Executive summary

Our 2005 10-Year Transmission System Assessment provides current results of planning activities and analyses of our transmission facilities service territory. These activities and analyses identify needs for transmission system enhancement and potential projects responsive to those needs. This 2005 report also describes changes to the 2004 10-Year Assessment Update through 2014, and in some areas 2015, based on updated information provided by local distribution companies, the latest transmission service requirements and generation interconnection requests, recently conducted analyses, input from various stakeholders at ATC-sponsored meetings and other developments.

The updated information in this report provides further foundation for continued public discussions on the transmission planning process, identified transmission needs and limitations, possible resolutions to those needs and coordination with other public infrastructure planning processes.

Our Access Initiative

In addition to providing updated need and project information, this report presents additional information on Access, a topic we introduced in our March 2004 10-Year Assessment Update. Access is the ability of customers connected to our transmission system to gain greater access to lower-cost energy and move it within our system to where it is needed to serve energy requirements. For more on this topic, go to the Access Initiative.

20-Year Analysis

This report presents a second major initiative we started in 2005. It has multiple objectives including evaluating the robustness of projects listed in this report, evaluating the merits of Access Initiative alternatives and obtaining a longer-term view of system limitations and needs. We plan to hold meetings during 2005 with interested stakeholders to discuss the scope of this effort and to present results of analyses that are conducted. For more on this topic, go to 20-Year Analysis.

Regional Analysis

For the first time, this report presents information on ATC planning involvement in regional transmission system studies. In addition to conducting transmission system planning studies internal to ATC, we also are involved in transmission planning studies to address regional needs that can impact our system. Current studies in which we are involved include:

- ❑ MISO Exploratory - Iowa-Southern Minnesota Wind Study;
- ❑ RPU - Rochester Minnesota Reliability Study & DPC - La Crosse Wisconsin Reliability Study;
- ❑ Alliant - Eastern Iowa Study;
- ❑ State of Minnesota - CAPX 2020; and
- ❑ State of Michigan - Capacity Need Forum and Transmission Transfer Capability.

For more on this on these studies, go to Regional Analysis.

Current projections

Based on anticipated changes to our 10-Year expansion plan since the 10-Year Assessment Update was issued in March 2005, we now estimate 525 miles of new transmission lines on new

rights-of-way and improvements to 984 miles of lines on existing rights-of-way over the next ten years (see Table ES-1). A graphical representation of the transmission system reinforcements included in this years Assessment is shown in Figure ES-1. Please refer to the tables in Projects for details on each of the particular projects reflected in this figure.

Details of the specific changes to plans from those listed in the March 2005 Update report is provided in New in 2005. Several of the changes are due to proposed new generation projects meeting criteria for inclusion that will require the construction of new transmission facilities. Other changes are attributable to further analyses of project alternatives. Still other changes are due to updated load forecast information provided by ATC customers.

