



Project classifications

In our 10-Year Assessments and Updates, projects are identified that address system reliability issues, economic benefits, regional issues, loss savings, transmission service issues, generation or distribution interconnections, or any combination of the above. In general, these projects address system performance issues identified using the governing system planning criteria or economic benefits for customers. We have numerous other projects under way or under evaluation that address asset renewal including reliability improvement and end-of-life equipment issues. The projects referenced in the project tables PR-2 through PR-26 generally include only those projects that at least in part address system reliability issues. Projects referenced in tables AR-1 through AR-5 detail our asset renewal efforts.

To facilitate an understanding of the status of the various future projects, we classify projects into one of three possible categories – Planned, Proposed or Provisional. Please note that the classifications of asset renewal projects are underway and thus are not depicted in Tables AR-1 through AR-5.

Each classification has specific criteria based on the status of the project as outlined below:

Planned projects:

- ATC planning is complete;
- If required, we have applied for regulatory approvals, which may be pending or have been issued; and
- Project may be under construction or in construction planning phase.

Proposed projects:

- ATC planning is not complete;
- ATC has not yet pursued regulatory approvals; and
- Project represents ATC's preliminary preferred project alternatives from a system performance perspective.

Provisional projects:

- ATC planning is not complete;
- ATC has not yet sought regulatory approvals; and
- Project reflects meeting the need identified, but does not necessarily represent ATC's preliminary preferred project alternative.

In the 2001-2011 10-Year Assessments and Updates, we identified 686 projects that address system reliability or economic issues. Projects that address equipment reliability issues are not included in these statistics. Figure PR-6 illustrates the status of system reliability and economic projects ATC has considered from 2001-2011. Regarding Figure PR-6, it is worthwhile to note that:



- ❑ ATC has completed 349 projects and another 4 are in design or under construction. Notable projects most recently completed are listed in [Table PR-1](#). Projects under construction include the Brodhead-South Monroe 69-kV rebuild and the Rockdale-Cardinal 345-kV line.
- ❑ 87 projects have been replaced with alternate project solutions. It is not unusual that the status of certain projects will change or evolve since customer needs and uses of the transmission system continually are changing.
- ❑ ATC canceled 160 projects that were identified in previous Assessment reports due to changing needs and up-to-date information. Most of these projects were relatively minor projects, involving only replacement of equipment at existing substations.
- ❑ 90 future projects are in various stages of evaluation or development (Planned which includes projects In Design/Under Construction, Proposed or Provisional).

Projects completed since 2010 Assessment

Transmission projects significantly affecting system performance that have been completed since the 2010 Assessment was issued in September 2011 are listed in [Table PR-1](#).

Most notable include:

- Construct 69-kV line from new Warrens Substation to the Council Creek-Tunnel City 69-kV line,
- Replace two overhead Blount-Ruskin 69-kV lines with one underground 69-kV line, and
- Expand 345-kV switchyard at Oak Creek to interconnect one new generator.

Summary of 2011-2026 Projects

The transmission facilities that we are proposing based on this Assessment are listed in [Tables PR-2 through PR-22](#), and shown graphically by planning zone in [Figures PR-1 through PR-5](#). Changes that have occurred since the 2010 Assessment are listed in [Table PR-23](#). Please also refer to our [Asset Renewal](#) section for a list of our larger asset renewal projects.

In each of these tables, there is a column indicating the planned in-service year for each particular facility and a column indicating the year the facility is needed. Sometimes the year that facilities are needed precedes the planned in-service year. There are a variety of reasons for this, including:

- The preferred alternative to address a particular need may take several years to implement.



- The need had been addressed with operating procedures that are becoming less effective or ineffective, necessitating a permanent solution.
- The preferred alternative to address a particular need may need to be implemented in phases, thus delaying completion of the entire project.
- New data or information affected the nature of the need or limitation, necessitating a change in the preferred alternative and introducing a delay in implementation.
- The need for a project was based on load or generation development that was uncertain.
- Stakeholder input necessitated a change in the alternative to be implemented, introducing a delay in implementation.

Tables PR-2 through PR-12 show the facilities planned by year for 2011-2021. Table PR-13 shows provisional facilities where the in-service date is yet to be determined or beyond the 2021 timeframe.

Tables PR-14 through PR-18 show the facilities planned by planning zone.

