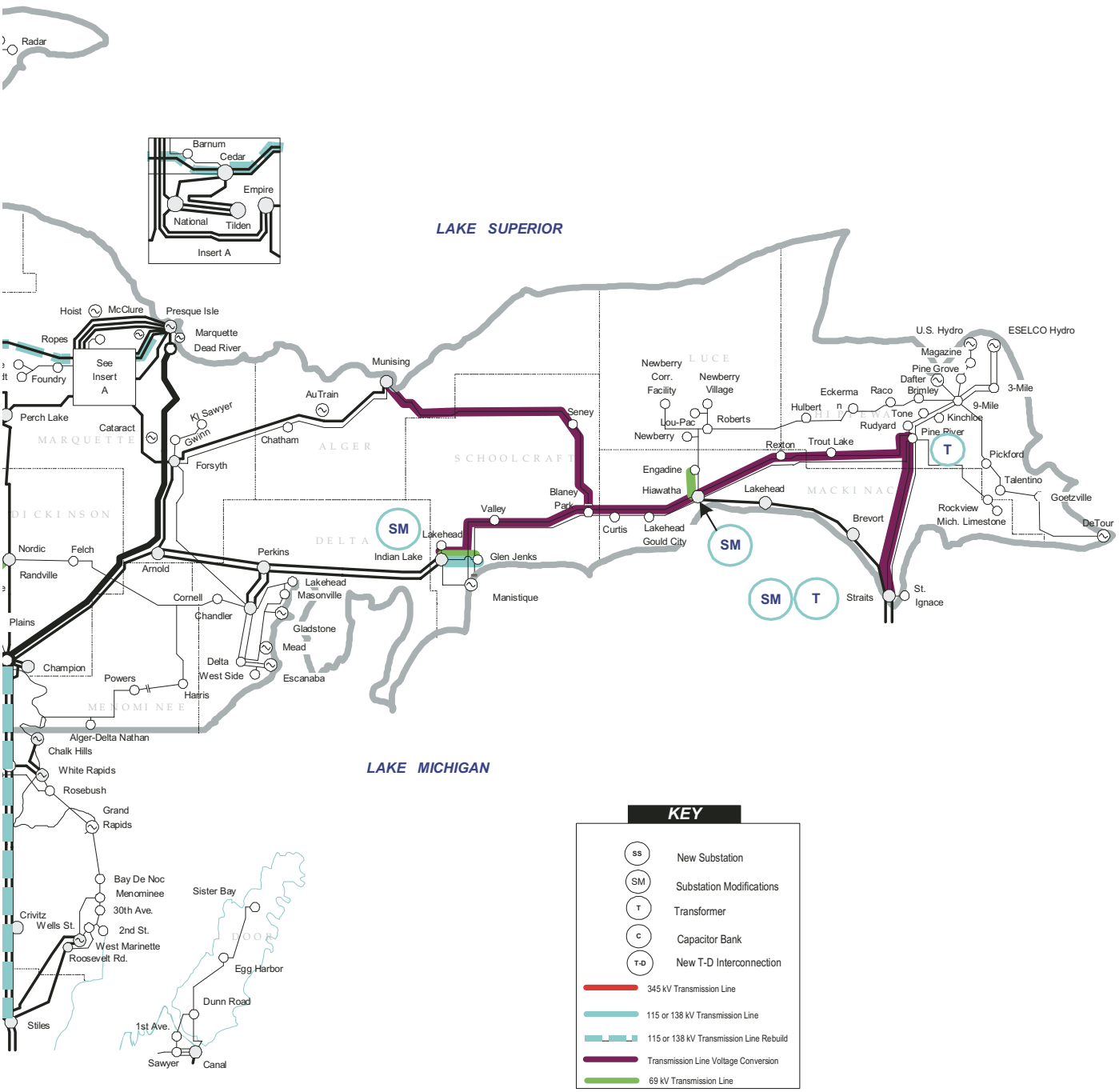
ATC has identified an integrated approach to solving projected transmission limitations within Zone 2. ATC's approach is based on the following planned and proposed solutions:

- Either reconductor or rebuild the Plains [near Iron Mountain] -Stiles 138 kV double circuit line to relieve this key facility limiting transfer capability between Wisconsin and the UP (2004 or 2005). ATC is investigating whether reconductoring this line is feasible.

- Implement the Hiawatha [Mackinac County] -Indian Lake [near Manistique] project to address chronic transmission service limitations and improve transmission system reliability. This line project will involve:
  - *Constructing a new transmission line from Indian Lake to Glen Jenks [near Manistique] capable of carrying two 138 kV circuits and two 69 kV circuits (2004)*
  - *Constructing a new 69 kV line from Hiawatha [Mackinac County] to Engadine [Mackinac County] (2004)*
  - *Rebuilding one of the existing Hiawatha-Indian Lake 69 kV lines to double circuit 138 kV standards, stringing one circuit initially and operating that circuit initially at 69 kV (2005)*
  - *Stringing the second Hiawatha-Indian Lake circuit, expanding the Hiawatha and Indian Lake substations to accommodate two new 138 kV circuits terminations and converting both Hiawatha-Indian Lake circuits to 138 kV operation (2009)*
  - *Expanding the Hiawatha, Indian Lake, Engadine and Glen Jenks substations to accommodate the new and rebuilt lines (2004 and 2009)*

- Implement the Conover [Vilas County] -Plains 69 kV line conversion project. This project, in conjunction with constructing a new 138 kV line between Cranberry [near Eagle River] (Zone 1) and Conover, will improve reliability in the western UP, replace facilities in poor condition, improve transfer capability from Wisconsin to the UP and improve reliability in the northern portion of Zone 1. This project will involve:
  - *Rebuilding the Conover-Plains 69 kV line and converting the line to 138 kV (2007)*
  - *Installing 138/69 kV transformers at Conover and Iron River (2007)*
  - *Expanding the Conover, Iron River and Plains substations to accommodate the rebuilt lines and transformers (2007)*




Radar
Barnum
Cedar
Empire
National
Tilden
Insert A
LAKE SUPERIOR
Hoist
McClure
Presque Isle
Ropes
Marquette
Dead River
See Insert A
Foundry
Perch Lake
Cataract
Ki Sawyer
Gwinn
Forsyth
Chatham
AuTrain
Munising
Seney
Newberry Corr. Facility
Newberry Village
Lou-Pac
Roberts
Newberry
LUCE
ALGER
SCHOOLCRAFT
Engadine
Hiawatha
Blaney Park
Curtis
Lakehead Gould City
Valley
Lakehead
Indian Lake
Glen Jenks
Manistique
SM
Rexton
Trout Lake
Lakehead
Eckerma
Raco
Hulbert
Tone
Rudyard
Brimley
Dafter
Pine Grove
Magazine
U.S. Hydro
ESELCO Hydro
3-Mile
9-Mile
Kinchloe
Pine River
T
Pickford
Talentino
Goetzville
Rockview
Mich. Limestone
DeTour
MACKINAC
Brevort
Straits
St. Ignace
SM
T
Nordic
Felch
Randville
Arnold
Perkins
Cornell
Chandler
Lakehead
Masonville
Gladstone
Mead
Escanaba
Delta
West Side
Harris
Powers
Champion
Plains
DELTA
DICKINSON
MENOMINEE
Alger-Delta Nathan
Chalk Hills
White Rapids
Rosebush
Grand Rapids
LAKE MICHIGAN
Bay De Noc
Menominee
30th Ave.
2nd St.
West Marinette
Roosevelt Rd.
Crivitz
Wells St.
Stiles
Sister Bay
Egg Harbor
Dunn Road
1st Ave.
Sawyer
Canal
KEY
SS New Substation
SM Substation Modifications
T Transformer
C Capacitor Bank
T-D New T-D Interconnection
345 kV Transmission Line
115 or 138 kV Transmission Line
115 or 138 kV Transmission Line Rebuild
Transmission Line Voltage Conversion
69 kV Transmission Line

Transmission system solution alternatives (continued)

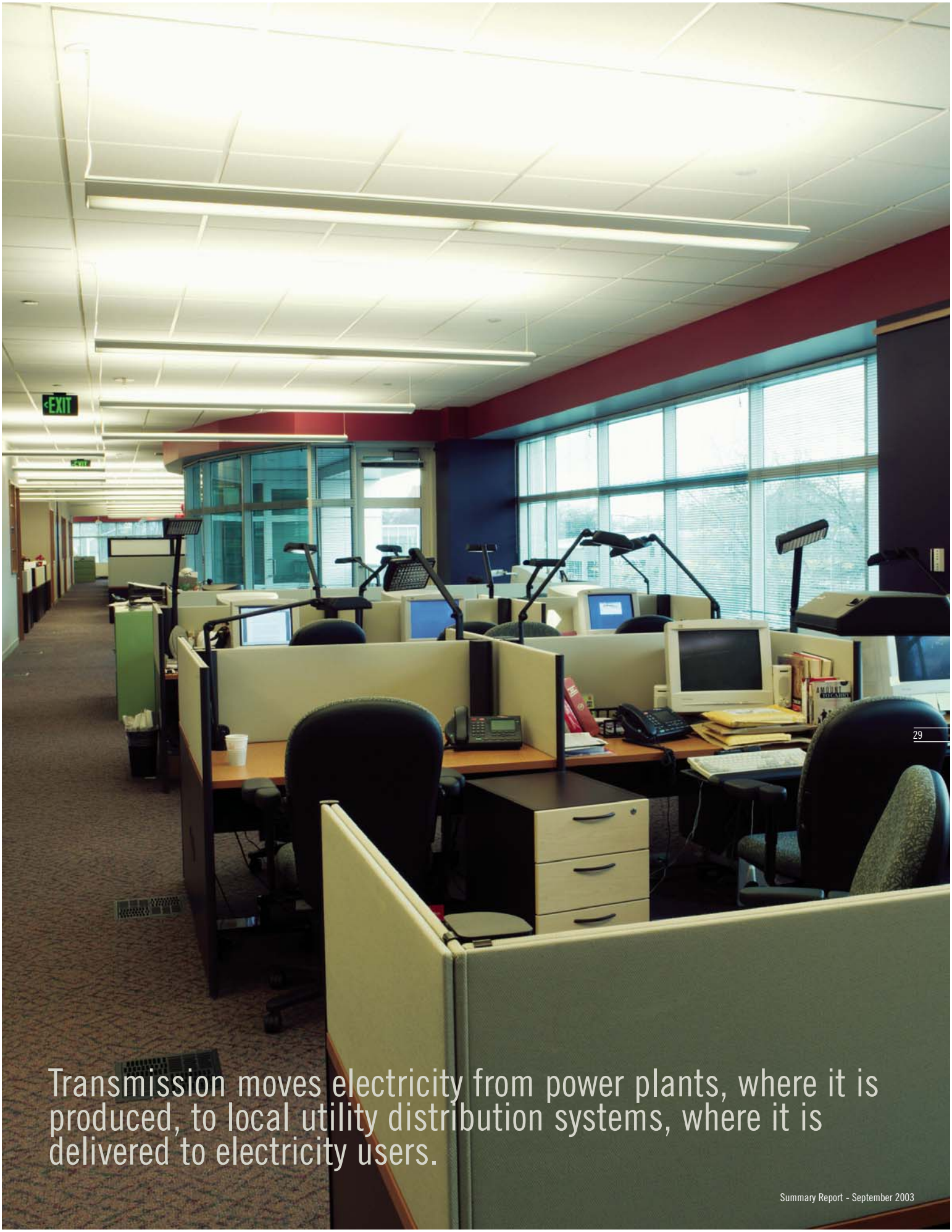
- Implement the Hiawatha-Pine River [Chippewa County] -Straits [St. Ignace] project to address line overloads and low voltages, replace facilities in poor condition and improve reliability in the eastern UP. This project will involve:
  - *Rebuilding the Hiawatha-Pine River and Pine River-Straits 69 kV lines and converting the lines to 138 kV (2009)*
  - *Installing a 138/69 kV transformer at Pine River (2009)*
  - *Expanding the Hiawatha, Pine River and Straits substations to accommodate the rebuilt lines and transformer at Pine River (2009)*

- Implement the Blaney Park [Schoolcraft County] - Munising project to address line and transformer overloads, improve voltage profiles, replace facilities in poor condition and improve reliability in the central UP. This project will involve:
  - *Rebuilding the Blaney Park-Munising 69 kV line and converting the line to 138 kV (2012)*

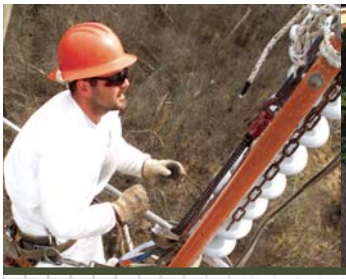
- To address overloads elsewhere in Zone 2:
  - *Uprate the Presque Isle [near Marquette] -Cedar [near Ishpeming], Presque Isle-Freeman [near Negaunee], Cedar-M38 [near L'Anse] and Cedar-Freeman 138 kV lines (2004)*
  - *Rebuild the Nordic [Dickinson County] -Randville [Dickinson County] 69 kV line to double circuit 69 kV*

- To address low voltages elsewhere in Zone 2:
  - *Install capacitor banks at Atlantic [near Houghton], Gwinn, Land O' Lakes [Gogebic County], Roberts [near Newberry] and Talentino [Chippewa County] substations (2004)*
  - *Install a 138/69 kV transformer at Straits [St. Ignace] (2005)*
  - *Install a capacitor bank at Iron River substation (2006)*

- To meet new distribution load interconnection requests where new transmission lines would be required:
  - *Construct a 69 kV line from Elevation Tap [near Houghton] to Elevation [near Houghton]*



Transmission moves electricity from power plants, where it is produced, to local utility distribution systems, where it is delivered to electricity users.



zone 3 South Central / Southwest Wisconsin and North Central Illinois

Transmission system characteristics

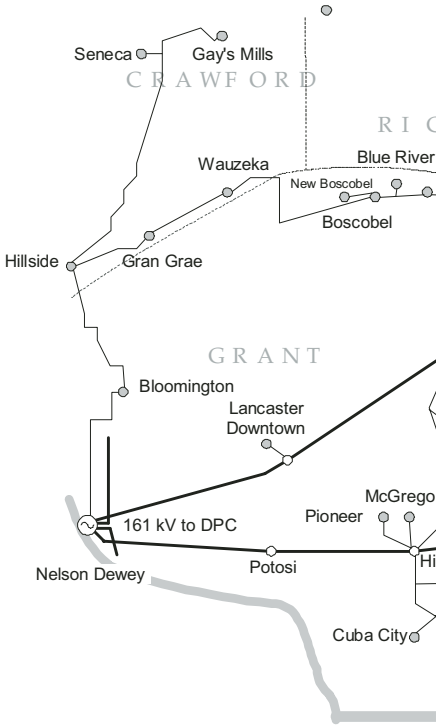
ATC delivers power in Zone 3 with the following major transmission facilities:

- Columbia-North Madison 345 kV line
- Columbia-Rockdale-Paddock-Wempletown [Illinois] 345 kV line
- 138 kV and 69 kV facilities throughout the zone

There are a number of transmission system performance issues in Zone 3. There is limited import capability into the Madison area, heavy power transfers affecting 138 kV and 69 kV facilities in the western portion of the zone, parallel path flows from new generation in northern Illinois and heavily loaded facilities in the eastern portion of the zone. Low voltages are prevalent throughout the zone.

There are several proposed new generation projects in Zone 3, one of which currently is under construction to the south of Janesville. New generation proposed in the Madison area will require transmission reinforcements but also will provide support to the transmission system. Another generation consideration is the possibility of future retirement of generation in the Madison area.

The diagram at right shows the existing transmission lines and substations in Zone 3. ATC completed 13 reinforcement projects since summer 2002 and is planning to complete 24 additional reinforcement projects by summer 2004, most notably a new 345/138 kV transformer at Rockdale, the reconductored Whitewater-Mukwonago 138 kV line and conversion of the Kirkwood-Reedsburg 69 kV line to 138 kV.