Capital cost of our expansion plan

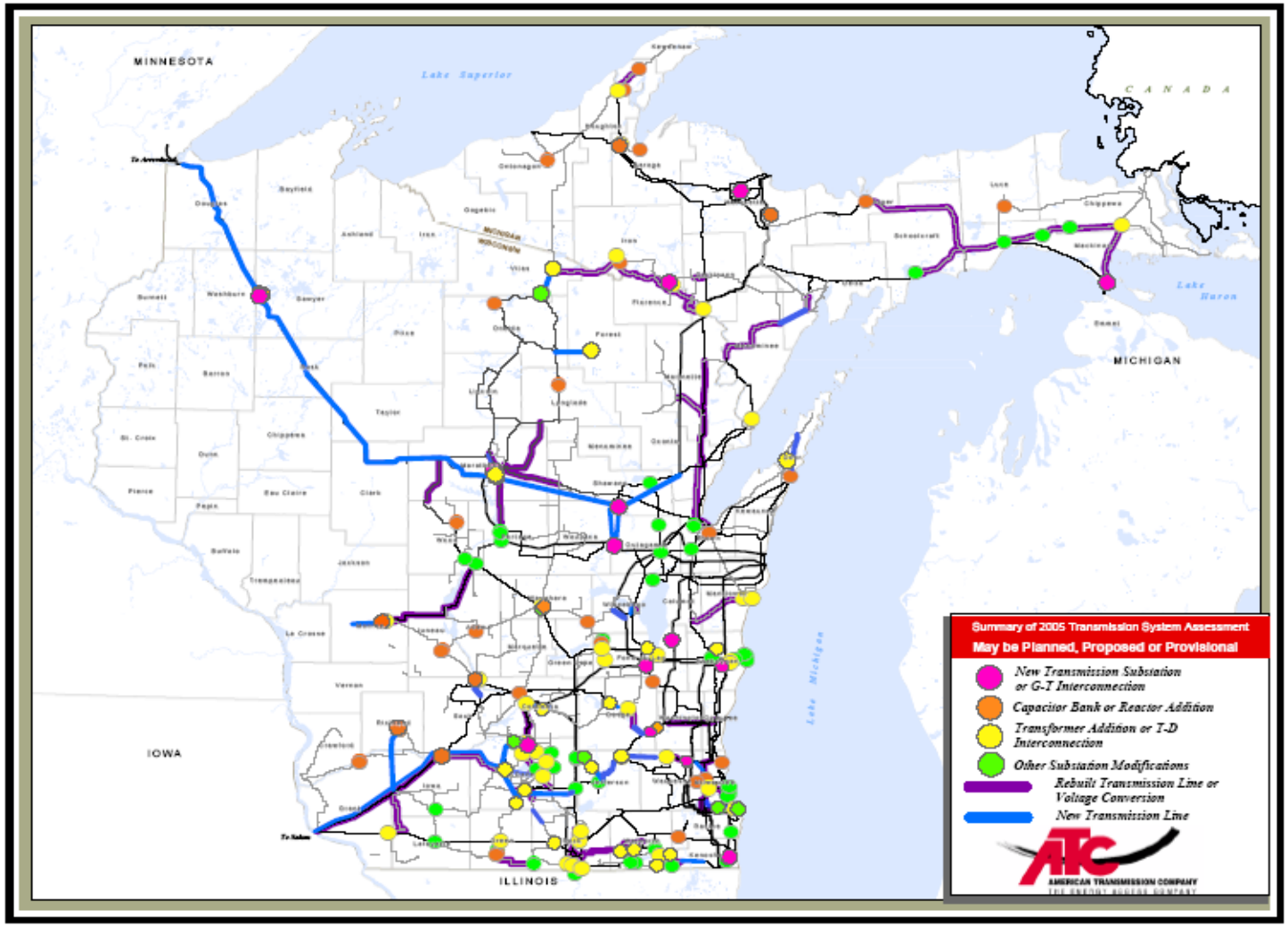
In the 2004 Assessment, we estimated it would cost about $2.8 billion over the next 10 years to construct the transmission system improvements necessary to meet current and projected needs. Projects totaling $2.1 billion were specifically detailed in the 2004 Assessment; the remaining $700 million included projections for interconnecting other proposed generators, asset renewal projects, infrastructure replacements and relocations, and other smaller network reliability improvements. Though there were numerous changes to projects reported in the 2004 Update, the net effect of the changes is that these capital cost estimates were still valid at the time.

Based upon actual and updated estimated costs for current projects and the projects identified in this 2005 Assessment, the total cost estimate for necessary transmission system improvements is about $3.4 billion over the next 10 years (through 2014). Further study and information has provided a better understanding of the needs and estimates made in 2004, and although significant investment has begun, needs now emerging at the latter end of this 10-year period along with projections associated with the Access Initiative and emerging energy market keep the rolling 10-year estimate at about $3.4 billion. Projects totaling $2.4 billion now are specifically detailed in the 2005 Assessment; the remaining $1 billion covers other projects as noted above. The increase in the total cost estimate for necessary transmission system improvements is attributable to increases in the cost of steel and construction labor as well as revisions to planned, proposed and provisional projects based on current analyses.

Table ES-1
Summary of American Transmission Co.'s
2005 Transmission System Assessment

	2004 Update	2005 Assessment
	(March 2005)	(September 2005)
New Transmission Lines Requiring New Right-of-Way		
345 kV	8 lines / 340 miles	8 lines / 340 miles
138 kV	17 lines / 95 miles	14 lines / 77 miles
115 kV	3 lines / 32 miles	2 lines / 26 miles
69 kV	7 lines / 53 miles	12 lines / 82 miles
Transmission Lines to be Constructed, Rebuilt, Reconductored or Uprated on Existing Right-of-Way		
345 kV	8 lines / 140 miles	5 lines / 114 miles
161 kV	1 / 20 miles	1 / 20 miles
138 kV	49 lines / 889 miles	42 lines / 706 miles
115 kV	4 lines / 78 miles	4 lines / 78 miles
69 kV	11 lines / 80 miles	11 lines / 66 miles
New Transformers to be Installed		
(# of transformers / total increase in capacity)	44 transformers / 8,467 MVA	41 transformers / 8,457 MVA
New Capacitor Banks to be Installed		
(# of installations / capacity)	24 installations / 1,047 MVAR	35 installations / 1,255 MVAR

Figure ES-1


MINNESOTA
Lake Superior
CANADA
MICHIGAN
Lake Huron
Lake Michigan
IOWA
ILLINOIS
Summary of 2005 Transmission System Assessment
May be Planned, Proposed or Provisional
New Transmission Substation or G-T Interconnection
Capacitor Bank or Reactor Addition
Transformer Addition or T-D Interconnection
Other Substation Modifications
Rebuilt Transmission Line or Voltage Conversion
New Transmission Line
AMERICAN TRANSMISSION COMPANY

ABOUT > Planning approach

Our approach to transmission planning is built upon two critical foundations – comprehensive engineering analyses and collaborative communications.