Table PR-19 provides a list of planned transmission lines involving new right-of-way for 2011-2026. Since ATC intends to solicit public input on the identification of ultimate solutions through its public planning process, these particular projects may be modified in the future.

Table PR-20 provides a list of proposed transmission line rebuilds, line reconductoring and uprates on existing right-of-way.

Table PR-21 provides a list of proposed new substations and transformer additions (excluding transmission-to-distribution transformers).

Table PR-22 provides a list of other proposed substation equipment additions or replacements.

Need categories

Within these tables, the need for each project is identified. Need categories include the following:

Reliability: Facility (line, transformer, substation equipment) normal rating is exceeded under normal system conditions or emergency rating is exceeded under single or multiple contingency conditions, or bus voltage is not within 5 percent of nominal voltage under normal system conditions or is not within 10 percent of nominal voltage under single



or multiple contingency conditions, or the contingency creates a cascading outage risk (see [Planning criteria](#)). Impending overload or voltage violations are noted as appropriate. NERC reliability categories depicted in the Project Tables are from Table 1 of the TPL 001-004. If the reliability need is not on the Bulk Electric System, we have utilized the terminology of the voltage level preceding the equivalent NERC reliability category.

Operating flexibility: Provides enhanced ability to perform maintenance or react to system changes.

New generation: In our generation interconnection studies and related transmission service studies, the facility has been identified as necessary to accommodate new generation.

T-D interconnection: Facility is required to interconnect to a new transmission-distribution substation requested by a distribution company.

Asset renewal: We have identified the facility as needing repair or replacement.

Stability: We have identified the facility as needed to ensure that our dynamic stability criteria are met (see [Planning Criteria](#)), or to improve stability response of generation.

Economics: Preliminary and partial list of projects emerging from our economic planning studies that may be beneficial in reducing congestion, enhancing system transfer capability and producing economic benefit.

Policy benefits: Provides enhanced ability to access renewable resources and to meet the public policy objectives of state and federal governments.

Projects in design or under construction

Transmission projects that will significantly affect system performance, have regulatory approval if required and are currently in design or under construction are listed in [Table PR-24](#). Most notable include:

- Construct 69-kV line from new Warrens Substation to the Council Creek-Tunnel City 69-kV line,
- Construct the Rockdale-Cardinal 345-kV line, and
- Construct the Canal-Dunn Road 138-kV line.



Because of the number of projects in certain areas, finding sufficient outage opportunities has become an issue. We are striving to more accurately predict the potential cost implications of construction/connection outages and schedule outages to minimize such potential costs.

Projects pending regulatory review/approval

Transmission projects that are pending issuance of a Certificate of Authority (CA) or a Certificate of Public Convenience and Necessity (CPCN) from the Public Service Commission of Wisconsin are listed in [Table PR-25](#).

Notable projects include:

- Rebuild the Pleasant Prairie 345-kV bus, and
- Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station.

Project costs

The estimated capital costs for all of the projects reflected in [Figure PR-6](#) are shown in [Figure PR-7](#). The figure shows that the combined capital costs for 10-Year Assessment projects that are completed, canceled, replaced, in licensing and under construction account for roughly 83 percent of the estimated total 2001-2011 capital costs, with future projects accounting for the remaining 17 percent of the total. The estimated capital costs depicted in [Figure PR-7](#) are based only on those projects listed in the previous and current Assessment(s) that affect system performance.

The total 10-year capital expenditure described in this Assessment ranges from \$3.8 to \$4.4 billion. The cost estimate for all 2011 10-Year Assessment system reliability and economics projects (not including regional multi-value projects) to be placed in-service is approximately \$1.0 billion, which is the same as the 2010 Assessment estimate. [Figure PR-8](#) categorizes the current \$1.0 billion 2011 Assessment system reliability and economics project dollars by status. Planned projects (including those projects in design and under construction) account for 25% of the reliability and economic dollars, proposed projects account for 41% of the dollars, and provisional projects account for the remaining 34% of the dollars.

Asset renewal project costs as outlined in our [Asset Renewal](#) section account for approximately \$1.0 billion. Other anticipated projects, including regional multi-value projects, road relocations, generation and distribution interconnections, and unspecified network projects make up the remaining \$1.8 – 2.4 billion of the total \$3.8 – \$4.4 billion range.