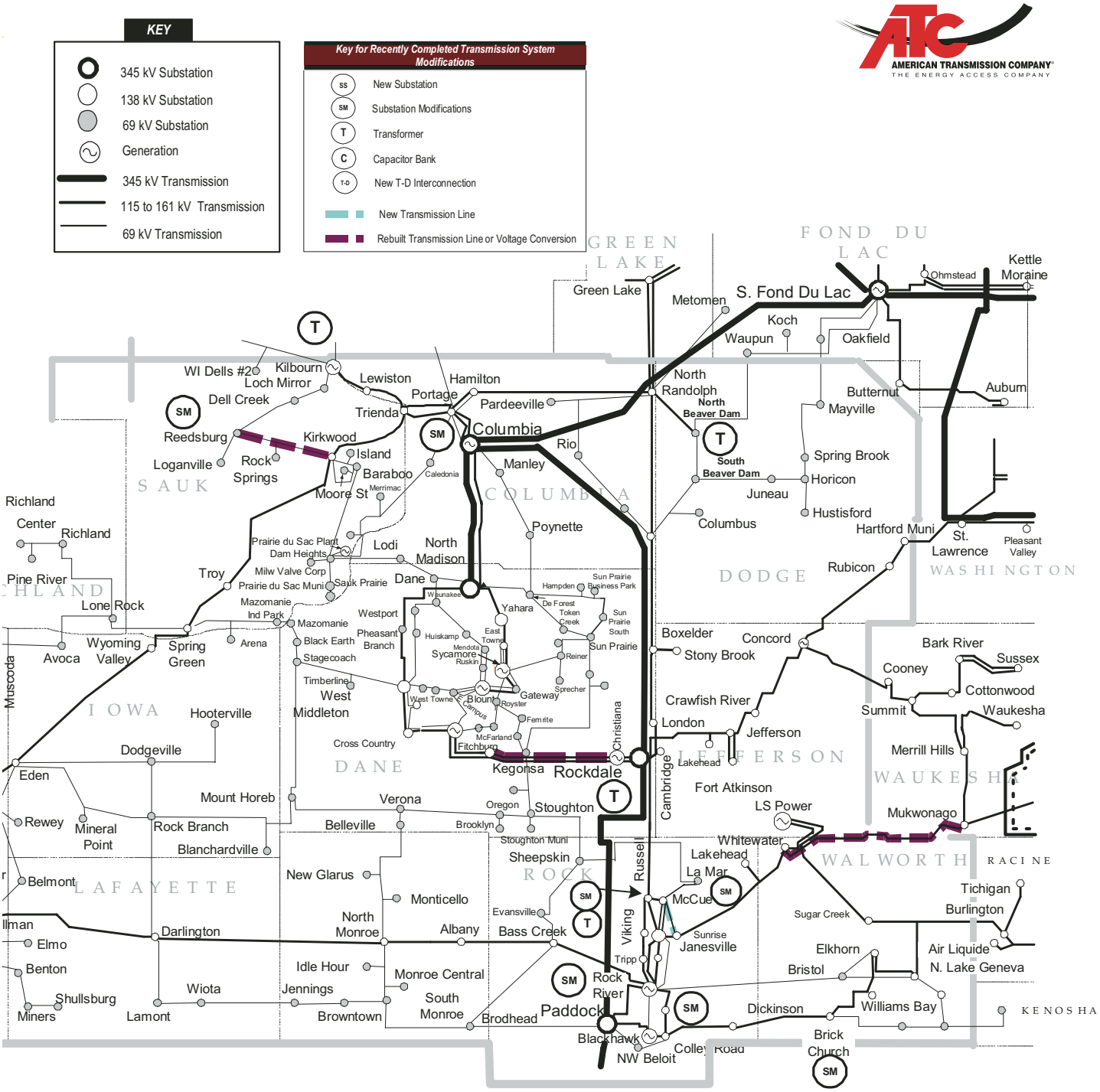


Environmental considerations

This zone covers the south central and southwestern portions of Wisconsin. The ecological landscapes in this zone vary from Southeast Glacial Plains in the east through Central Sand Hills areas to areas that are part of the Southwest Savanna and Western Coulee and Ridges landscapes in the west. The eastern portions of the zone generally are level to gently rolling terrain while the western areas are characterized by the ridges and valleys of the driftless area. The northern and western portions of this zone are located in the Lower Wisconsin River Drainage Basin and the Mississippi River forms the zone's western boundary. Other portions of this zone are located in the Grant-Platte, Sugar River-Pecatonica, Upper & Lower Rock, and Fox Illinois drainage basins. Horicon Marsh National Wildlife Refuge is located in the northeast part of the zone and the Upper Mississippi River Wildlife and Fish Refuge is located along the zone's western edge. The Baraboo Hills are located in the north-central portion of the zone. The Lower Wisconsin River State Riverway also is found in this zone.

South Central / Southwest Wisconsin and North Central Illinois

Transmission system



zone 3

South Central / Southwest Wisconsin and North Central Illinois

Transmission system limitations

In Zone 3, low voltages, transmission facility overloads and transmission service limitations were identified in the 2004 analyses. In addition, heavily loaded facilities during off-peak periods continue to keep the system working with very little operating margins.

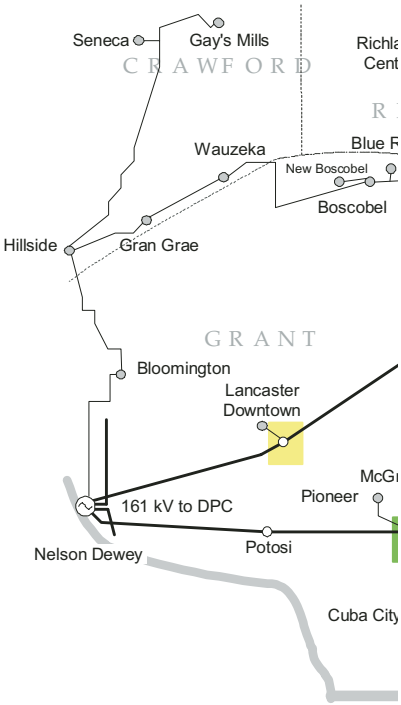
In 2004, low voltages are projected to be prominent in Walworth, Jefferson, Richland and Iowa counties. Voltage problems in Dane and Dodge counties, while not as significant a problem at this time, are projected to worsen with load growth. Facility overloads were identified on a 345/138 kV transformer at Columbia and on 138/69 kV transformers at Hilman, Paddock and McCue, as well as on the Turtle-Bradford and Columbus-South Beaver Dam 69 kV lines.

The key transmission system limitations in Zone 3 are the 345/138 kV transformer at Paddock and the Russell-Rockdale 138 kV line. Various alternatives are being evaluated to address the Paddock transformer limitation. A rebuild of the Russell-Rockdale line is planned.

ATC also will be implementing various projects to address other problems identified in the 2004 analyses, including numerous projects to accommodate new generation south of Janesville and planned generation on the near west side of Madison, and various projects to keep the system within safe operating limits until more permanent solutions can be constructed.

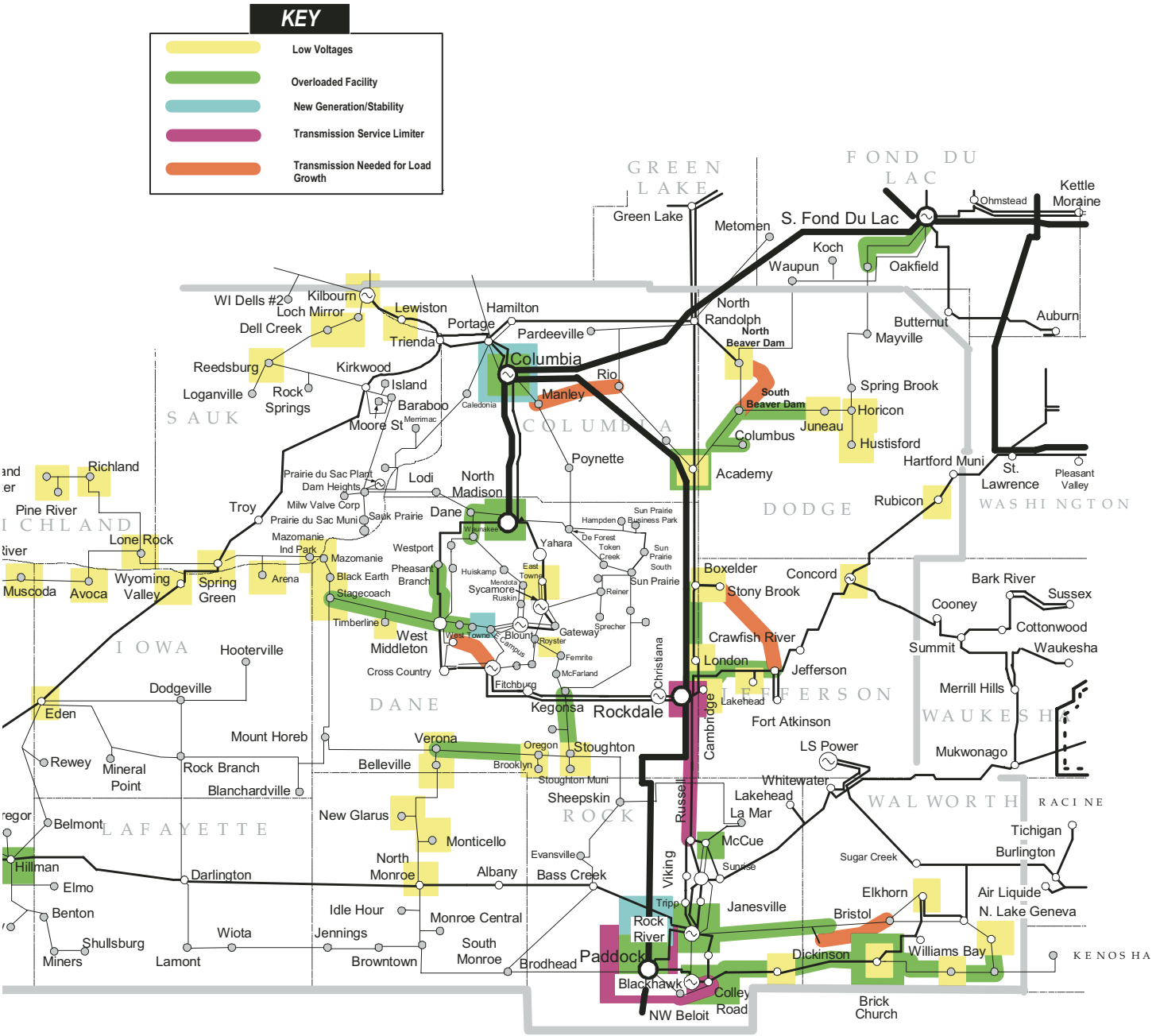
The 2008 analyses showed that many of the short-term solutions that ATC plans to implement to address the issues identified in the 2004 analyses become less effective over time indicating that longer-term solutions are needed. For example, low voltages were identified at over 50 substations throughout Zone 3. Ten line overloads and seven transformer overloads were identified as well. This magnitude of problems and the location of the issues identified signal the need for significant transmission reinforcements in Zone 3.

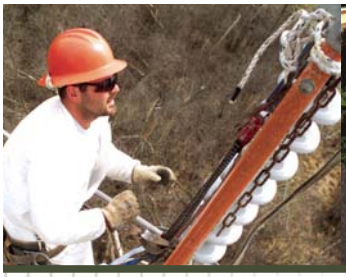
The 2012 analyses showed that with the projects planned for construction prior to 2012, many of the problems previously identified as emerging by this time are deferred.



South Central / Southwest Wisconsin and North Central Illinois

Transmission system limitations



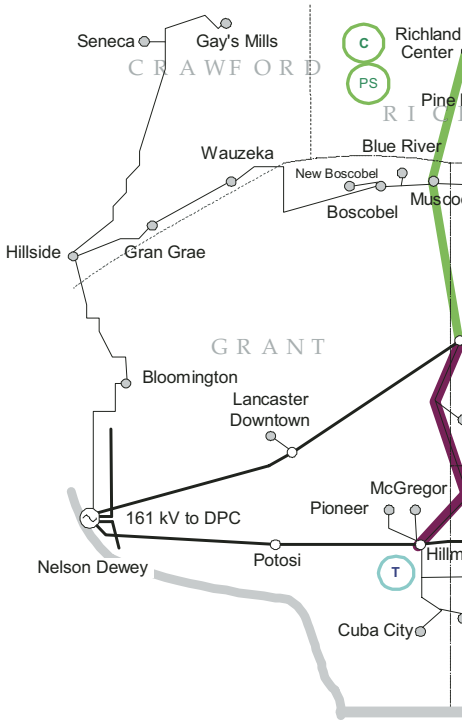


zone 3 South Central / Southwest Wisconsin and North Central Illinois

Transmission system solution alternatives

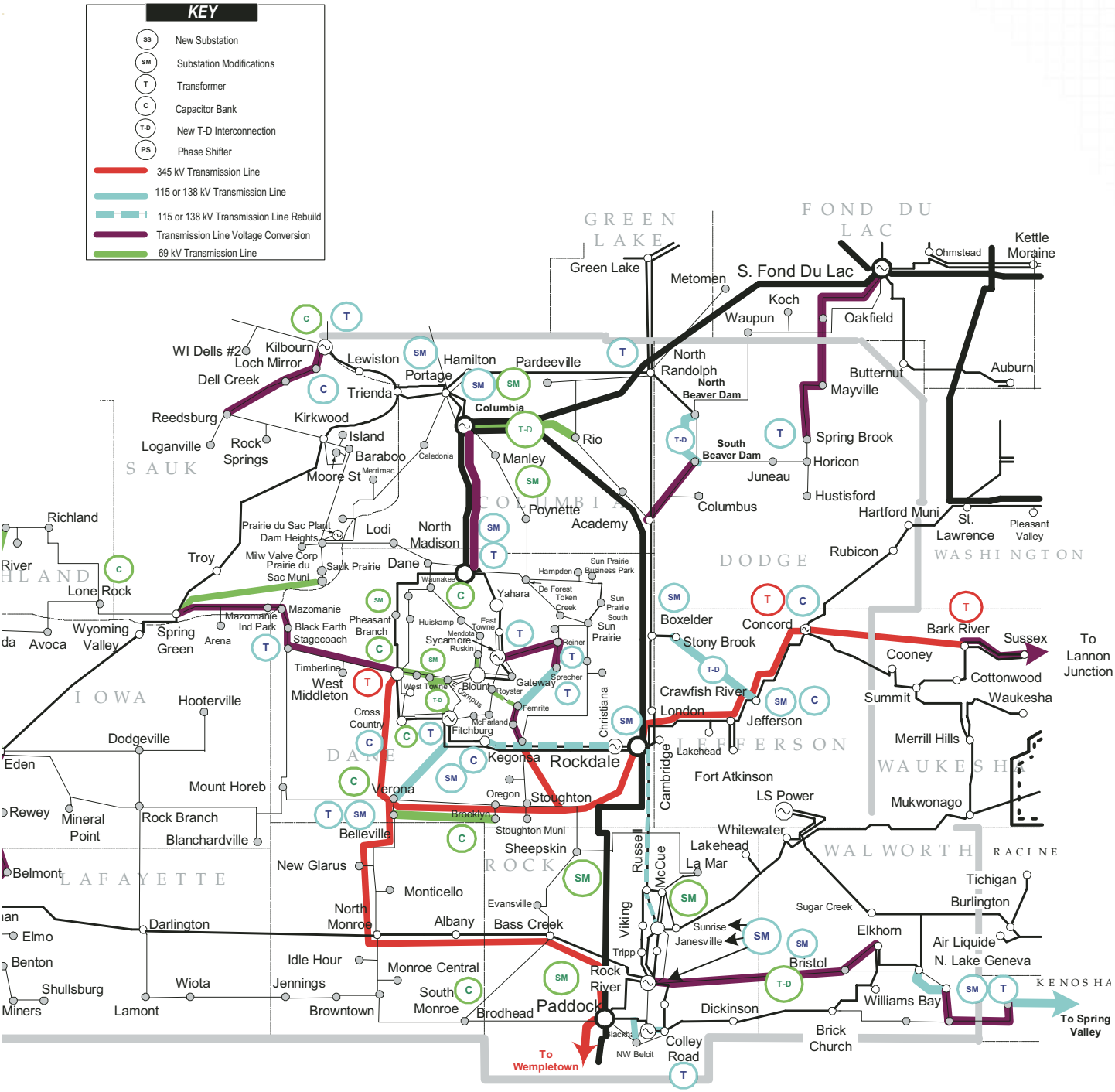
ATC has identified an integrated approach to addressing projected transmission limitations within Zone 3. ATC's approach is based on the following planned and proposed solutions:

- Implement numerous transmission system reinforcements in Dane County to enable provision of reliable service over the next ten years. These reinforcements would address the interconnection and delivery of the Riverside generation, which is under construction south of Janesville, and the proposed West Campus generation to be located on the near west side of Madison, as well as the load serving needs in the Madison area.
  - *Reconfigure the 138 kV and 69 kV circuits between Rock River [north of Beloit] and Janesville substations to create a Rock River-Janesville and a Rock River-Sunrise [near Janesville] 138 kV circuit (2003)*
  - *Construct a new 138 kV switchyard at the Riverside [northwest of Beloit] generation site (2003)*
  - *Construct a double circuit 138 kV line from Rock River to Riverside (2003)*
  - *Construct a second East Campus-Walnut [near UW-Madison] 69 kV underground line (2004)*
  - *Uprate the McCue [near Janesville] -Sheepskin [near Edgerton] 69 kV line (2004)*
  - *Replace the 138/69 kV transformers at Sycamore [Madison] and Fitchburg (2004)*
  - *Rebuild the Russell [near Janesville] -Janesville 138 kV line (2004)*
  - *Reconductor the Russell-Rockdale [near Cambridge] 138 kV line (2004)*
  - *Reconductor the Blount-Ruskin [Madison] and Blount-Ruskin Tap 69 kV lines (2004)*
  - *Rebuild the Kegonsa [south of McFarland] -McFarland-Femrite [near Madison] 69 kV line to 138 kV (2004)*
  - *Rebuild the Femrite-Royster [Madison] 69 kV line (2004)*
  - *Expand the Walnut substation to connect the proposed West Campus [adjacent to Walnut substation] generation (2004)*
  - *Construct a new Tokay [Madison] substation (2004)*
  - *Construct a new Fitchburg-Tokay-West Towne [Madison] 69 kV underground line*
  - *Install capacitor banks at the Kegonsa, North Madison, Cross Country [near Madison], Waunakee and at either Oregon [Dane County] or Brooklyn [Dane County] (2004)*
  - *Install distribution capacitor banks at/near Tokay and West Middleton (2004)*
  - *Expand the Kegonsa substation and connect the Christiana [near Cambridge] -Fitchburg 138 kV line into Kegonsa (2005)*
  - *Expand the North Madison substation and replace the 345/138 kV transformers (2006)*
  - *Convert the Columbia [near Portage] -North Madison 138 kV circuit to 345 kV (2006)*
  - *Install a capacitor bank at Verona [near Madison] (2006)*
  - *Extend the Femrite-Royster 69 kV line into AGA gas substation {Madison] (2007)*
  - *Construct a new Femrite-Sprecher [near Madison] 138 kV line (2007)*
  - *Convert the Kegonsa-McFarland-Femrite 69 kV line to 138 kV (2007)*
  - *Install 138/69 kV transformers at Femrite and Sprecher (2007)*
  - *Convert the Sycamore-Reiner [near Sun Prairie] -Sprecher 69 kV line to 138 kV (2007)*
  - *Construct a new 138 kV line from Verona to SE Fitchburg (2007)*
  - *Construct a new 69 kV line from Brooklyn [Dane County] to Belleville [Dane County] (2009)*
  - *Construct a new Rockdale [near Cambridge] -Kegonsa-West Middleton 345 kV line (2009)*



South Central / Southwest Wisconsin and North Central Illinois

Transmission system solution alternatives



Transmission system solution alternatives (continued)

- *Expand the West Middleton substation and install a 345/138 kV transformer (2009)*
- *Construct a second West Middleton-Walnut 69 kV circuit (2009)*
- *Rebuild and convert the West Middleton-Spring Green line to 138 kV (2009)*
- *Expand the Stagecoach [near Cross Plains] substation and install a 138/69 kV transformer (2009)*
- *Uprate the West Middleton-Pheasant Branch [Middleton] 69 kV line (2011)*

- Implement projects that relieve limitations to transferring power into and through Zone 3, including:
  - *Reconductor the Christiana-Kegonsa portion of the Christiana-Fitchburg 138 kV line (2003)*
  - *Reconductor the Blackhawk [Beloit] -Colley Road [near Beloit] 138 kV line (2003)*
  - *Construct a second Wempletown [Illinois] -Paddock [west of Beloit] 345 kV circuit and reconfigure the existing Wempletown-Paddock and Paddock-Rockdale 345 kV circuits (2005)*
  - *Uprate the Rockdale-Jefferson and Rockdale-Box Elder [near Waterloo] 138 kV lines (2005)*

- Implement transmission reinforcements to address load serving needs in Sauk County, including:
  - *Construct a new Zobel [Reedsburg] 138/69 kV substation on the north side of Reedsburg (2004)*
  - *Construct a new Artesian [Reedsburg] -Zobel 138 kV line (2004)*
  - *Convert the Kilbourn-Zobel 69 kV line to 138 kV (2004)*
  - *Install a capacitor bank at the Birchwood [near Wisconsin Dells] substation (2004)*

- Implement transmission reinforcements to address load serving needs in Walworth and Kenosha counties, including:
  - *Rebuild the Turtle [north of Beloit] -Bristol [near Delavan] 69 kV line to 138 kV (2005)*
  - *Construct a new West Darien-SW Delavan-Delavan 138 kV line (2005)*
  - *Operate both of the above lines at 69 kV until 2008*
  - *Expand the Bristol substation (2008)*
  - *Convert South Lake Geneva-Twin Lakes [Kenosha County] 69 kV line to 138 kV (2009)*
  - *Expand the South Lake Geneva substation and install a 138/69 kV transformer (2009)*
  - *Construct a new South Lake Geneva-North Lake Geneva 138 kV line (2009)*
  - *Construct a new Twin Lakes-Spring Valley [Kenosha County] 138 kV line (2009)*

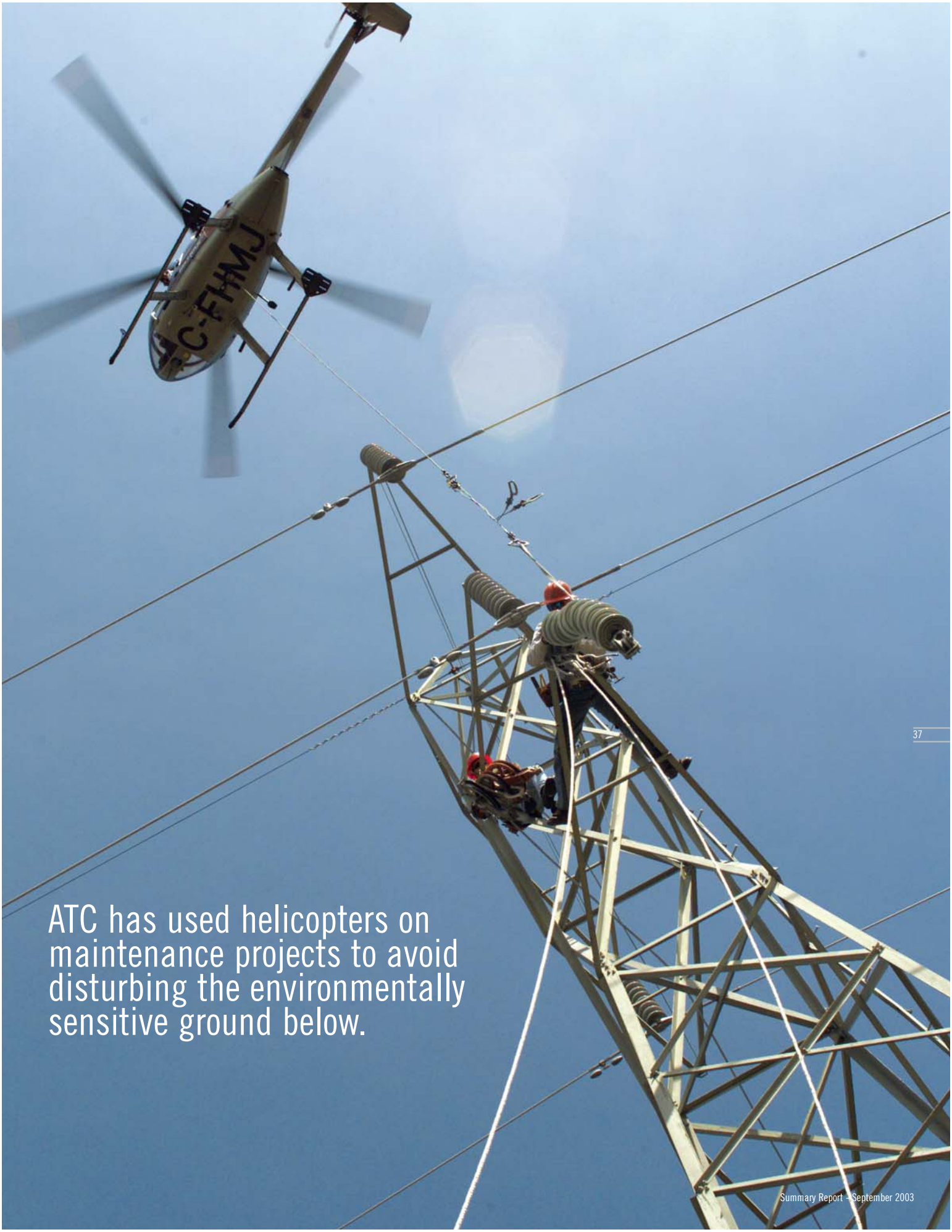
- To address overloads elsewhere in Zone 3:
  - *Install a second 138/69 kV transformer at North Randolph [Columbia County] (2004)*
  - *Uprate the Portage-Columbia double circuit 138 kV line (2005)*
  - *Install a second 138/69 kV transformer at Hilman [near Plattville] (2008)*
  - *Uprate the Columbia-Manley Sand [Columbia County] 69 kV line (2009)*
  - *Uprate the Paddock [near Beloit] -Shirland [near Beloit] 69 kV line (2010)*
  - *Uprate the Colley Road 138/69 kV transformer (2010)*
  - *Replace one of the 138/69 kV transformers at Kilbourn [in Wisconsin Dells] (2010)*
  - *Move the Lone Rock [Richland County] 69 kV phase shifter to Richland Center (2012)*

- To address low voltages elsewhere in Zone 3:
  - *Install a capacitor bank at Lone Rock substation (2004)*
  - *Install capacitor banks at Richland Center and South Monroe [Green County] substation (2006)*
  - *Construct a South Beaver Dam-North Beaver Dam 138 kV line (2007)*
  - *Convert the Academy-South Beaver Dam 69 kV line to 138 kV (2007)*
  - *Install capacitor banks at Jefferson and Concord [near Watertown] substations (2007)*
  - *Convert the South Fond du Lac-Springbrook [near Mayville] 69 kV line to 138 kV (2008)*
  - *Expand the Springbrook substation and install a 138/69 kV transformer (2008)*
  - *Convert the Hillman-Eden [Iowa County] 69 kV line to 138 kV (2009)*
  - *Construct a new Spring Green-Prairie du Sac [Sauk County] 69 kV line (2009)*
  - *Install a capacitor bank at Kilbourn (2010)*
  - *Construct a new Eden-Muscoda [Grant County] -Richland Center 69 kV line (2012)*

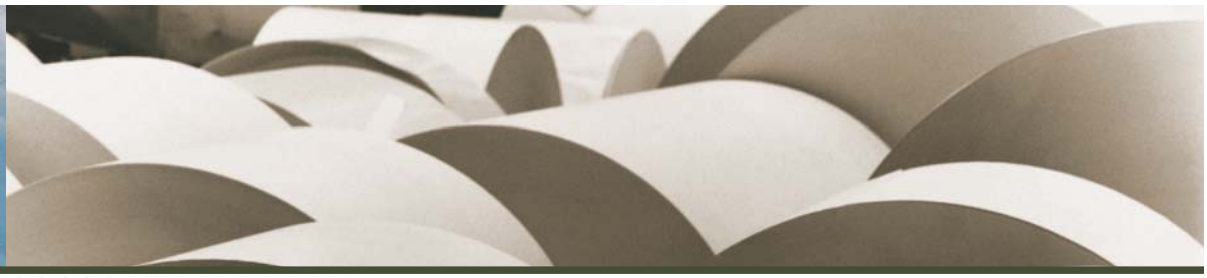
- To meet new distribution load interconnection requests where new transmission lines would be required:
  - *Construct a 69 kV line from Columbia through a new Wyocena [Columbia County] substation to Rio [Columbia County] (2005)*
  - *Construct a 138 kV line from Jefferson through a new Lake Mills substation to Stony Brook (2006)*

- Implement transmission reinforcements to address low voltages in Jefferson and Waukesha counties and increase west-east transfer capability in the southern portion of ATC's system, including the following projects or equivalents:
  - *Rebuilding the Rockdale-Jefferson-Concord 138 kV line to double circuit 345 kV and 138 kV (2009)*
  - *Expand the Jefferson and Concord substations and install a 345/138 kV transformer at Concord (2009)*
  - *Construct a new Concord-Bark River [Waukesha County] 345 kV line (2010)*

- Implement transmission reinforcements to increase transfer capability into the ATC system, relieve congestion at Paddock substation and improve reliability in Dane County, including the following projects or equivalents:
  - *Construct a 345 kV line from Paddock to Verona [near Madison] (2012)*
  - *Loop the Kegonsa-West Middleton 345 kV line into Verona (2012)*



ATC has used helicopters on maintenance projects to avoid disturbing the environmentally sensitive ground below.



zone 4 Northeast Wisconsin

Transmission system characteristics

ATC delivers power in Zone 4 with the following major transmission facilities:

- Four 345 kV lines extending from the Kewaunee and Point Beach nuclear plants
- Two 345 kV lines extending from the Edgewater Power Plant
- The eastern portion of the Rocky Run-North Appleton 345 kV line
- 345 kV lines 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 the Upper Peninsula of Michigan, the stability response of the Kewaunee and Point Beach nuclear plants, aging facilities in poor condition and heavily loaded facilities in the Fox River Valley and Green Bay.

There are several new generation projects in Zone 4, one that went into service earlier this year at the Pulliam Power Plant and one that is under construction in Kaukauna. Many of the other proposed generation projects in the zone will require transmission reinforcements that may affect ATC's current transmission plans. Another generation consideration is the possibility of future retirement of generation in the Green Bay area.

The diagram on the next page shows the existing transmission lines and substations in Zone 4. ATC completed seven reinforcement projects since summer 2002 and is planning to complete eight additional reinforcement projects by summer 2004, most notably a rebuild of the Morgan-Stiles 138 kV line and rebuild of the Pulliam-Bayport line to double circuit 138 kV and 69 kV.

Environmental considerations

This zone includes lands in the Southeast Glacial Plains, Central and Northern Lake Michigan Coastal, and Northeast Sands ecological landscape regions. The area drains towards Lake Michigan via the Milwaukee, Sheboygan, Manitowoc, Twin-Door-Kewaunee, Wolf and Lower Fox Drainage Basins. Lake Winnebago and the Fox Valley are located in the central part of this zone. The eastern boundary of the zone is formed by the shorelines of Lake Michigan and Green Bay. The Niagara Escarpment runs through the center of the zone and out the Door Peninsula. Portions of the Kettle Moraine State Forest and the Horicon National Wildlife Refuge are found in the southern end of the zone. Navarino State Wildlife Area and a segment of the Wolf River classified as a Federal Wild and Scenic River are located in the northwest part of the zone. Several Native American tribal reservations are located in this planning zone.