We are continually assessing and reassessing the needs of its existing and anticipated system users, on both an individual and collective basis, according to accepted industry system performance criteria and practices. Our goal is to initially determine, and then evolve over time, the best set of transmission projects to address those needs. “Best” means striking the right balance among reliability, risk, cost and societal impact so that the resulting plan is publicly acceptable and constructible.

We evaluate transmission need drivers, including load growth forecasts and proposed new power plants, and use computer models to analyze problems and implications and identify potential solutions. We strive to design a portfolio of projects where each project addresses multiple needs, so that the set of needs in total can be met as efficiently as possible, and overall societal impacts can thus be minimized.

We work closely with the Midwest Independent Transmission System Operator to integrate our local planning and operating activities with those occurring on a regional and national basis. We also actively participate in regional planning forums and incorporate regional need drivers and implications of adjacent utilities’ activities into our local plans. We monitor industry developments, including proceedings associated with the August 2003 Northeast blackout and potential national energy legislation, and incorporate new tools, standards and practices into our planning approach as appropriate.

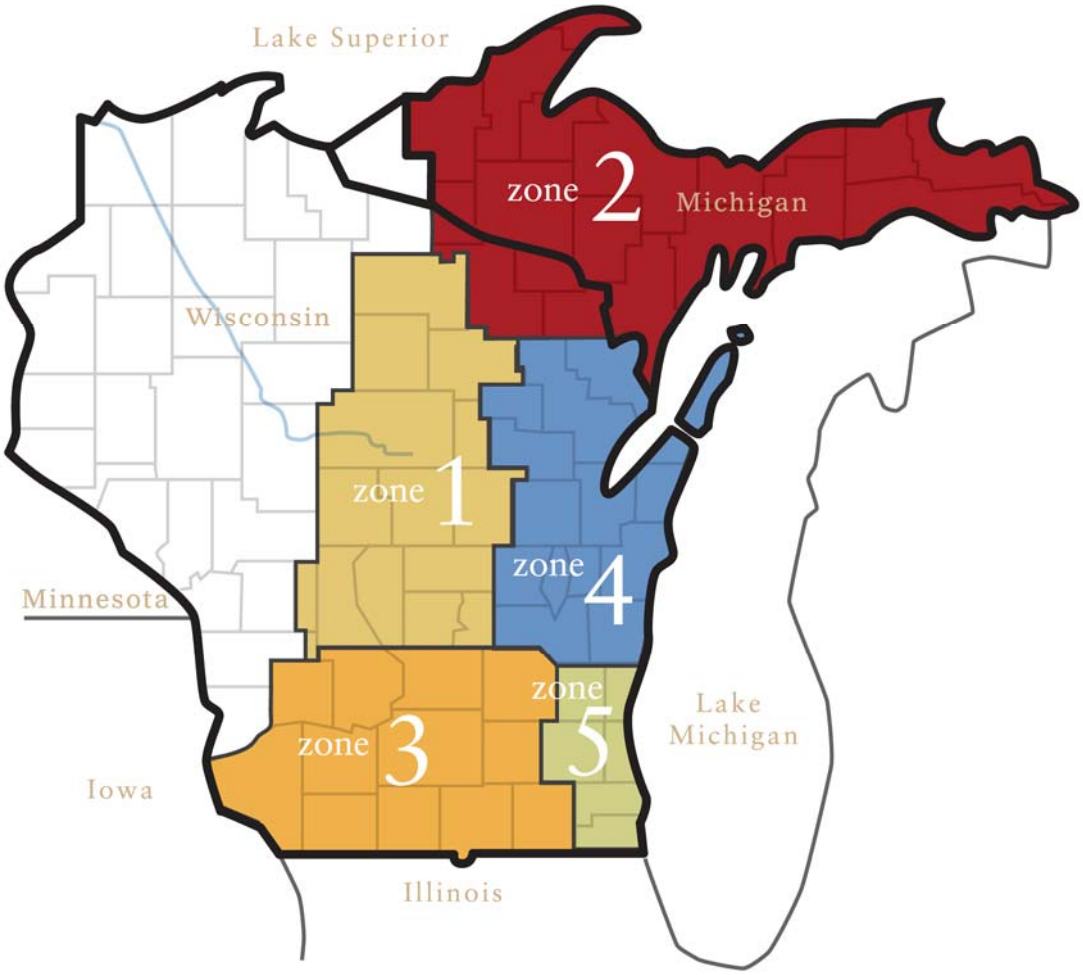
Our annual 10-Year Transmission System Assessment report is an important planning communication tool – presenting up-to-date results of our ongoing engineering analyses, including information on the array of needs driving system upgrades and the potential projects anticipated to best meet those needs. The report provides the baseline information necessary to facilitate future communications with and involvement by anyone interested in engaging further in either the general planning process or the subsequent, more specific and locally focused, routing and siting process for individual projects.