Generation Interconnections

The size and location of new or expanded power plants can have significant impacts on the transmission system. These impacts can range from very positive (adding voltage support in a weak area of the system) to very negative (aggravating loading problems and/or causing generator instability). Information on the status, as of July 1, 2011, of ATC's portion of the Midwest Independent System Operator generation interconnection queue is provided in this section. There continues to be significant activity in ATC's portion of this queue, ranging from newly proposed generation projects to cancellation of previously proposed generation projects.

There are two key aspects in determining the total impacts a proposed new generator may have on the transmission system:

- impacts of interconnecting the new generator to the transmission system and
- impacts of using the transmission system to deliver power from the new generator.

Per the Midwest ISO Revised Attachment X process, a generator interconnection study is usually performed in three stages: Interconnection Feasibility Study (Application Review Phase), Interconnection System Impact Study (System Planning and Analysis and/or Definitive Planning Phase), and an Interconnection Facilities Study (Definitive Planning Phase)

The *Interconnection Feasibility Study* includes a determination of thermal overload or voltage level impacts created by the new generator. This study process is performed by MISO approximately five to six times per calendar year and provides a qualitative screen of the affected facilities, indicating if there is ample capacity on the system to support the new interconnection. Depending on the results of the study, the request may either enter into the Definitive Planning Phase (DPP), System Planning and Analysis Phase (SPA) or Customer Not Ready Phase of the System Impact study.

The *Interconnection System Impact Study* includes a determination of whether the proposed generator and other nearby generators will remain connected to the system under various disturbance situations, such as line trips and equipment failures and includes a fault duty analysis to determine whether existing system equipment can accommodate the increased short circuit fault duty caused by the new generator. Finally, the System Impact Study will identify solutions for any thermal, stability or fault duty deficiencies.

Delivery impacts are assessed during the DPP portion of the interconnection study process using the Midwest ISO deliverability methodology, which determines whether a new generator is deliverable to the Midwest ISO energy market and to what percent if not wholly deliverable. Whatever portion of the new generator that is deliverable may then be used as



a Network Resource by Network Customers through the Midwest ISO's Module E Resource Adequacy procedures.

The *Interconnection Facilities Study* is conducted in the DPP process phase to specify and estimate the time and cost of the equipment, engineering, procurement and construction of the system upgrades identified in the earlier interconnection studies.

The results of the interconnection studies are needed to develop a comprehensive picture of the transmission facilities that will be required for a proposed generator. These necessary changes to the transmission system are why we include in our Assessment models those proposed generators for which interconnection studies have been completed.

The first portion of this section provides the status of the generation queue within our service territory. The second portion of this section describes the transmission system additions associated with various proposed generation projects for which final interconnection studies have been completed. The third portion of this section describes some of the implications associated with interconnecting generation at various locations within our service territory.

ATC Generation Queue

Since ATC's inception, eighteen new generators have gone into service and three up rates to existing generators have been completed, totaling approximately 5700 MW. These generators are shown in Table PR-26.

Table PR-27 lists the proposed generators in the generation queue for our service territory as of July 1, 2011. This table lists each proposed generation project and summarizes them by zone and MW amount. These proposed projects also are shown by approximate location in Figure PR-9. As shown, the total capacity of proposed generators in the queue is 2625.45 MW. Of that proposed capacity, wind units reflect 96 percent; nuclear up-rates reflect 2 percent and the remaining 2 percent is comprised of natural gas turbines (see Figure PR-10). Of this generation, 0 percent in Zone 1, 11 percent in Zone 2, 68 percent is proposed in Zone 3, 21 percent in Zone 4, and 0 percent in Zone 5. Table PR-29 lists the required network upgrades associated with the generators shown in Table PR-27 with a signed Interconnection Agreement.

The developer's projected in-service date listed in Table PR-27 is the last official commercial operation in-service date provided by the developer for that request. Under the Midwest ISO's former Attachment X procedures, a developer may suspend their Interconnection Agreement which may delay the project and were not required to update their official in-service date as part of this suspension.



The following request has been suspended:

- G590 – 98 MW wind farm, Line 971K91 in Calumet County, Wisconsin
- G611/G927 – 100.5 MW wind farm, Line 4035 in Calumet County, Wisconsin

Generation interconnection requests previously in the generation queue, which have been cancelled or removed from the queue since July 1, 2009 (because the developer withdrew the request or missed contractual milestones), are summarized in Table PR-28.

Link to publicly posted generation queue:

http://oasis.midwestiso.org/documents/ATC/Cluster_8_Queue.html

Implications of generation development

Availability of fuel, water and transmission interconnections are among the key aspects to be considered when sighting generation.