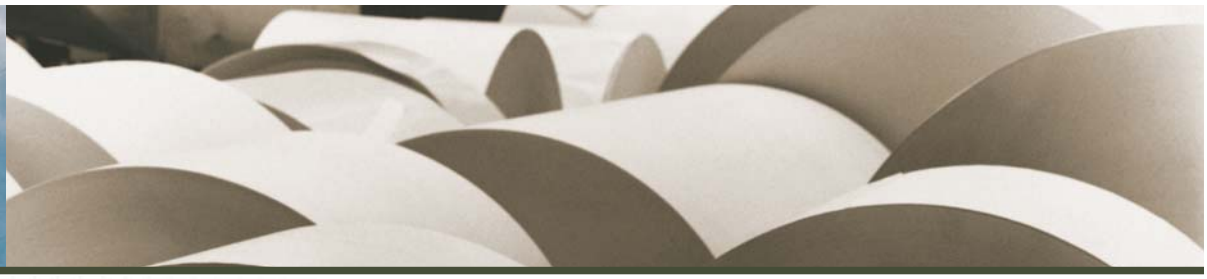
Northeast Wisconsin
Transmission system

Key for Recently Completed Transmission System Modifications

- New Substation
- Substation Modifications
- Transformer
- Capacitor Bank
- New T-D Interconnection
- New Transmission Line
- Rebuilt Transmission Line or Voltage Conversion

KEY

- 345 kV Substation
- 138 kV Substation
- 69 kV Substation
- Generation
- 345 kV Transmission
- 115 to 161 kV Transmission
- 69 kV Transmission



zone 4 Northeast Wisconsin

Transmission system limitations

In Zone 4, low voltages, transmission facility overloads and transmission service limitations were identified in the 2004 analyses. In addition, heavily loaded facilities during shoulder-peak periods continue to keep the system working with very little operating margin.

In 2004, low voltages were identified in Door County and south of Fond du Lac. Facility overloads were identified on a 345/138 kV transformer at the Edgewater Power Plant, three 138/69 kV transformers in and around the Sheboygan area, three 69 kV lines in the Green Bay area, one 69 kV line in the Sheboygan area and one 69 kV line in the Fond du Lac area.

The key transmission service limitations in Zone 4 have been the Morgan-Stiles 138 kV line and the North Appleton-Lost Dauphin 138 kV line. The recently completed Forest Junction project, including a new Forest Junction-Lost Dauphin line, addresses the North Appleton-Lost Dauphin limitation. A rebuild of the Morgan-Stiles line is planned.

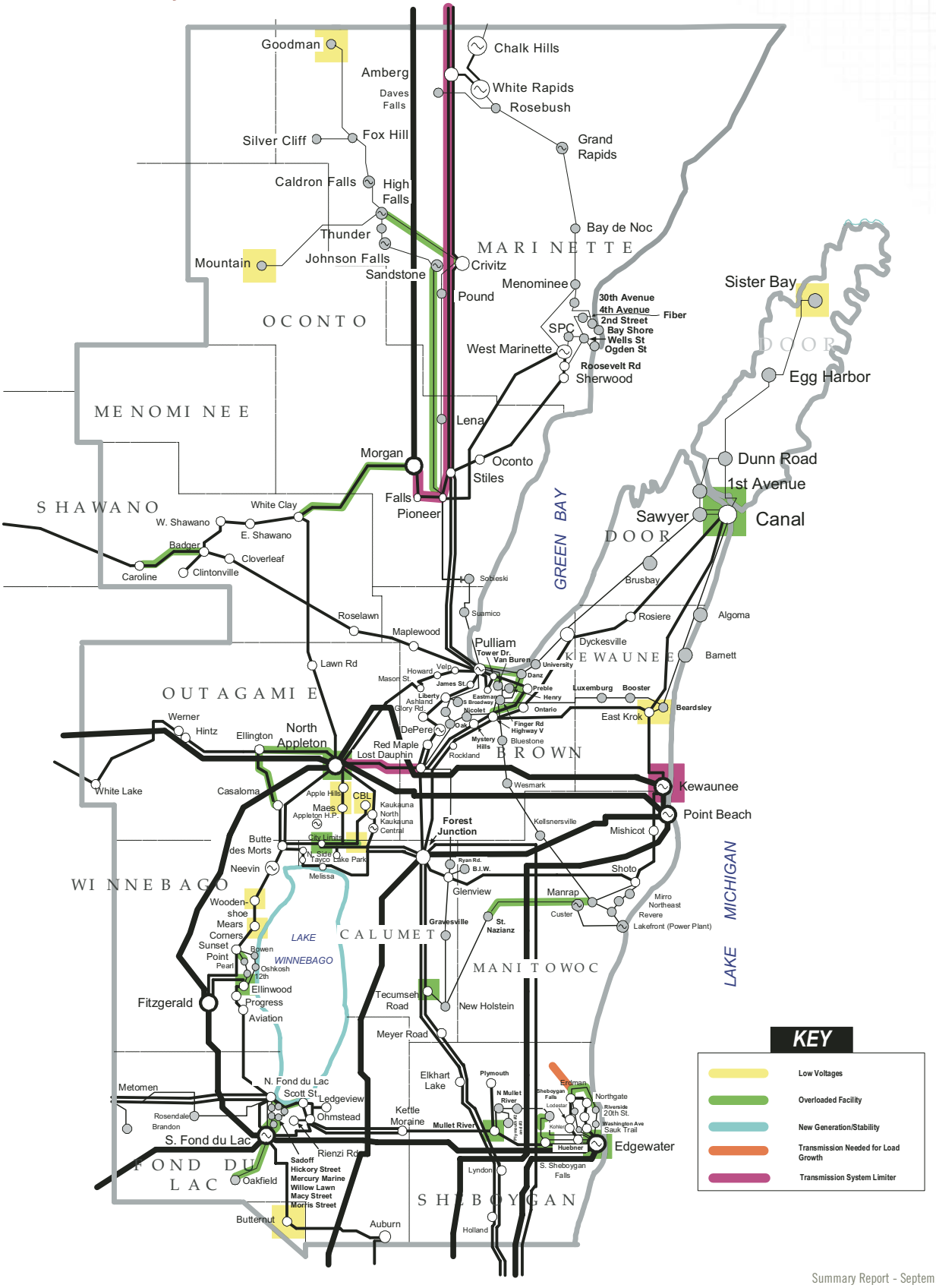
ATC also will be implementing various projects to address other problems identified in the 2004 analyses, including various projects to keep the system within safe operating limits until more permanent solutions can be constructed.

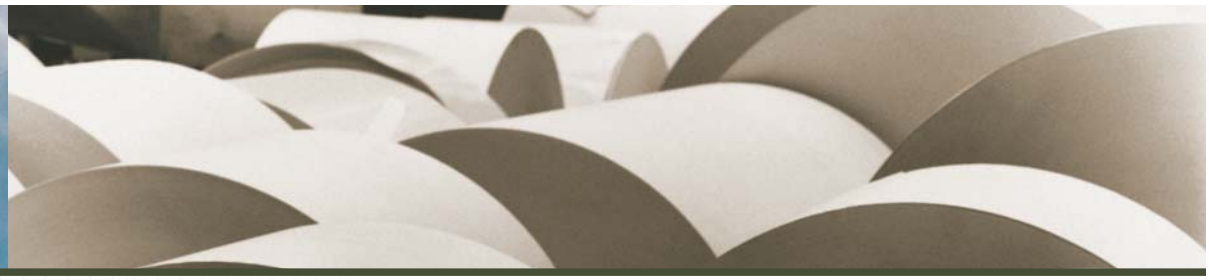
The 2008 analyses showed that while projects ATC has planned to be in service by 2008 are keeping voltages stable, numerous line and transformer overloads are emerging. In particular, the line and transformer loadings in the Appleton and Green Bay areas signal the need for a significant transmission reinforcement in that portion of Zone 4.

The 2012 analyses showed that with the projects planned for construction prior to 2012, most of the emerging facility overloads and low voltages in that timeframe are located in and between Appleton and Oshkosh.

Northeast Wisconsin

Transmission system limitations





zone 4 Northeast Wisconsin

Transmission system solution alternatives

ATC has identified an integrated approach to addressing projected transmission limitations within Zone 4. ATC's approach is based on the following planned and proposed solutions:

- Implement numerous transmission system reinforcements in the Sheboygan area to enable provision of reliable service over the next ten years. These reinforcements would include the following projects:
  - *Replace or modify substation equipment at the Sheboygan Falls and Lodestar [near Kohler] substations (2003)*
  - *Construct a 138 kV line from the Mullet River substation to the North Mullet River substation [near Plymouth] (2003)*
  - *Convert the North Mullet River-Plymouth 69 kV line to 138 kV (2003)*
  - *Install a 345 kV circuit breaker at the Edgewater [near Sheboygan] substation (2004)*
  - *Replace substation equipment at Edgewater (2004)*
  - *Replace a 345/138 kV transformer at Edgewater (2005)*
  - *Construct a new 138 kV line from Lodestar to Sheboygan Falls (2006)*
  - *Install a 138/69 kV transformer at Sheboygan Falls (2006)*

- Implement projects that relieve limitations to transferring power through Zone 4 and to the UP, improve voltage profiles in the Appleton and Green Bay areas, and lessen transformer loadings throughout the zone, including:
  - *Constructing a new 345/138 kV substation called Werner West [near New London], located west of Appleton, which interconnects the Rocky Run [near Plover] -North Appleton 345 kV line and the Werner-White Lake [near Waupaca] 138 kV line (2006)*
  - *Constructing a new 345 kV line from Werner West to Morgan [near Oconto Falls] (2009)*

- Implement transmission reinforcements to address load serving needs in Door County, including:
  - *Install a capacitor bank at the Canal [near Sturgeon Bay] substation (2004)*
  - *Construct a new Canal-Dunn Road [near Sturgeon Bay] 138 kV line (2007)*
  - *Install a 138/69 kV transformer at Dunn Road substation (2007)*
  - *Construct a new Dunn Road-Egg Harbor 69 kV line (2011)*

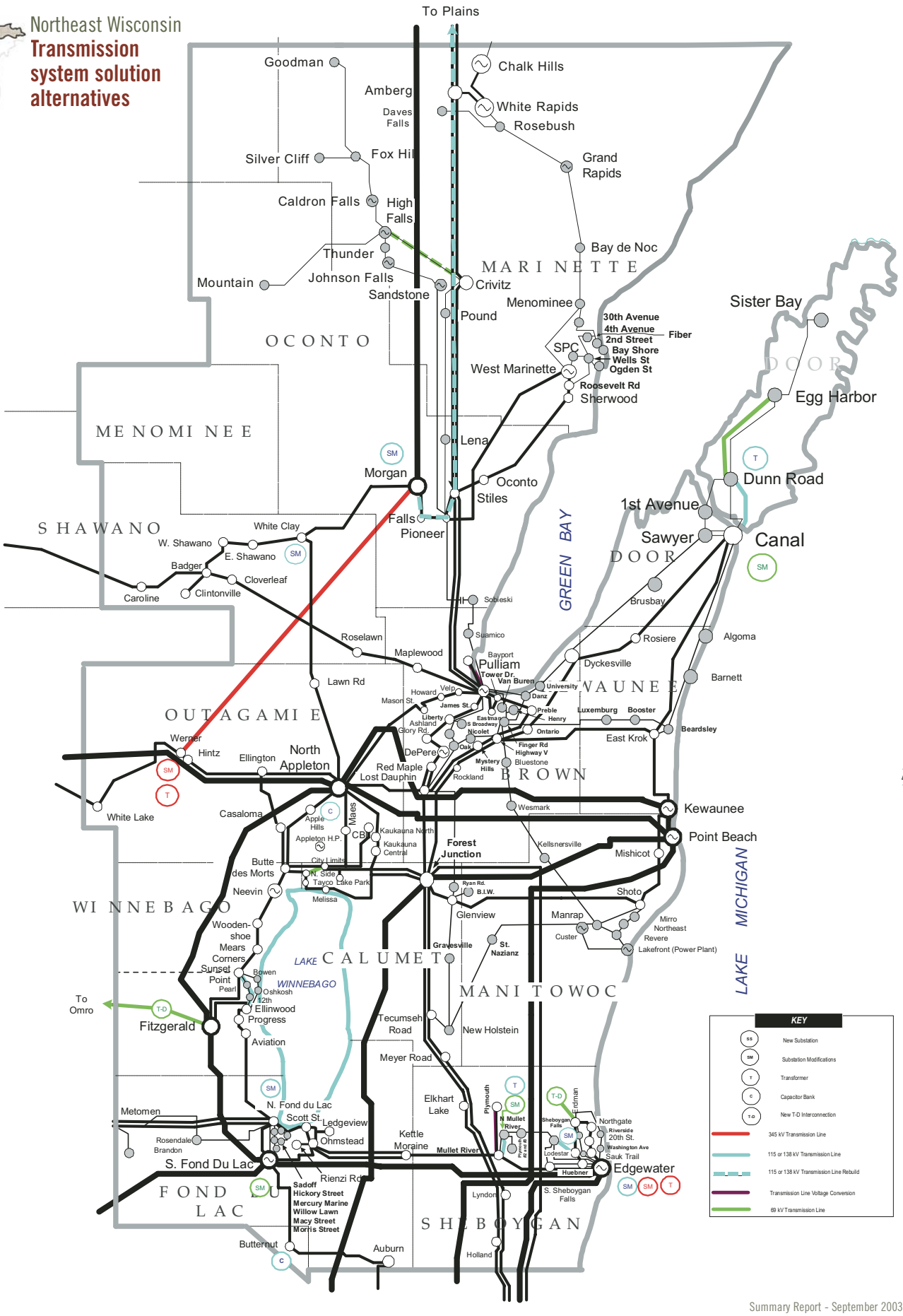
- To address overloads elsewhere in Zone 4:
  - *Replace substation equipment at the South Fond du Lac substation (2003)*
  - *Rebuild the Pulliam [Green Bay] -Bayport [near Green Bay] line to double circuit 138 kV and 69 kV (2004)*
  - *Rebuild the Morgan [near Oconto Falls] -Stiles 138 kV line (2005)*
  - *Uprate the Morgan-White Clay [near Bonduel] 138 kV line (2005)*
  - *Reconductor a portion of the Sunset Point [near Oshkosh] -Pearl Avenue [Oshkosh] 69 kV line (2007)*
  - *Rebuild the Crivitz-High Falls [Marinette County] double circuit 69 kV line (2007)*
  - *String a new Elinwood [near Oshkosh] -Sunset Point 138 kV circuit on existing structures (2009)*
  - *Construct a Northside [Menasha] -City Limits [near Appleton] 138 kV line (2011)*

- To address low voltages elsewhere in Zone 4:
  - *Install a capacitor bank at Butternut [near Lomira] substation (2007)*

- To meet new distribution load interconnection requests where new transmission lines would be required:
  - *Construct a 138 kV line from Erdman [near Sheboygan] to a new Howards Grove substation (2006)*

Northeast Wisconsin

Transmission system solution alternatives



zone 5 Southeast Wisconsin

Transmission system characteristics

ATC delivers power in Zone 5 with the following major transmission facilities:

- Southern portion of 345 kV lines extending from the Edgewater and Point Beach power plants
- Saukville, Arcadian, Granville and Racine 345/138 kV substations
- 345 kV lines from Pleasant Prairie Power Plant
- 345, 230 and 138 kV lines from Oak Creek Power Plant
- Numerous 138 kV lines in and around the Milwaukee area