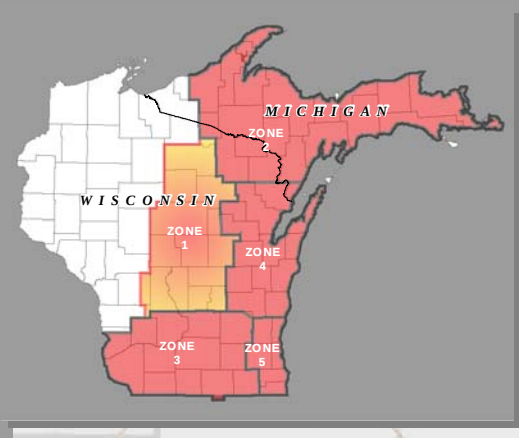
This analysis is iterative by nature, as situations can change at any time. We want to be able to take new information into account as quickly as possible and adjust our plans accordingly. We only will build transmission in response to specific identified needs – if the needs change or disappear, so do the corresponding transmission projects.

For more about our public outreach and siting process, go to Routing & Siting.

ABOUT > Planning zones

For planning purposes, we divide our service area into five geographic areas or planning zones. For each zone, information is provided about the transmission issues, future growth considerations, environmental aspects and the major projects that ATC is planning or proposing over the next 10 years to strengthen the reliability of the transmission system and meet customer needs.





Iron
Vilas
Florence
Oneida
Forest
Marinette
Rusk
Taylor
Lincoln
Langlade
Oconto
Menominee
Marathon
Shawano
Clark
Wood
Portage
Waupaca
Outagamie
Jackson
Monroe
Juneau
Adams
Marquette
Green Lake
Fond du Lac
Ohmstead
Vernon
Sauk
Columbia
Waushara
Winnebago
Calumet
Dodge
Washington
Richland

6220
50632
43025

Skanawan SW STA
Fox Hills SW STA
Bunker Hill SW STA
Blackbrook SW STA
WAUSAU
Wien SW STA
F-110
I-20
Whitcomb
Y-44
Caroline
Badger
Arpin
Sigel
Rocky Run
Coyne SW STA
West Wisconsin Rapids
Y-70
Y-19
Sand Lake
Petenwell
Y-90
Fitzgerald
C-107
Lincoln Pump STA
Chaffee Creek
Mckenna
Castle Rock
Metomen
X-77 X-4
Y-68
Y-27
Green Lake SW STA
X-30
X-3
North Randolph
Y-17
X-6

I-9
L-42

Electric Transmission Network & Substations

PLANNING ZONE 1

0 2.5 5 10 15 Miles

N W E S

Currently, ATC owns or operates transmission facilities in 50 Wisconsin counties and in 15 Michigan counties. Facilities include:

- *Approximately 8900 miles of transmission lines*
- *98 wholly owned substations*
- *358 jointly owned substations*
- *Offices in Madison (2), Cottage Grove, Pewaukee, De Pere Wausau and Kingsford, MI*