From a transmission perspective, the ability of the transmission system to accommodate new generation is a function of stability, power flow and short circuit analyses. For certain generation technologies, harmonics and voltage fluctuations may need to be considered as well. In most instances, new generation will require certain transmission system reinforcements to interconnect and deliver the generation output. In a few specific instances, new generation can be beneficial to the transmission system, perhaps even deferring or eliminating the need for transmission reinforcements that would be necessary absent the new generation. The ability of generation to defer or eliminate the need for transmission reinforcements also can be a function of the generation location, number of generators and/or expected generator capacity factor.

In this section, a general zone-by-zone evaluation of the likelihood of needing or deferring transmission reinforcements for various generator locations is provided. The purpose of these evaluations is to provide a cursory indication to the generation market of the likely magnitude of the impact and the transmission reinforcements that would likely be needed by general location.

Zone 1

Within Zone 1, generation has been proposed in various locations, and most of the proposals have involved generation located in the vicinity of the 345-kV infrastructure. Based on studies that we have conducted for proposed generation interconnections to date, some transmission reinforcements are likely to be required for any significant (>100 MW) generation development. The extent and nature of the reinforcements largely would be a function of where the power from the generation is to be delivered.



The reliability of the northern portion of Zone 1, the Rhinelander Loop, has been significantly improved with the completion of the new Cranberry to Conover 115 kV line and the Conover to Plains 138 kV conversion. While no new generator requests have been studied for this area, the addition of the Rhinelander Loop improvement projects may be able to support small-sized (up to 50 MW, depending on location) generation development, provided generator stability can be maintained, and provided it can be located in the northern portion of the Loop. Whether this generation would be cost-effective as a transmission-deferral mechanism would depend on a number of factors. The need for additional stability and thermal reinforcements in and outside of the Loop would be a function of where the new generation is sited and where the power is to be delivered. These improvements will be required to ensure that NERC reliability standards are continuously being met and that the security of the Rhinelander loop is not compromised.

The transmission infrastructure in the central portion of Zone 1 includes three new 345-kV lines which make up the GCMW corridor (Gardner Park – Highway 22, Morgan – Highway 22, and Highway 22 – Werner West). These additional lines significantly strengthen the Weston area, bringing much needed support to the area for both stability and thermal considerations for the new Weston 4 facility. A new generating facility was studied interconnecting 50 MW of biomass generation to the 115 kV transmission system located near the Weston substation. This study proved that properly sited generation of 50 MW or less can be accommodated to the transmission system in the area with minimal network upgrades. While the evaluation of new generation in this area is limited to this one study, it is possible that the GCMW corridor has the potential to support additional small to medium size generation development depending on actual physical location of the facility.

The infrastructure in the southern portion of Zone 1 consists of five 138-kV lines and several 69-kV lines. Only smaller generation projects (typically <25 MW) could be accommodated with minimal transmission reinforcements. The existing infrastructure in this portion of Zone 1 is not suitable for significant generation development.

The following table lists Zone 1 generator studies completed in the last five years.

Zone 1 completed generation studies:

Request	Size	Type	County, State	Status
G588	55/60 MW	Combustion Turbine	Wood County, WI	In-Service
J040	50 MW	Biomass	Marathon County, WI	Out of Queue



Zone 2

We have completed studies of ten generation interconnection requests for the Zone 2 area. Even though the first six requests are no longer active in the queue, they have helped us build a base of knowledge similar to what we have in other zones relating to likely generation interconnection impacts.

ATC has seen substantial interest in siting wind turbine generators in the Upper Peninsula of Michigan. ATC has completed studying six wind farms located in Marquette, Houghton, Delta and Chippewa counties totaling 509 MW. One of the major challenges wind farms proposed for the Upper Peninsula will face is the limited transmission infrastructure to interconnect and deliver the energy produced by these power plants. Since the Upper Peninsula transmission grid was primarily designed to serve local load, substantial transmission upgrades area may be required to accommodate these proposed plants. The completion of the Northern Umbrella Plan, however, will result in a much more robust 138-kV network at Plains Substation that could accommodate medium sized generation in the future at or near Plains.

It is likely that given the scarcity of 138-kV infrastructure in the Upper Peninsula there are very few locations in Zone 2 that are ideal candidates for significant generation development. Generation studies have indicated substantial re-enforcements are required to accommodate small to medium size generation development throughout the Upper Peninsula.