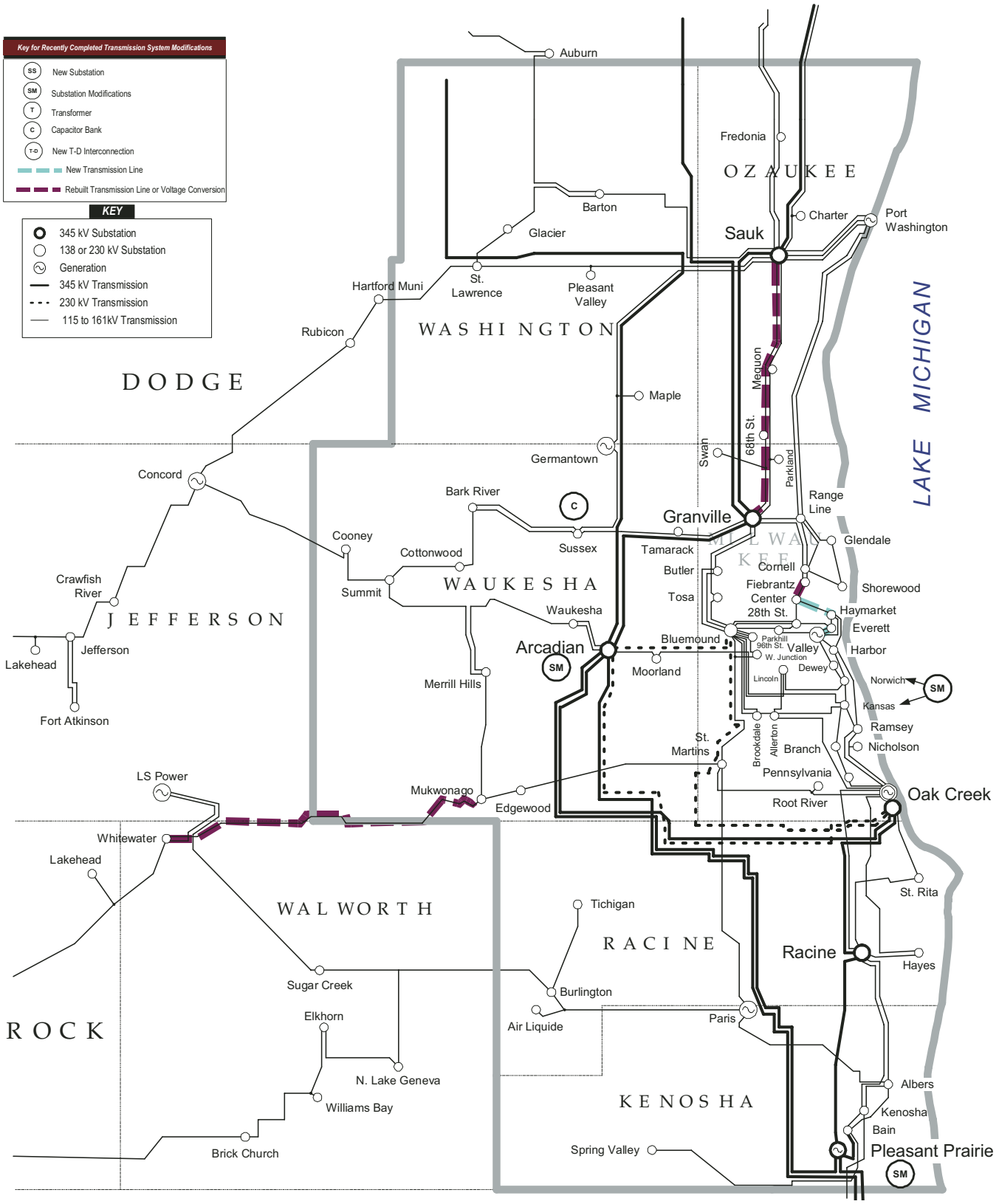
Major new generation projects, one of which is under construction in Port Washington, and another that is planned for construction at Oak Creek Power Plant, will have a significant impact on the transmission facilities needed in Zone 5. In addition, significant load growth, particularly in Waukesha and Washington counties, is signaling the need for transmission system reinforcements.

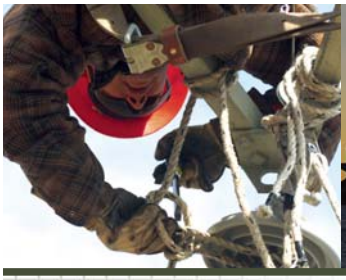
The diagram on the next page shows the existing transmission lines and substations in Zone 5. ATC completed seven reinforcement projects since summer 2002 and is planning to complete three additional reinforcement projects by summer 2004, most notably reconductoring the Center-28th Street 138 kV line and constructing a new Harbor-Haymarket 138 kV line.

Environmental considerations

Planning Zone 5 encompasses the southeastern portion of the state and is the most densely populated of the zones. The area lies in the Southern Lake Michigan Coastal and Southeast Glacial Plains ecological landscape regions. Most of the zone lies in the drainage basins of the Milwaukee, Root or Fox (Illinois) rivers. The Kettle Moraine State Forest lies in the western portions of the zone, and Lake Michigan forms its eastern boundary. Pre-settlement vegetation varies from prairie and oak savanna in the south to southern mesic forest in the northern portions of the zone. Agricultural land uses are common throughout this zone.

Southeast Wisconsin
Transmission system





zone 5

Southeast Wisconsin

Transmission system limitations

In Zone 5, low voltages, transmission facility overloads and transmission service limitations were identified in the 2004 analyses. In addition, heavily loaded facilities during shoulder-peak periods continue to keep the system working with very little operating margin.

In 2004, low voltages were identified in western Washington County and west of Milwaukee. Facility overloads were identified on a Pleasant Prairie-Bain 345 kV line, the 138 kV facilities at Bain substation, the 345/230 kV transformer at Oak Creek and on the St. Lawrence-Pleasant Valley 138 kV line.

The key transmission service limitation in Zone 5 has been the Albers-Paris 138 kV line. This limitation surfaces for an outage of the Wempletown-Paddock 345 kV line. A second Wempletown-Paddock 345 kV circuit is planned to be constructed/installed in 2005 to address this limitation.

ATC also will be implementing various projects to address other problems identified in the 2004 analyses, including various projects to keep the system within safe operating limits until more permanent solutions can be constructed.

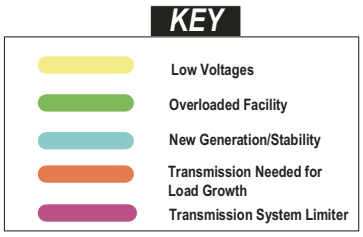
The 2008 analyses identified low voltages in central Racine County and west of Milwaukee, with emerging low voltages in Waukesha, Jefferson and Washington counties. While projects ATC has planned to be in service by 2008 will keep voltages at safe operating levels, the voltage profile in the western suburbs of Milwaukee signal the need for a significant transmission reinforcement in that portion of Zone 5. Overloads on the Oak Creek-Ramsey 138 kV line and the 230/138 kV transformer at Oak Creek will need to be addressed with the proposed generation expansion at Oak Creek.

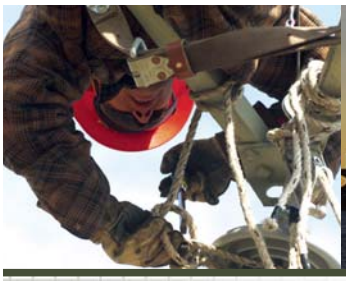
The 2012 analyses showed that with the projects planned for construction prior to 2012, only one new overload, the Racine 345/138 kV transformer, and one low voltage, at Hartford, emerged.

We recognize our proposals potentially impact many communities, and appropriately, we welcome public input so that the ultimate solutions are mutually beneficial.

Southeast Wisconsin

Transmission system limitations





zone 5 Southeast Wisconsin

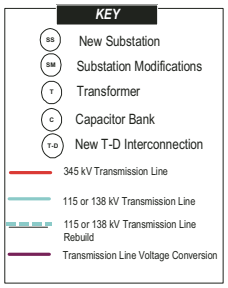
Transmission system solution alternatives

ATC has identified an integrated approach to solving projected transmission limitations within Zone 5. ATC's approach is based on the following planned and proposed solutions:

- Implement numerous transmission system reinforcements in the Milwaukee area to accommodate the interconnection and delivery of three new 650 MW generators to be installed in 2007, 2009 and 2011 at the Oak Creek Power Plant site. Without the proposed generation some of these projects would still be needed, but at a later date than with the generation. These reinforcements currently include the following projects:
  - *Expand Oak Creek 345 kV switchyard to interconnect one new 650 megawatt generator (moving the existing Oak Creek Unit #7 from the 230 kV bus to the 345 kV bus) and two 345 kV lines (Oak Creek-Brookdale [Greenfield] and Oak Creek-Bluemound [West Allis]) plus installation of two 345 kV series breakers for interconnection purposes. Expand the Oak Creek 138 kV switchyard to accommodate a new Oak Creek-St. Martins [Franklin] 138 kV line (2007)*
  - *Construct an Oak Creek-Brookdale 345 kV line. This project, as proposed, will involve installing four miles of new structures, and converting 16 miles of non-operative 230 kV and five miles 138 kV line (2007)*
  - *Construct a 345/138 kV switchyard at Brookdale to accommodate two 345 kV lines, one 500 MVA 345/138 kV transformer and four 138 kV lines, plus two 138/26.2 kV transformers (2007)*
  - *Construct a Brookdale-Granville [Milwaukee] 345 kV line. This project, as proposed, will involve converting/reconductoring six miles of 138 kV line, rebuilding seven miles of 138 kV double circuit tower line and converting/reconductoring three miles of 138 kV circuit on existing 345 kV structures (2007)*
  - *Restring the five-mile Bluemound-Butler 138 kV line on new 345 kV structures installed with Brookdale-Granville 345 kV line (2007)*
  - *Construct a one-mile Butler-Tamarack [Menomonee Falls] 138 kV line on new 345 kV structures installed with Brookdale-Granville line (2007)*
  - *Construct Oak Creek-St Martins 138 kV circuit #2 installing four miles of new structures and conductor, plus 13 miles of conductor on existing towers (2007)*
  - *Construct 345 kV Bluemound switchyard to accommodate one 345 kV line and one 345/138 kV transformer (2007)*
  - *Convert/reconductor Oak Creek-Bluemound 230 kV line to 345 kV (2007)*
  - *Install series circuit breakers on two 345 kV lines at the Pleasant Prairie switchyard (2007)*
  - *Replace seven 138 kV overdutied breakers at Bluemound (2007)*
  - *Reconductor the Oak Creek-Ramsey 6 [Cudahy] 138 kV line (2007)*
  - *Reconductor the underground segment of Ramsey 5 [Cudahy] -Harbor 138 kV line (2007)*
  - *Reconductor the Oak Creek-Allerton [Greenfield] 138 kV line (2007)*
  - *Expand Oak Creek 345 kV switchyard to connect one new 650 megawatt generator plus installation of one 345 kV series breaker for interconnection purposes (2009)*
  - *Expand Oak Creek 345 kV switchyard to interconnect three new generators (totaling 650 megawatts), moving the existing Oak Creek Unit #8 from the 230 kV bus and two 345 kV lines (Oak Creek-Racine and Oak Creek-Bluemound), plus installation of five 345 kV series breakers for interconnection and/or stability purposes (2011)*
  - *Expand the Oak Creek 138 kV switchyard to reconnect existing units #6 and #9 from the 230 kV bus (2011)*
  - *Convert and reconductor Oak Creek-Bluemound 230 kV line to 345 kV and loop this line into the Arcadian [New Berlin] 345 kV substation (2011)*
  - *Expand the 345 kV switchyard at Bluemound to accommodate three additional 345 kV lines and two additional 345/138 kV transformers (2011)*
  - *Reroute Brookdale-Granville 345 kV line into the expanded Bluemound 345 kV switchyard (2011)*
  - *Construct a new Oak Creek-Racine 345 kV line with four miles of new conductor installed on the vacant position of the structures installed with the Oak Creek-Brookdale 345 kV line in 2007, and convert 10 miles of 138 kV line to 345 kV (2011)*
  - *Replace 22-138 kV overdutied breakers at Harbor [Milwaukee], Everett [Milwaukee] and Haymarket [Milwaukee] substations (2011)*
- Implement transmission reinforcement projects in Ozaukee County to accommodate the interconnection and delivery of two new 600 MW generators to be installed in 2005 and 2008 at the Port Washington Power Plant site. These reinforcements would include the following projects:
  - *Rebuild the Port Washington-Rangeline [Milwaukee] double circuit 138 kV line (2004)*
  - *Rebuild the Port Washington-Saukville double circuit 138 kV line (2005)*
  - *Rebuild the Port Washington-Saukville single circuit 138 kV line (2005)*
  - *Expand the Port Washington substation (2005)*
  - *Reconductor the Saukville-Pleasant Valley [north of Slinger] and St. Lawrence [north of Slinger] -Pleasant Valley [north of Slinger] 138 kV lines (2008)*

Southeast Wisconsin

Transmission system solution alternatives



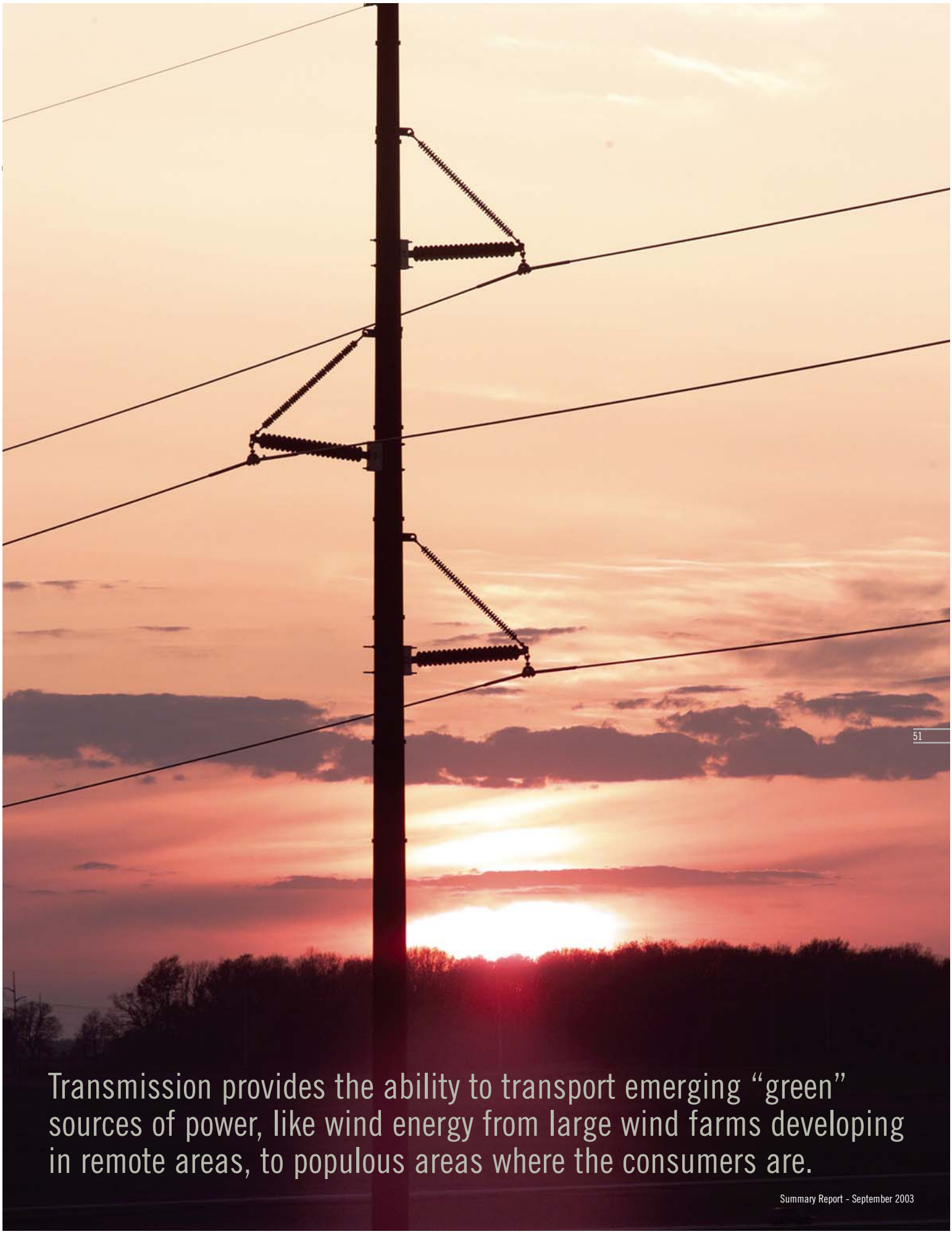
Transmission system solution alternatives (continued)