Transmission Line Voltage

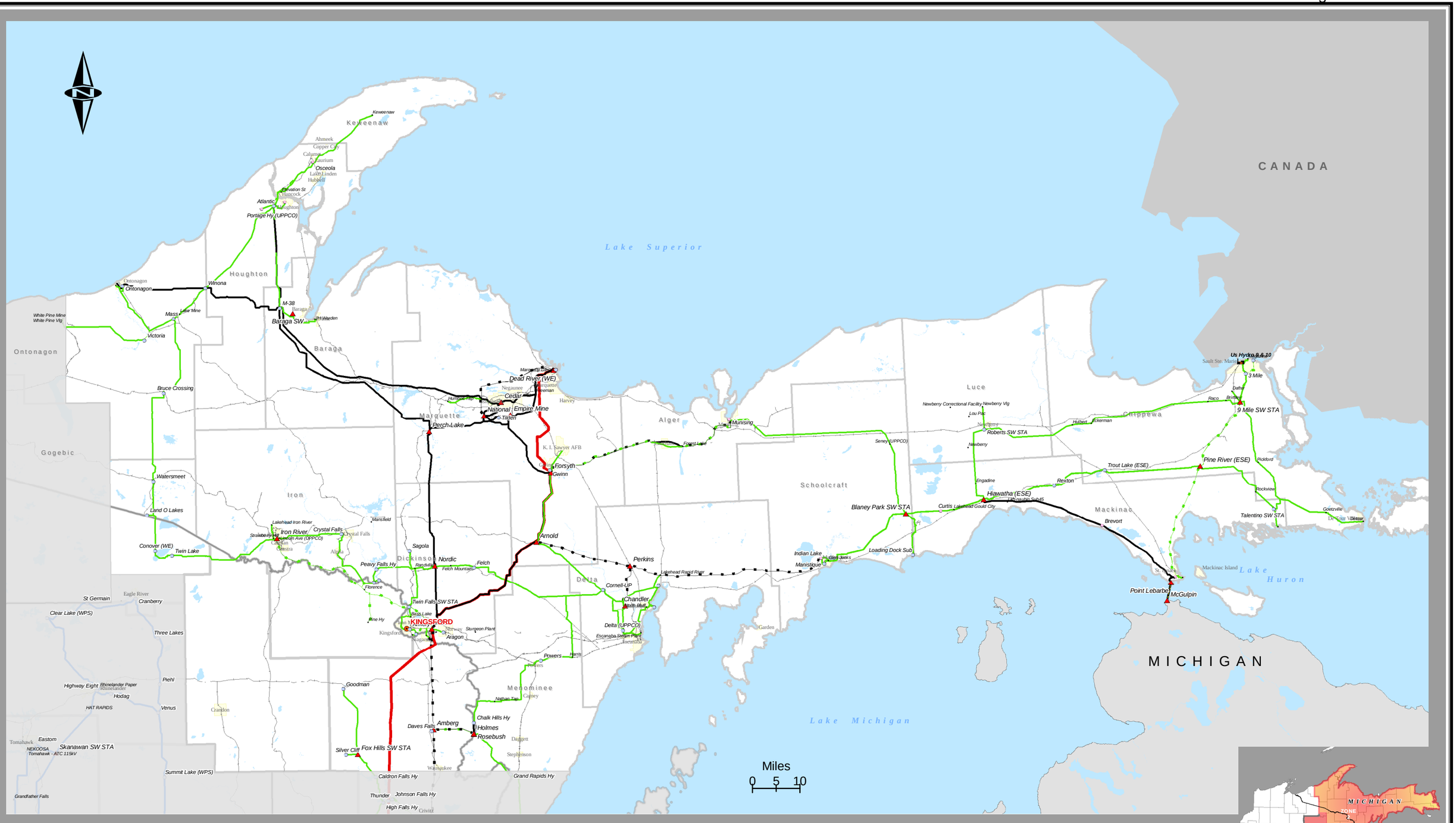
- 69 kV
- 115 kV
- 138 kV
- 230 kV
- 345 kV
- 69 kV Double Circuit
- 115 kV Double Circuit
- 138 kV Double Circuit
- 230 kV Double Circuit
- 345 kV Double Circuit
- 69 kV Underground
- 138 kV Underground
- Non-ATC Line

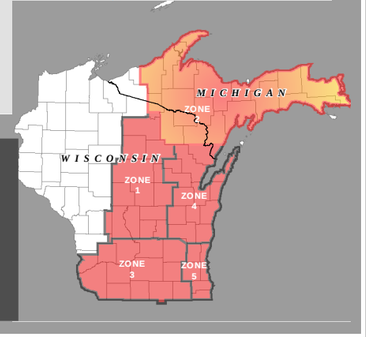
Transmission Related Facilities

- ATC Owned Substation
- Joint Owned Substation - Assets Conveyed
- Joint Owned Substation - Assets Retained
- Proposed/Design/Construction
- ATC Office Location
- Generation
- Other Facility

The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate.

Zone1 11x17.mxd Modified: April 15, 2005





AMERICAN TRANSMISSION COMPANY
THE ENERGY ACCESS COMPANY

Electric Transmission Network & Substations

PLANNING ZONE 2

Currently, ATC owns or operates transmission facilities in 50 Wisconsin counties and in 15 Michigan counties. Facilities include:

- *Approximately 8900 miles of transmission lines*
- *98 wholly owned substations*
- *358 jointly owned substations*
- *ATC offices in Madison (2), Cottage Grove, Pewaukee, De Pere, Wausau and Kingsford, MI*