There are areas in Zone 2, such as on the western end of the Upper Peninsula, which are or will be in need of transmission reinforcements where smaller generation projects could be beneficial in terms of deferring transmission expenditures. The allowable capacity of such generation would depend on the location. However, other potential impacts (stability, fault duties) would need to be evaluated on a location-by-location basis.

The following table lists Zone 2 generator studies completed in the last five years.

Zone 2 completed generation studies:

Request	Size	Type	County, State	Status
G567-568	165 or 300 MW	Coal	Delta County, MI	Out of Queue
G583	19 MW	Biomass	Ontonagon County, MI	Out of Queue
G750	201 MW	Wind	Marquette County, MI	Out of Queue
G799	120 MW	Wind	Houghton County, MI	Out of Queue
G937	29 MW	Wind	Delta County, MI	Out of Queue
J039	50 MW	Biomass	Delta County, MI	Out of Queue



J060	29 MW	Wind	Delta County, MI	In Queue
J061	70 MW	Wind	Delta County, MI	In Queue
J066	60 MW	Wind	Chippewa County, MI	In Queue
J078	26 MW	Biomass	Marquette County, MI	Out of Queue

Zone 3

In Zone 3, generation has been proposed in various locations, but over half have been in the southern-most counties in Zone 3. Generation could be beneficial in a few areas depending on the capacity of such generation and the exact location.

Even with the on-going reinforcement plans for Dane County, smaller-scale generation (< 100 MW) in certain locations could be beneficial to improving the voltage profile in the area and potentially deferring transmission reinforcements. Stability analysis would need to be conducted to ensure stable operation of such generation.

Similarly, the southeast portion of Zone 3 is heavily loaded and will require transmission reinforcements in the future to ensure reliable operation. Small-scale generation in certain locations could be beneficial to changing power flow patterns and improving the voltage profile in the area. Generation studies completed in the southwest corner of the state have demonstrated that sighting large amounts of generation in rural areas may require substantial upgrades to the transmission system to ensure reliable operation.

The following table lists Zone 3 generator studies completed in the last five years.

Zone 3 completed generation studies:

Request	Size	Type	County, State	Status
G282	99 MW	Wind	Lafayette County, WI	In Queue
G366	80 MW	Wind	Columbia County, WI	Out of Queue
G527	280 MW	Coal	Grant County, WI	Out of Queue
G546	100 MW	Wind	Walworth County, WI	Out of Queue
G550	24 MW	Simple cycle	Jefferson County, WI	In Service
G553	280 MW	Coal	Columbia County, WI	Out of Queue
G706	99 MW	Wind	Columbia County, WI	In Queue
G724	99 MW	Wind	Dane County, WI	Out of Queue
G747	99 MW	Wind	Rock County, WI	Out of Queue
G749	50 MW	Wind	Lafayette County, WI	In Queue
G793	100 MW	Wind	Rock County, WI	Out of Queue
G901	600 MW	Wind	Winnebago County, IL	Out of Queue



G902	600 MW	Wind	Winnebago County, IL	Out of Queue
G953	49.5 MW	Wind	Grant County, WI	Out of Queue
G954	49.5 MW	Wind	Grant County, WI	Out of Queue
H012	150 MW	Wind	Columbia County, WI	In Queue
H024	48 MW	Wind	Columbia County, WI	Out of Queue
J084	50 MW	Wind	Grant County, WI	In Queue

Zone 4

Generation has been proposed in various locations in Zone 4. Generation could be beneficial in a few areas depending on the capacity of such generation and exact location. Given the nature of the issues in Zone 4, however, it is unlikely that new generation in Zone 4 will significantly alter the need for the major transmission reinforcements contemplated in that zone.

One area where generation could defer the need for transmission reinforcements is in Door County, provided such generation is small-scale (< 50 MW) and appropriately located. Currently, the northern portion of the county is served radially, and electric service is subject to interruption for the loss of the single 69-kV line serving the area. The voltage profile in Door County is projected to precipitate the need for reinforcements in the future. Small-scale generation potentially could defer certain of these reinforcements.

One area in Zone 4 that cannot accommodate any additional generation without significant transmission reinforcements is the area around the Point Beach and Kewaunee nuclear plants. In this area, existing transmission lines have little excess capacity and the existing generation requests have demonstrated that large scale transmission projects are needed for even modest increases in existing generation capacity. As the system evolves, stability margins at those plants may become a concern even with the transmission improvements. Siting of additional generation in the area will require extensive studies to ensure that system reliability will continue to be met for the existing generators in the area.