- Implement transmission reinforcements to address load serving needs in Waukesha, Washington and Jefferson counties, improve stability at Germantown Power Plant, and improve transfer capability across the southern portion of the ATC system, including:
  - *Construct a new Lannon Junction [Menomonee Falls] substation at the intersection of the Granville-Arcadian 345 kV line, the Forest Junction near Brillion] -Arcadian 345 kV line, the Sussex-Tamarack [Menomonee Falls] 138 kV line and the Sussex-Germantown 138 kV line (2007)*
  - *Install a 345/138 kV transformer at Lannon Junction [Menomonee Falls] substation (2007)*
  - *Construct a second Germantown-Lannon Junction 138 kV line (2007)*
  - *Convert the Lannon Junction-Bark River [west of Merton] 138 kV line to 345 kV (2009)*
  - *Construct a new 345 kV line from Bark River to Concord [near Watertown] (2010)*

- To address overloads elsewhere in Zone 5:
  - *Reconfigure the 345 kV facilities at Pleasant Prairie substation (2005)*
  - *Replace equipment at the Waukesha and Arcadian substations (2005)*
  - *Replace the two smaller 345/138 kV transformers at Arcadian substation (2011)*
  - *Replace additional equipment at the Waukesha and Arcadian substations (2011)*

- To address low voltages elsewhere in Zone 5:
  - *Install a capacitor bank at the Moorland [New Berlin] substation (2005)*
  - *Install a capacitor bank at the Burlington substation (2005)*

- To meet new distribution load interconnection requests where new transmission lines would be required:
  - *Construct a 138 kV line from Waukesha through a new Duplainville [Pewaukee] substation to Sussex (2005)*



Transmission provides the ability to transport emerging “green” sources of power, like wind energy from large wind farms developing in remote areas, to populous areas where the consumers are.

Arrowhead-Weston transmission project

The Arrowhead-Weston transmission project is a new 220-mile, 345 kV transmission line extending from the Arrowhead Substation in Duluth, Minn., to the Weston Substation in Wausau, Wis.

It will help keep the lights on and businesses running in Northwest Wisconsin, as well as throughout the state and Upper Midwest. The line will strengthen the power grid and help ensure that Wisconsin continues to have reliable and affordable electricity. More than 70 percent of this new line will be built on existing transmission line, railroad, highway or petroleum pipe right-of-way.

Benefits of this project include:

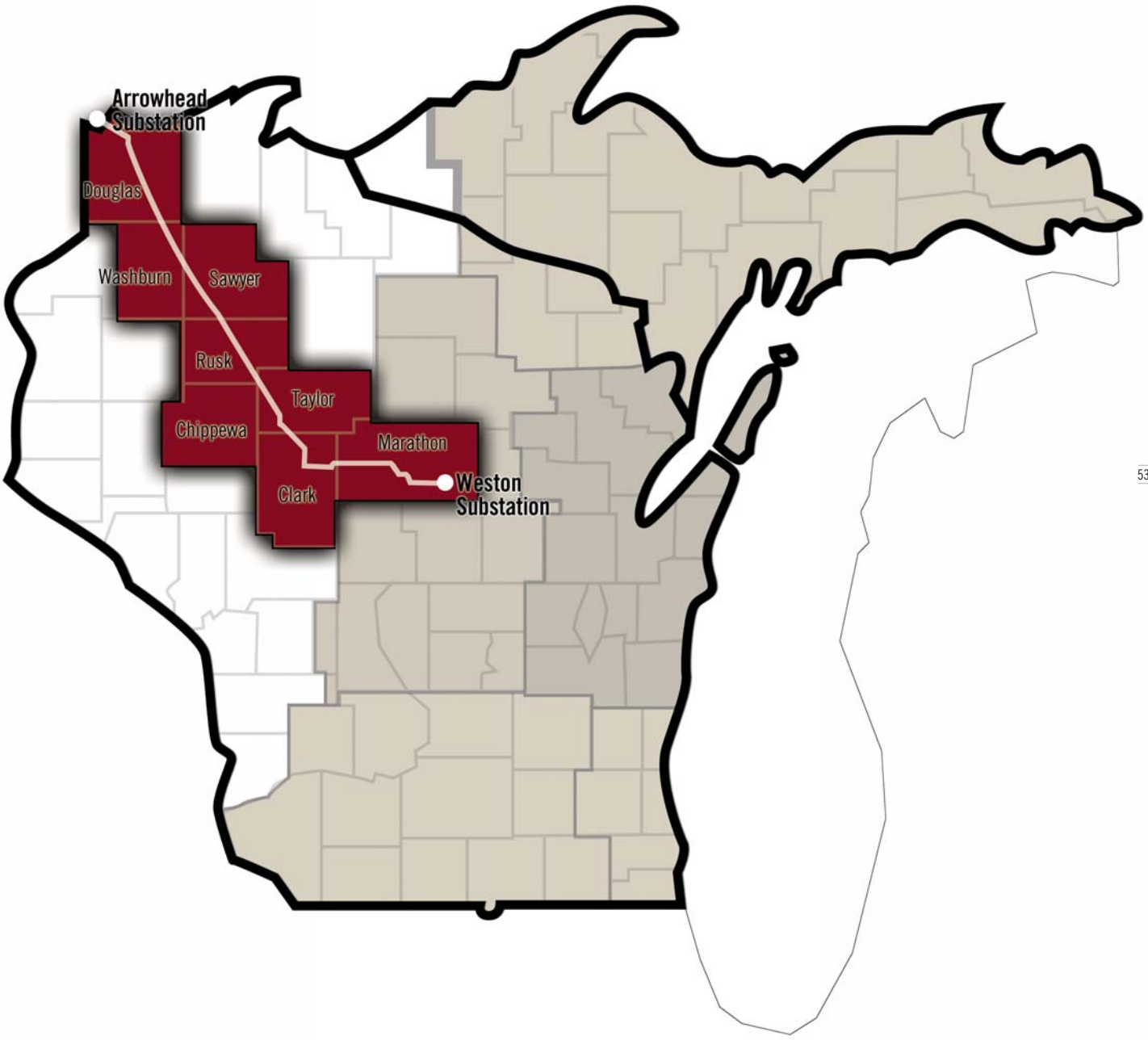
- Increasing system reliability and security for the region and the State of Wisconsin,
- Providing access to lower-cost energy markets,
- Supporting the connection of new generation, and
- Providing backbone transmission infrastructure necessary to support local economic development.

The Public Service Commission of Wisconsin issued a certificate authorizing construction of the line in October 2001. Revised cost estimates for the project currently are under review by the Commission, with an updated order expected before the end of 2003. Additional survey work and engineering activities will begin immediately following receipt of the new order, with construction starting in approximately one year.

ATC has been working with local utilities serving this area, including Xcel Energy, Dairyland Power Cooperative, Minnesota Power and Wisconsin Public Service to ensure that their systems are able to continue to serve customers during the construction period. As part of this effort, a temporary substation will be constructed at Stone Lake, which will be used to provide continuous service to the northern part of the project during construction. Discussions are occuring with local utilities about the possibility of making this substation permanent. ATC will continue to work with local utilities on future area planning issues as well.

For more information on the Arrowhead-Weston transmission project, go to www.arrowhead-weston.com.

Arrowhead - Weston transmission project



Umbrella Plans

ATC's 10-Year Assessments are based on various snapshots of anticipated future conditions which provide perspectives on the nature and severity of future system needs and limitations. Specific forecasts of load and generation are used to define the anticipated future conditions. Of course, there are many uncertainties about how the future actually will unfold. Addressing some of the issues identified beyond the 10-year planning horizon along with consideration of key nearer-term uncertainties requires analyses and solutions that go beyond the snapshot analyses. Consequently, ATC creates "umbrella plans" – integrated packages of potential projects that are developed to optimize system performance over a variety of selected possible future scenarios, addressing identified needs and limitations across a broad portion of the ATC system, not just a single zone.

We have developed umbrella plans for the three northern zones (Zones 1, 2 and 4) and the two southern zones (Zones 3 and 5). These plans reflect our current ideas about how to best address future needs and limitations. We anticipate that certain portions of these plans will change as new information becomes available, as we get input from consumers and stakeholders, and as some current uncertainties become more defined.

zones 1,2&4 Northern Zones Umbrella Plan

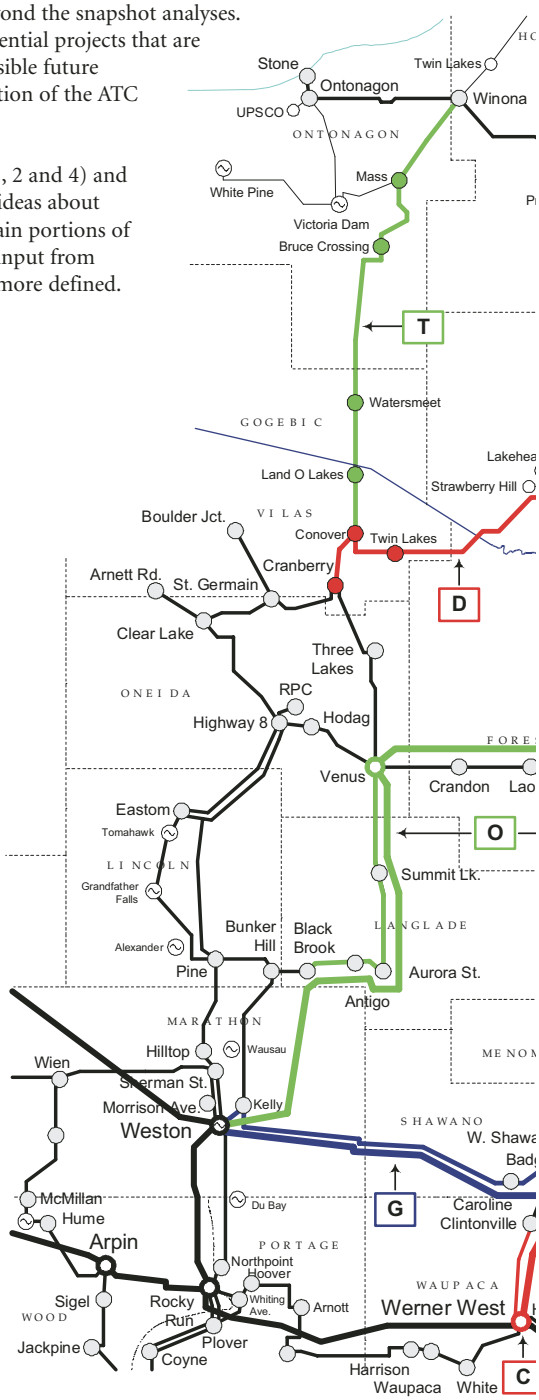
Northern Zones Umbrella Plan (Zones 1, 2 and 4)

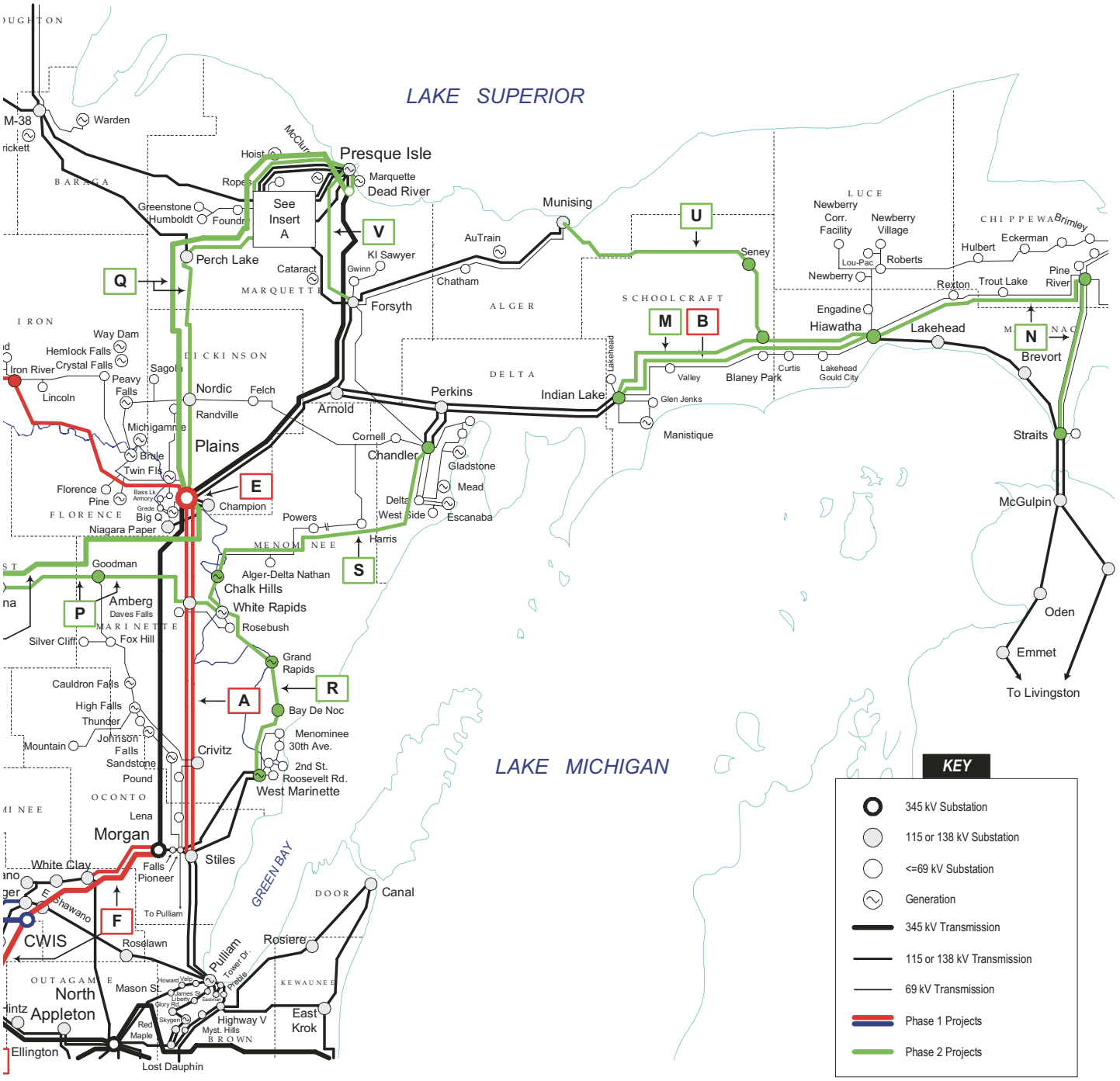
The proposed Phase I projects listed below include those that ATC believes represent the most effective means to address needs and issues from both system performance and cost perspectives. The conceptual Phase II projects are those that ATC believes will meet the needs in the area in the longer term, but will require further analyses. Based on the analyses performed to date, the Northern Zones Umbrella Plan includes the following projects:

A Reconductor or rebuild the Plains [near Iron Mountain]-Stiles double circuit 138 kV line. This project is needed now. ATC currently intends to complete the project in 2004 or 2005.

B Rebuild one of the Hiawatha-Indian Lake 69 kV lines to double circuit 138 kV standards, but string only one of the circuits initially and operate that circuit at 69 kV. ATC currently intends to complete this first phase of the project by 2005.