Transmission Line Voltage

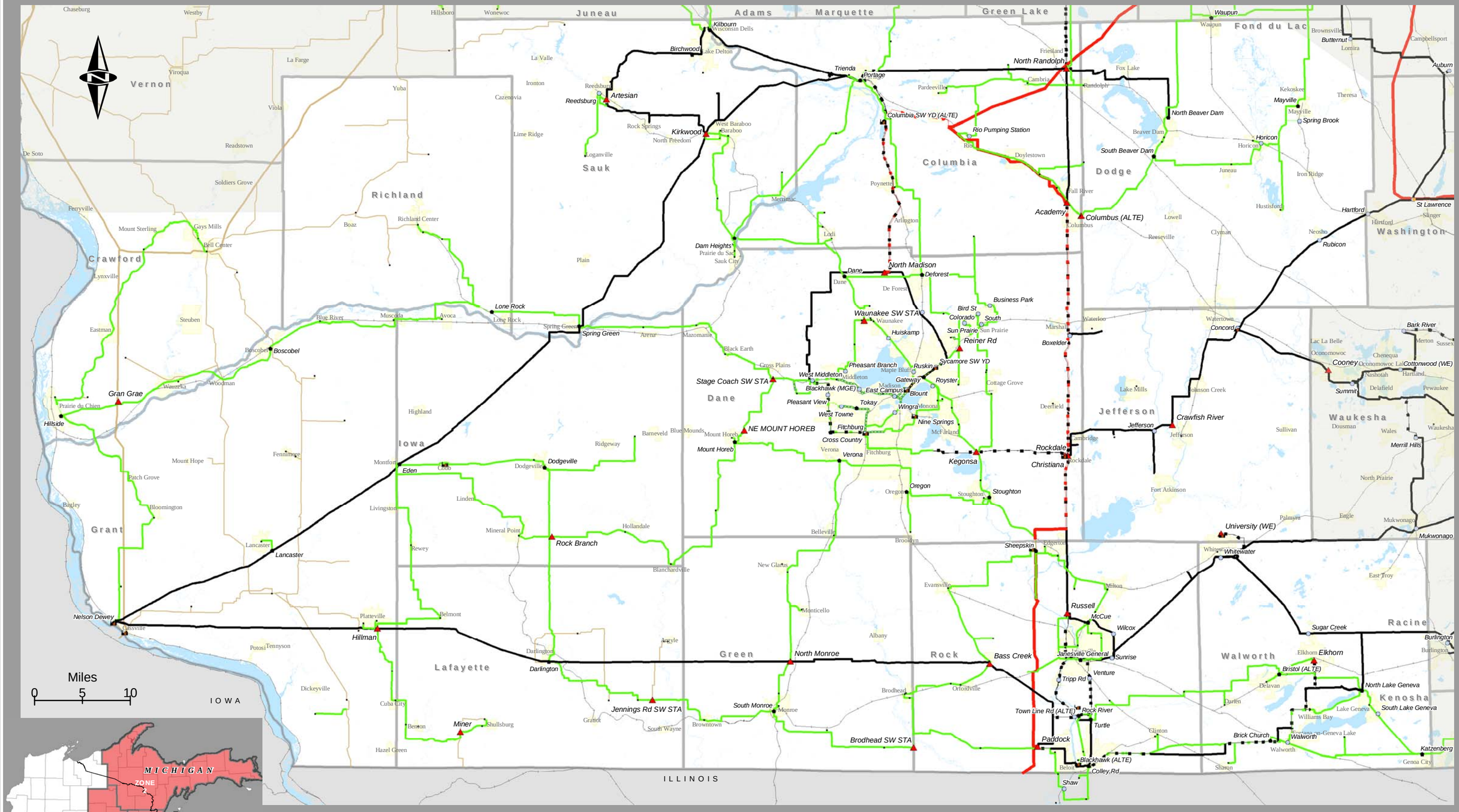
- 69 kV
- 115 kV
- 138 kV
- 230 kV
- 345 kV
- 69 kV Double Circuit
- 115 kV Double Circuit
- 138 kV Double Circuit
- 230 kV Double Circuit
- 345 kV Double Circuit
- 69 kV Underground
- 138 kV Underground
- Non-ATC Line

Transmission Related Facilities

- ATC Owned Substation
- Joint Owned Substation - Assets Conveyed
- Joint Owned Substation - Assets Retained
- Proposed/Design/Construction
- ATC Office Location
- Generation
- Other Facility

The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate.

Figure ZS-20



AMERICAN TRANSMISSION COMPANY
THE ENERGY ACCESS COMPANY

Electric Transmission Network & Substations

PLANNING ZONE 3

Currently, ATC owns or operates transmission facilities in 50 Wisconsin counties and in 15 Michigan counties. Facilities include:

- *Approximately 8900 miles of transmission lines*
- *98 wholly owned substations*
- *358 jointly owned substations*
- *ATC offices in Madison (2), Cottage Grove, Pewaukee, De Pere, Wausau and Kingsford, MI*

Transmission Line Voltage

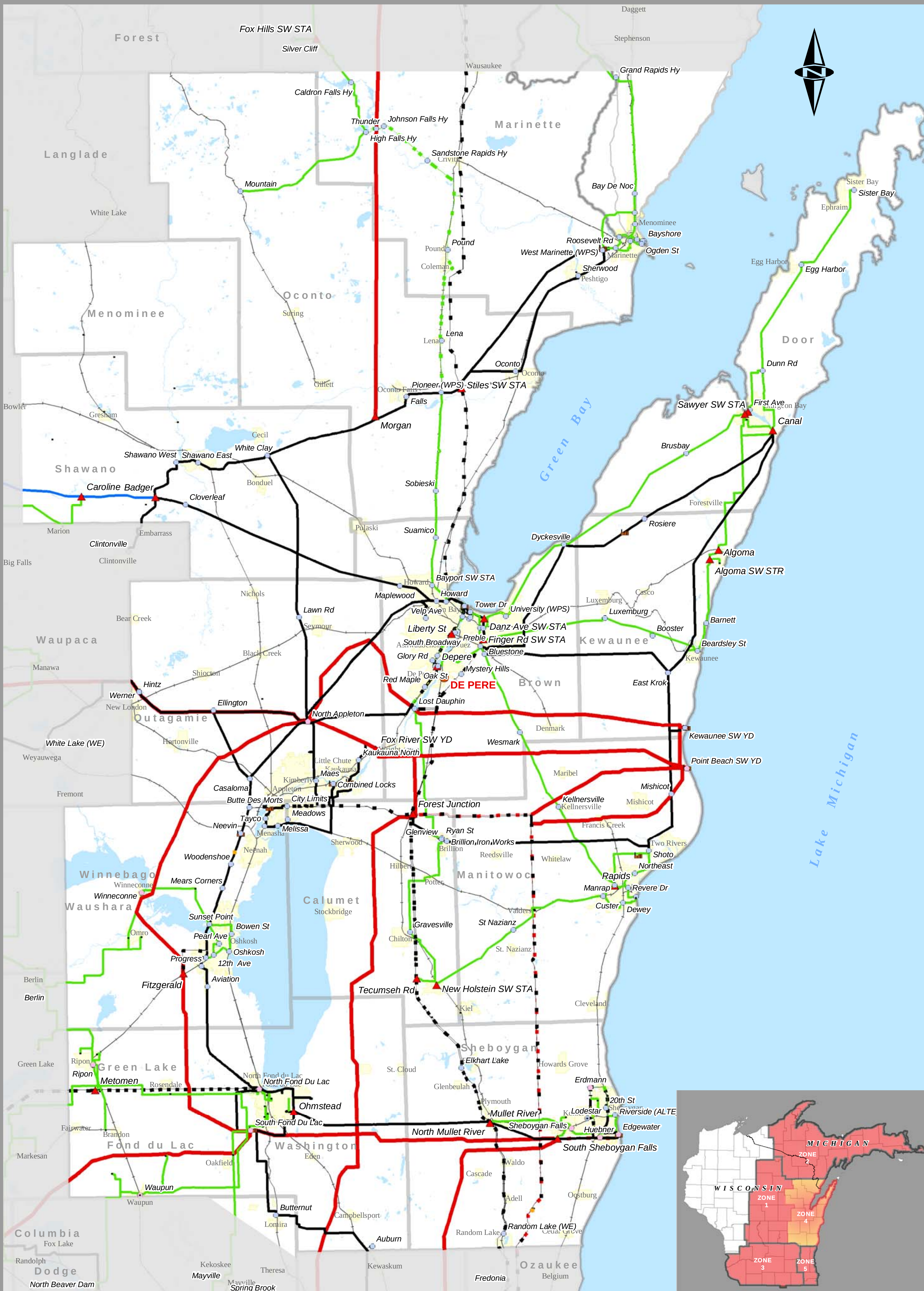
- 69 kV
- 115 kV
- 138 kV
- 230 kV
- 345 kV
- 69 kV Double Circuit
- 115 kV Double Circuit
- 138 kV Double Circuit
- 230 kV Double Circuit
- 345 kV Double Circuit
- 69 kV Underground
- 138 kV Underground
- Non-ATC Line

Transmission Related Facilities

- ATC Owned Substation
- Joint Owned Substation - Assets Conveyed
- Joint Owned Substation - Assets Retained
- Proposed/Design/Construction
- ATC Office Location
- Generation
- Other Facility

The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate.

Figure ZS-21



AMERICAN TRANSMISSION COMPANY
THE ENERGY ACCESS COMPANY

Electric Transmission Network & Substations

PLANNING ZONE 4

0 5 10 20 Miles

Currently, ATC owns or operates transmission facilities in 50 Wisconsin counties and in 15 Michigan counties. Facilities include:

* Approximately 8900 miles of transmission lines
* 98 wholly owned substations
* 358 jointly owned substations
* Offices in Madison (2), Cottage Grove, Pewaukee, De Pere Wausau and Kingsford, MI