C Construct a new 345/138 kV substation called Werner West [near New London] near the intersection of the Rocky Run-North Appleton 345 kV line and the Werner-White Lake 138 kV line. ATC currently intends to complete this substation project by 2006.




LAKE SUPERIOR
LAKE MICHIGAN
GREEN BAY
M-38
Warden
Hoist
Rope
Presque Isle
Marquette
Dead River
See Insert A
Greenstone
Humboldt
Perch Lake
Cataract
Gwinn
KI Sawyer
Forsyth
AuTrain
Munising
Chatham
Seney
Newberry Corr. Facility
Newberry Village
Lou-Pac
Roberts
Newberry
Hulbert
Eckerman
Brimley
Pine River
Rexton
Trout Lake
Engadine
Hiawatha
Lakehead
Brevort
Straits
McGulpin
Oden
Emmet
To Livingston
Way Dam
Hemlock Falls
Crystal Falls
Iron River
Peavy Falls
Lincoln
Sagola
Nordic
Felch
Randville
Michigamme
Brule
Twin Falls
Florence
Pine
Big Q
Niagara Paper
Champion
Plains
Arnold
Perkins
Cornell
Chandler
Gladstone
Mead
Delta
West Side
Escanaba
Indian Lake
Glen Jenks
Manistique
Valley
Blaney Park
Curtis
Lakehead Gould City
Powers
Harris
Alger-Delta Nathan
Chalk Hills
White Rapids
Rosebush
Goodman
Amberg
Daves Falls
Fox Hill
Silver Cliff
Grand Rapids
Bay De Noc
Menominee
30th Ave.
2nd St.
Roosevelt Rd.
West Marinette
Cauldron Falls
High Falls
Thunder
Johnson Falls
Mountain
Sandstone
Pound
Crivitz
Lena
Morgan
White Clay
Falls
Pioneer
Stiles
To Pulliam
Roselawn
CWIS
Rosiere
Canal
Pulliam
Tower Dr.
Pringle
Howard Young
James St.
Liberty
Glory Rd.
Skyview
Mason St.
North Appleton
Red Maple
Highway V
Myst. Hills
East Krok
Ellington
Lost Dauphin
Q
V
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E
S
P
R
A
F
KEY
345 kV Substation
115 or 138 kV Substation
<=69 kV Substation
Generation
345 kV Transmission
115 or 138 kV Transmission
69 kV Transmission
Phase 1 Projects
Phase 2 Projects

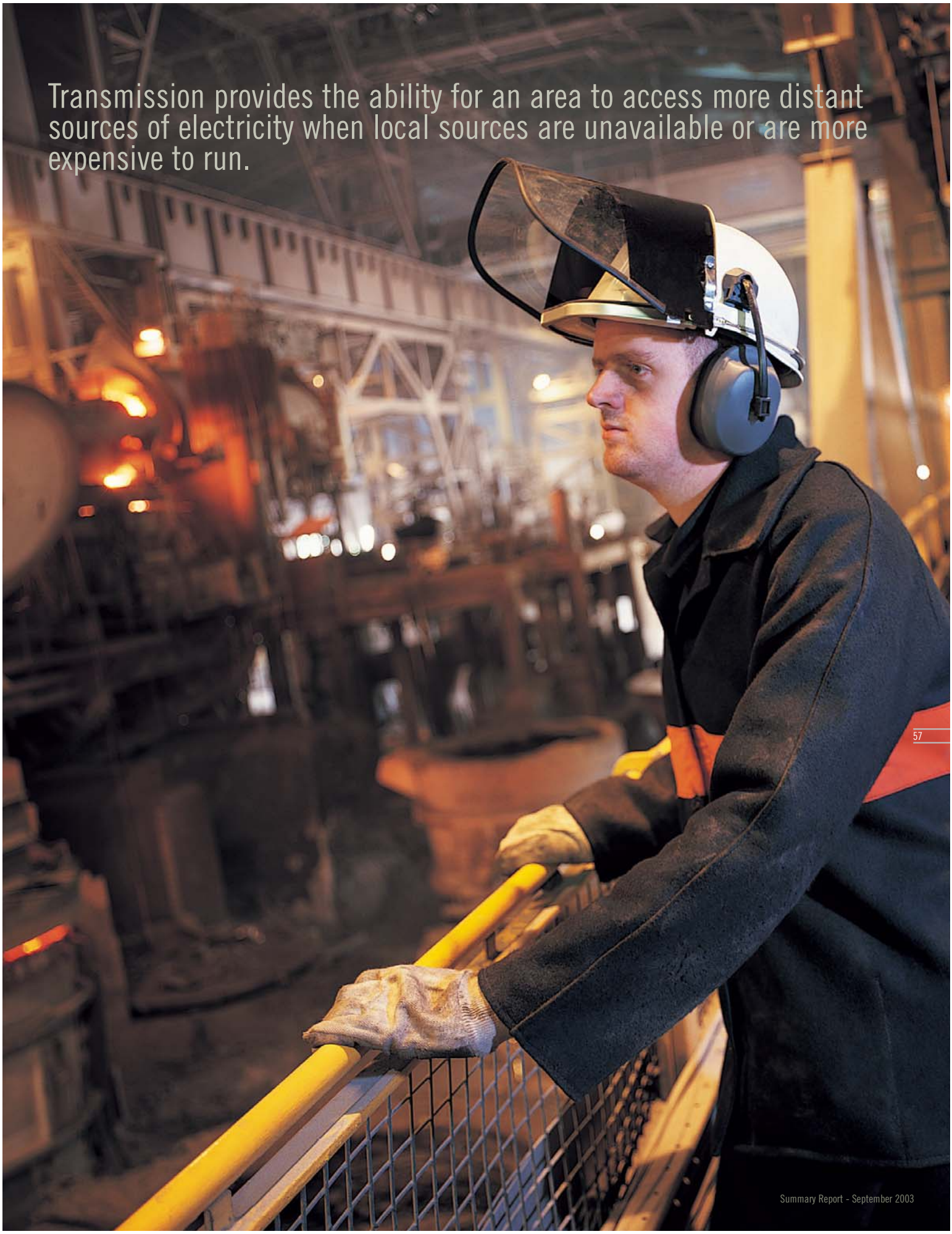
D Construct a new 138 kV line between Cranberry [Near Eagle River] and Conover [Vilas County], and rebuild and convert a 69 kV line between Conover [Vilas County] and Plains from 69 kV to 138 kV. This project is needed by 2007.

E Add a second 250 MVA 345/138 kV transformer at Plains by 2007.

F Construct a new 345 kV line from Werner West (see item C on previous page) to Morgan [near Oconto Falls]. ATC plans to complete this project in the 2009 timeframe.

G Rebuild the 69 kV lines from Hiawatha [Mackinac County] to Pine River [Chippewa County] and from Pine River to Straits [St. Ignace] and convert to 138 kV. ATC currently intends to complete this project by 2008.

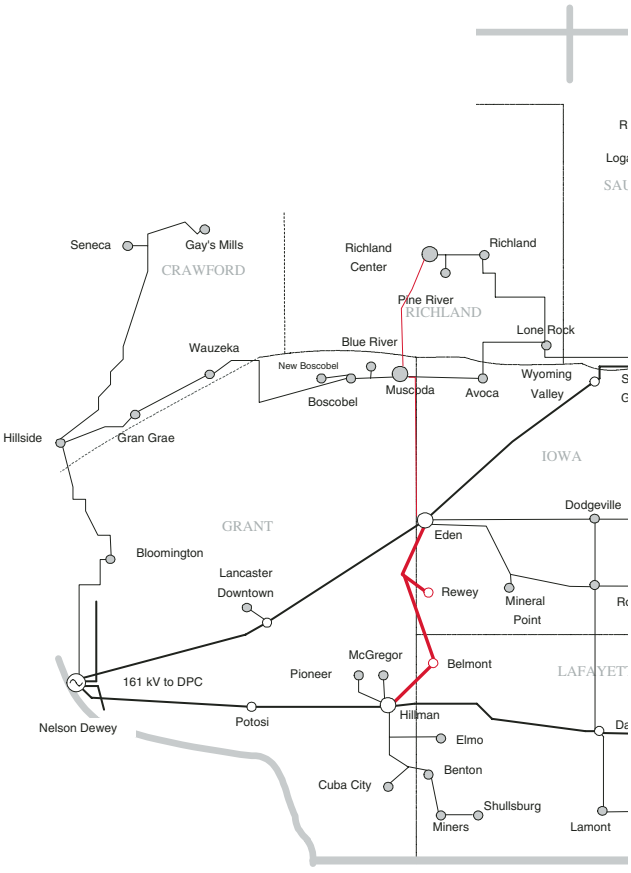
H Once the Hiawatha-Pine River-Straits rebuild/voltage conversion project is completed, string a second circuit on the Hiawatha-Indian Lake double circuit line and convert both circuits to 138 kV. ATC currently intends to complete this project in 2008.

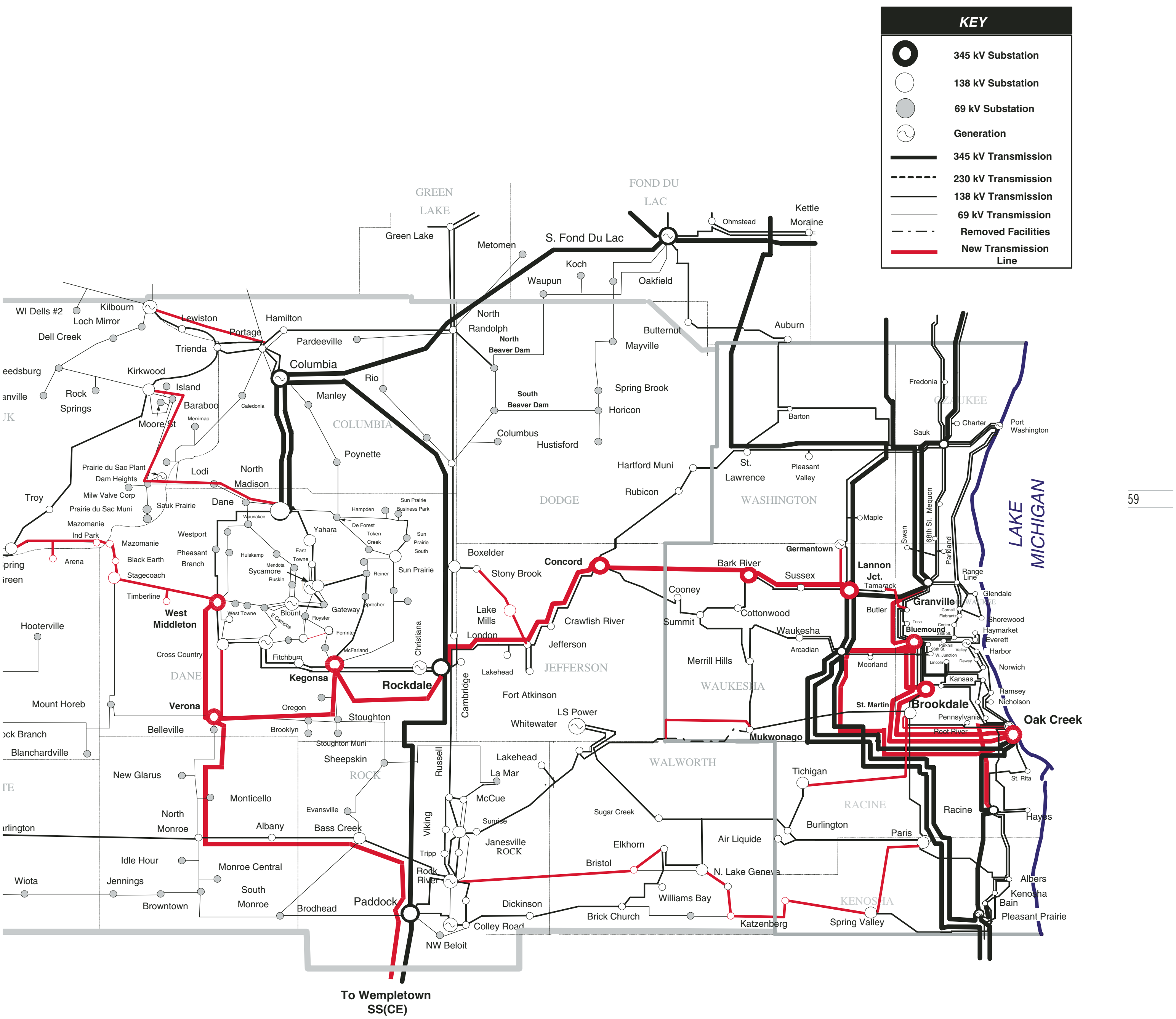

Transmission provides the ability for an area to access more distant sources of electricity when local sources are unavailable or are more expensive to run.

zones 3&5 Southern Zones Umbrella Plan

The proposed Southern Zones Umbrella Plan projects are those that ATC believes represent the most effective means to address needs and issues from both system performance and cost perspectives. The conceptual projects reflect those that ATC believes will meet the long term needs in the area, but will require further analyses. Based on the analyses performed to date, the Southern Zones Umbrella Plan includes the following projects:

- Construct a Rockdale [Near Cambridge]-Concord [Near Watertown]-Bark River [west of Merton]-Lannon Junction [Menomonee Falls] 345 kV line and associated substation facilities. This project would be phased in over the 2006-2010 time period.
- Construct the facilities associated with the proposed generation additions at the Oak Creek Power Plant site, including a new Oak Creek-Brookdale [Greenfield]-Granville [Milwaukee] 345 kV line over the 2007-2011 time period.
- Construct a new 345 kV line from Rockdale [near Cambridge] through Kegonsa [south of McFarland] to West Middleton, or equivalent. ATC contemplates this project by 2009.
- Construct a North Lake Geneva-Twin Lakes-Spring Valley [Kenosha County]138 kV line. ATC plans to complete this project in 2009.
- Construct a new Spring Valley-Paris 138 kV line. ATC contemplates this project by 2009.
- Construct a new Tichigan-St. Martins 138 kV line. ATC contemplates this project in the next six to nine years.
- Construct a second Kilbourn [in Wisconsin Dells]-Portage 138 kV line and a new North Madison-Kirkwood 138 kV line. ATC contemplates these projects or equivalents in the next six to nine years.
- Construct a Verona [near Madison] 345 kV switching station, construct a new Wempletown [Illinois]-Verona 345 kV line, and loop the Kegonsa-West Middleton 345 kV line into Verona. ATC contemplates these projects or equivalents in 2011.
- Construct a new Richland Center-Muscoda [Grant County]-Eden [Iowa County] 69 kV line designed for 138 kV operation. ATC contemplates this project or an equivalent by 2012.





KEY
345 kV Substation
138 kV Substation
69 kV Substation
Generation
345 kV Transmission
230 kV Transmission
138 kV Transmission
69 kV Transmission
Removed Facilities
New Transmission Line
GREEN LAKE
FOND DU LAC
COLUMBIA
DODGE
WASHINGTON
OZAUKEE
DANE
JEFFERSON
WAUKESHA
MILWAUKEE
ROCK
WALWORTH
RACINE
KENOSHA
LAKE MICHIGAN
S. Fond Du Lac
Columbia
Concord
Rockdale
Kegonsa
West Middleton
Verona
Paddock
Granville
Oak Creek
Lannon Jct.
Brookdale
Bluemound
Mukwonago
To Wempletown SS(CE)
Green Lake
Metomen
Koch
Waupun
Oakfield
Ohmstead
Kettle Moraine
Auburn
North Randolph
North Beaver Dam
South Beaver Dam
Butternut
Mayville
Spring Brook
Horicon
Columbus
Hustisford
Hartford Muni
Rubicon
St. Lawrence
Pleasant Valley
Barton
Fredonia
Sauk
Charter
Port Washington
Maple
Germantown
Sussex
Bark River
Tamarack
Butler
Cooney
Summit
Cottonwood
Waukesha
Arcadian
Merrill Hills
Moorland
St. Martin
Kansas
Ramsey
Nicholson
Pennsylvania
Root River
St. Rita
Racine
Hayes
Tichigan
Burlington
Paris
Albers
Kenosha
Bain
Pleasant Prairie
Spring Valley
Katzenberg
Air Liquide
N. Lake Geneva
Williams Bay
Brick Church
Elkhorn
Bristol
Sugar Creek
Whitewater
LS Power
Fort Atkinson
Jefferson
Crawfish River
Lake Mills
London
Boxelder
Stony Brook
Lakehead
La Mar
McCue
Sunrise
Janesville
Tripp
Rock River
Dickinson
Colley Road
NW Beloit
Brodhead
Albany
Bass Creek
Evansville
Sheepskin
Stoughton
Stoughton Muni
Oregon
Brooklyn
Belleville
Monticello
New Glarus
North Monroe
Monroe Central
South Monroe
Browntown
Idle Hour
Jennings
Wiota
Blanchardville
Mount Horeb
Hooterville
Cross Country
Fitchburg
Timberline
Stagecoach
Black Earth
Mazomanie
Pheasant Branch
Westport
Sycamore
Gateway
Sun Prairie
Yahara
Dane
Sauk Prairie
Lodi
North Madison
Poynette
Manley
Rio
Pardeeville
Hamilton
Portage
Lewiston
Trienda
Kilbourn
WI Dells #2
Loch Mirror
Dell Creek
Kirkwood
Island
Baraboo
Rock Springs
Moore St
Prairie du Sac Plant
Dam Heights
Milw Valve Corp
Prairie du Sac Muni
Troy
Arena
Russell
Viking
Cambridge
Christiana
Swan
68th St.
Mequon
Parkland
Range Line
Glendale
Shorewood
Haymarket
Everett
Harbor
Norwich

59

Network development & strategic expansion

ATC develops plans to enable the transmission system to provide the level of reliability our customers have come to expect. ATC also has begun to evaluate the capability of the transmission system in terms of its abilities to accommodate significant new load or generation development, provide strategic advantages to ATC customers, and achieve significant new capability to import or export power.

345 kV network development

The current ATC transmission system was constructed over a period of more than 80 years, evolving from simple networks tying generation to load centers to the complex system that exists today. The existing system is nearly fully subscribed and there is little room for generation development or load growth without significant investment in new transmission infrastructure, despite the recent investments made and being made by ATC. Construction of new 345 kV lines in key locations would substantially improve the ability of the transmission system to transfer power through, within, into and out of the system and to do this in a far more efficient manner. ATC is identifying these types of projects now in order to facilitate public discussion about options. Active work continues in this arena and further developments will be discussed in future assessments.

Planned/Proposed projects are those that have been identified previously in this assessment as solutions to existing or emerging needs, including accommodating planned generation included in the assessment analyses. These are projects that will need to be implemented in order to ensure reliable system operation.

Conceptual projects are those that, if developed, would improve the efficiency of the system, potentially facilitate the development of generation, accommodate large new load additions, facilitate maintenance scheduling and improve the overall security of the system. Note that the conceptual projects, for the most part, tie portions of the 345 kV network together where there are insufficient or no existing 345 kV facilities.

Strategic projects are representative of the types of projects that would increase transfer capability into the ATC system and in some instances address reliability needs.

Planned/Proposed 345 kV projects

- Arrowhead-Weston
- Morgan [near Oconto Falls]-Werner West [near New London]
- Wempletown [Illinois]-Paddock [west of Beloit] (2nd circuit)
- Oak Creek-Brookdale [Greenfield]-Granville [Milwaukee]
- Lannon Jct.-Bark River [west of Merton]-Concord [near Watertown]-Rockdale [near Cambridge]
- Rockdale-Verona-West Middleton
- Oak Creek-Bluemound circuits (convert from 230 kV)

Conceptual 345 kV projects

- Arpin-Columbia [near Portage]
- Dead River [near Presque Isle]-Plains [near Iron Mountain]-Venus [near Monico]-Weston
- Big Bend-Paddock [west of Beloit]
- Weston-Central Wisconsin
- North Madison-West Middleton

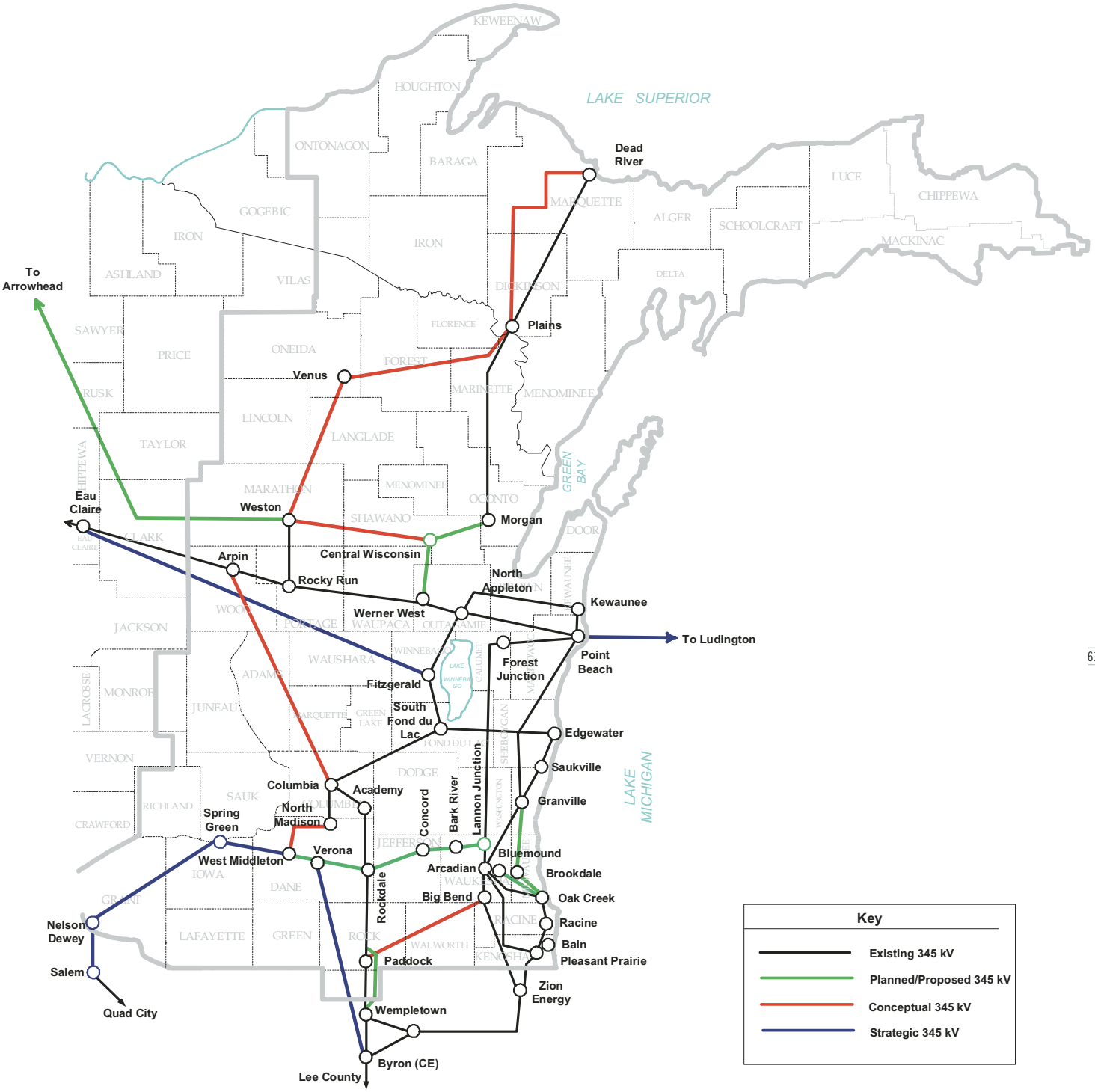
Strategic 345 kV projects

- Byron (CE)-North Monroe-Verona [near Madison]
- Salem-Nelson Dewey-Spring Green-West Middleton
- Point Beach-Ludington
- Eau Claire-Fitzgerald [near Oshkosh]

Under the Conceptual category, the Arpin-Columbia line would provide a needed north-south path on the western side of the ATC system, improve stability at Weston and reduce losses. The Dead River-Plains-Venus-Weston line would improve generator stability at Weston and at Presque Isle, increase transfer capability between the Upper Peninsula and Wisconsin, improve voltage stability in the Upper Peninsula, reduce losses and provide a long-term solution for the Rhinelander Loop. The Big Bend-Paddock line would improve generator stability in southeast Wisconsin, provide additional south-central - southeast (Zone 3 - Zone 5) transfer capability, increase import capability from Illinois and reduce losses. The Weston-Central Wisconsin project would be needed to accommodate proposed generation at Weston. Central Wisconsin would be a new substation on the proposed Morgan-Werner West line. The North Madison-West Middleton project would complete the 345 kV network around the Madison area, providing room for future load growth as well as reducing losses.

Under the Strategic category, the Byron-Verona line would improve voltage stability in the Madison area, increase import capability from Illinois and reduce losses. The Salem-Nelson Dewey-Spring Green-West Middleton line would provide additional import capability in addition to voltage support in the southwest portion of Wisconsin and reducing losses. A Point Beach-Ludington line would improve import capability, relieve line loading in the Upper Peninsula and lower system losses. The Eau Claire-Fitzgerald line would increase import capability, relieve line loading and lower system losses.

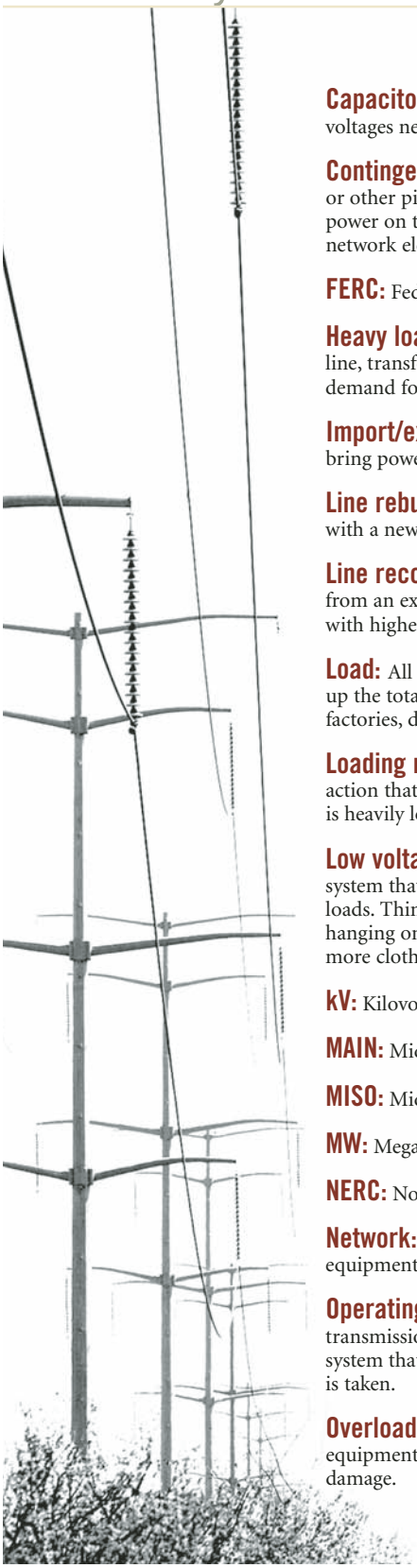
345 kV network development & strategic expansion



Key

- Existing 345 kV
- Planned/Proposed 345 kV
- Conceptual 345 kV
- Strategic 345 kV

Glossary of Terms



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

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.

FERC: Federal Energy Regulatory Commission

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

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, distribution substations, 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: Situation that can occur in parts of the system that are heavily loaded or which 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.

kV: Kilovolt

MAIN: Mid America Interconnected Network

MISO: Midwest Independent System Operator

MW: Megawatt

NERC: North American Energy Reliability Council

Network: A system of interconnected lines and electrical equipment.

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

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.

Power flows: Electricity moving through lines or other equipment.

Reliable: Meets standard industry and specific ATC performance criteria.

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.

Substation: Place where transmission lines connect to each other and where protective equipment is 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 overloads: Power flows on lines or equipment that exceed their capacity limits.

Transformers: Device that changes voltage levels.

Transmission loading relief: 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: Make the transmission system element able 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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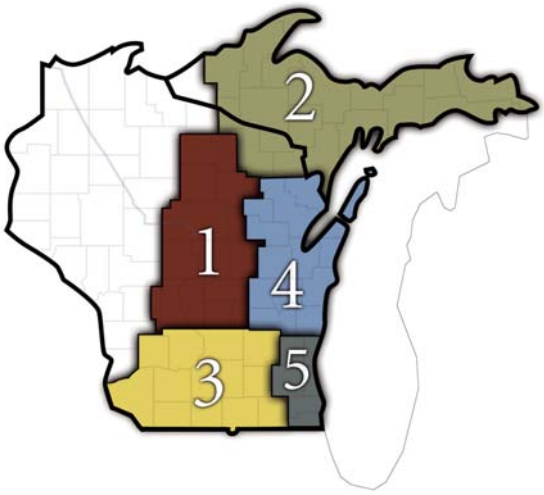

ATC values public comment on our proposals presented in this report. We believe that by inviting input early, we can learn what's acceptable to communities and local groups and develop comprehensive plans that are more likely to receive timely and necessary approvals. It's our goal to balance the concerns of communities and local citizens with the need to keep the lights on for millions of people.

If you have comments or questions about this report, please contact us via:
E-mail: planning@atcllc.com
Mail: please use self-mailer provided below

Full report available

For a copy of the 2003 ATC 10-Year Transmission System Assessment Full Report, please visit our Web site at www.atcllc.com.

Attend our Planning Zone Meetings

ATC will host a series of Planning Zone Meetings, at which we will discuss and gather input on our assessments of each of the five planning zones. Attend the meeting of your choice:

zone 1 **Wausau, Wis.**
Wednesday, Oct. 8, 2003, 10 a.m. to 2 p.m.
The Rose Garden, 131 W. Thomas St.

zone 2 **Marquette, Mich.**
Wednesday, Sept. 24, 2003, 10 a.m. to 2 p.m.
Northern Michigan University, 1401 Presque Isle Ave.

zone 3 **Wisconsin Dells, Wis.**
Thursday, Oct. 9, 2003, 10 a.m. to 2 p.m.
Kalahari, 1305 Kalahari Dr.

zone 4 **Manitowoc, Wis.**
Thursday, Sept. 25, 2003, 10 a.m. to 2 p.m.
Holiday Inn, 4601 Calumet Ave.

zone 5 **Port Washington, Wis.**
Wednesday, Oct. 1, 2003, 10 a.m. to 2 p.m.
Country Inn & Suites, 350 E. Seven Hills Rd.

All Zones Meeting **Oshkosh, Wis.**
Thursday, Oct. 16, 2003,
10 a.m. to 2 p.m.
Hilton Garden Inn,
1355 W. 20th Ave.

To attend,
please reply to: rsvp@atcllc.com
or call toll-free: 866-899-3204, ext. 6815

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Please complete the following if you would like an ATC representative to respond to your comment, question or request.

Name _____
Company _____
Address _____
E-mail _____ Phone _____

Comments/Questions/Requests:

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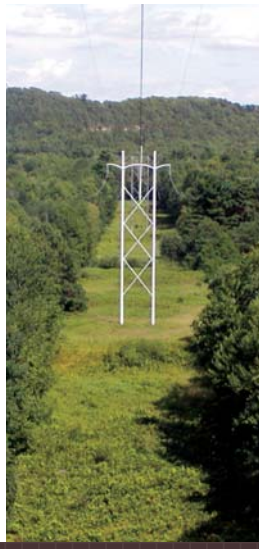

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