Transmission Line Voltage

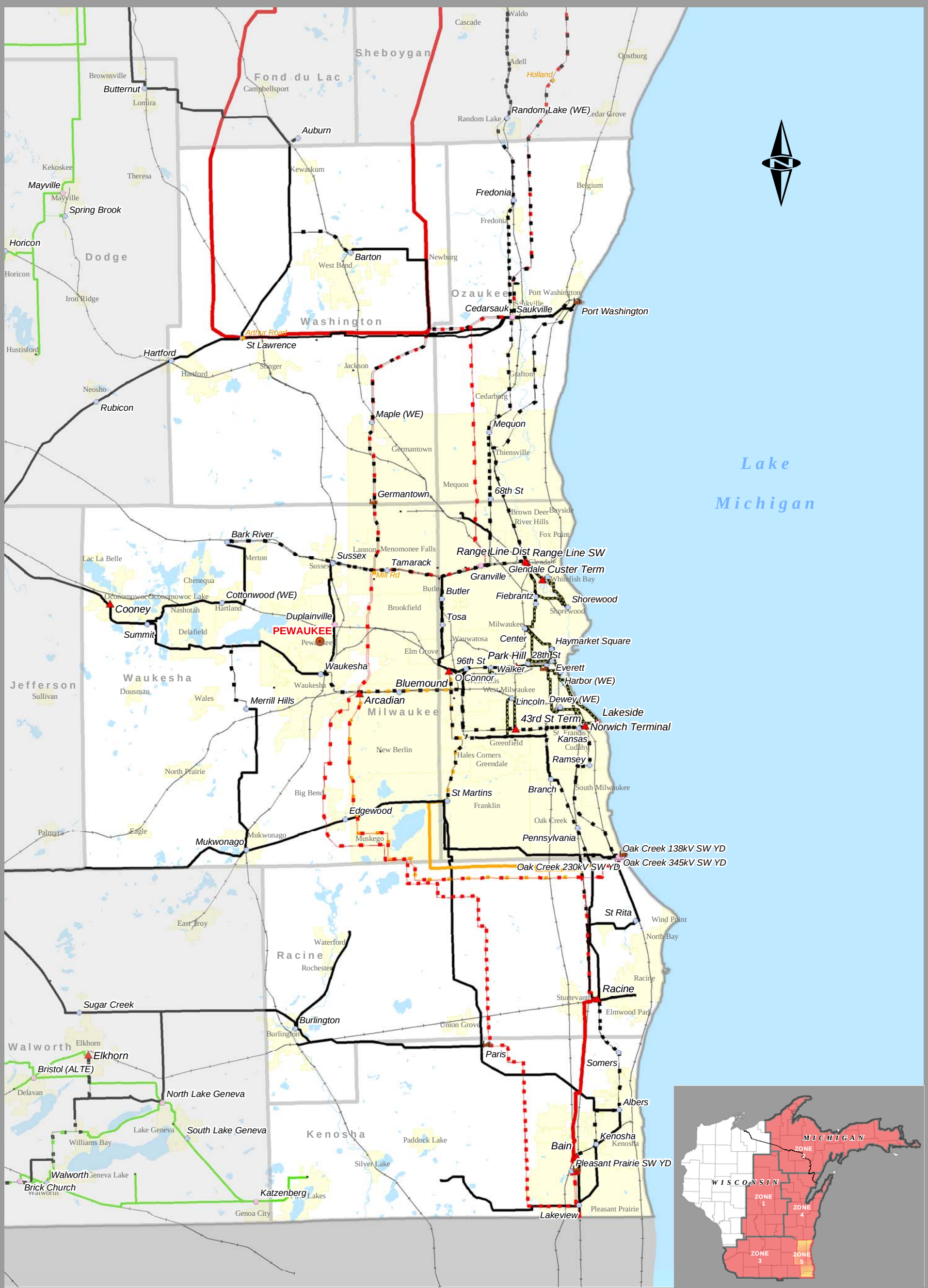
69 kV
115 kV
138 kV
230 kV
345 kV
69 kV Double Circuit
115 kV Double Circuit
138 kV Double Circuit
230 kV Double Circuit
345 kV Double Circuit
69 kV Underground
138 kV Underground
Non-ATC Line

Transmission Related Facilities

ATC Owned Substation
Joint Owned Substation - Assets Conveyed
Joint Owned Substation - Assets Retained
Proposed/Design/Construction
ATC Office Location
Generation
Other Facility

The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate.

Zone4 11x17.mxd Modified: April 15, 2005



AMERICAN TRANSMISSION COMPANY
THE ENERGY ACCESS COMPANY

Electric Transmission Network and Substations

PLANNING ZONE 5

0 5 10 Miles

Currently, ATC owns or operates transmission facilities in 50 Wisconsin counties and in 15 Michigan counties. Facilities include:

- *Approximately 8900 miles of transmission lines*
- *98 wholly owned substations*
- *358 jointly owned substations*
- *Offices in Madison (2), Cottage Grove, Pewaukee, De Pere Wausau and Kingsford, MI*

Transmission Line Voltage

- 69 kV
- 115 kV
- 138 kV
- 230 kV
- 345 kV
- 69 kV Double Circuit
- 115 kV Double Circuit
- 138 kV Double Circuit
- 230 kV Double Circuit
- 345 kV Double Circuit
- 69 kV Underground
- 138 kV Underground
- Non-ATC Line

Transmission Related Facilities

- ATC Owned Substation
- Joint Owned Substation - Assets Conveyed
- Joint Owned Substation - Assets Retained
- Proposed/Design/Construction
- ATC Office Location
- Generation
- Other Facility

The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate.

Zone5 11x17.mxd Modified: January 14, 2005