The following table lists Zone 4 generator studies completed in the last five years.

Zone 4 completed generation studies:

Request	Size	Type	County, State	Status
G427	98 MW	Wind	Fond du Lac County, WI	In Queue
G507	68 MW	Wind	Fond du Lac County, WI	In Service
G590	98 MW	Wind	Calumet County, WI	In Queue
G611	99 MW	Wind	Calumet County, WI	In Queue
G773	150 MW	Wind	Brown County, WI	Out of Queue



G833/J023	59 MW	Nuclear	Manitowoc County, WI	In Service
G834/J022	59 MW	Nuclear	Manitowoc County, WI	In Queue
G927	1.5 MW	Wind	Calumet County, WI	In Queue
G987	400 MW	Wind	Brown County, WI	Out of Queue
J094	200 MW	Wind	Manitowoc County, WI	In Queue

Zone 5

Two major generation additions have been completed for Zone 5. The first addition is at Port Washington Power Plant, which was completed in June of 2008. In order to accommodate the two blocks of generation at Port Washington, the two Port Washington–Rangeline 138-kV lines and the three Port Washington–Saukville 138-kV lines were rebuilt in 2005 and the Saukville–Pleasant Valley–Arthur Road–St. Lawrence 138-kV line was rebuilt in 2007 at a cost of approximately \$10 million.

The other site for new generation is the Oak Creek Power Plant. The PSCW approved two new units at the Oak Creek Power Plant, with the first unit having gone into service in December of 2009 and the second unit achieving commercial service in January of 2011.

Studies of other proposed generation projects that are no longer in the generation queue indicate that additional generation in certain areas of Zone 5 would pose stability problems. In particular, larger-scale generation interconnecting to the 345-kV network could pose stability issues.

Smaller-scale generation in certain locations in Washington and Waukesha counties potentially could be accommodated without the need for transmission reinforcements if located appropriately.

The following table lists Zone 5 generator studies completed in the last five years.

Zone 5 completed generation studies:

Request	Size	Type	County, State	Status
G051	1300 MW	Coal/steam	Milwaukee County, Wisconsin	In Service



Transmission to distribution interconnections

We continue to receive numerous requests from LDC's for new transmission to distribution interconnections. These interconnection requests generally are categorized into one of four different types of projects:

1. *Constructing new T-D substations.* This type of interconnection typically involves constructing a new T-D substation to serve normal load growth. They are usually located adjacent to an existing transmission line which is tapped or looped into the new substation. However sometimes, from a Best Value Planning perspective, the optimum site for the new substation cannot be located adjacent to the transmission line and we are required to construct a transmission line to the new substation site. In these instances it may require a single circuit transmission tap to the new substation or it may require a new transmission line from two existing substations forming a new network line. Depending on the redistribution of the load and type of new interconnection, the transmission system performance may not be materially impacted. However, a new network line can have a greater impact on the transmission system performance.
2. *Adding T-D transformers at existing substations.* This type of interconnection involves expanding an existing T-D substation to accommodate a new T-D transformer. Typically, this type of interconnection is a way for a distribution company to increase capacity by lowering the loading on existing T-D transformers to meet increasing customer demand and/or to improve reliability by providing redundancy. The addition of the new T-D transformer typically does not materially affect system performance.
3. *Replacing existing T-D transformers at existing substations or substation rebuilds.* This type of project is not technically a new interconnection since it is typically just an increase in the transformer capacity to reliably serve increasing customer demand. This type of project may also include increasing reliability by replacing old infrastructure and/or equipment at an existing substation. This type of project typically does not materially affect system performance.
4. *Economic development projects:* This type of project is designed to accommodate a large new unforeseen load. These loads may include a new industry or an existing industry that is expanding their operation. Distributed generation is also included in some of these requests. Depending on the amount of generation and the load pocket it is connecting to the transmission system may absorb some of the generation during part or all of the year. However, there may be a need for other transmission system reinforcements, besides a new substation, to reliably serve the new load.

T-D interconnection requests that have been jointly evaluated to the point of Best Value Planning agreement between ATC and the LDC are shown in Figures PR-11 through PR-15 for Zones 1-5, respectively. A corresponding list of these interconnection requests is



10-Year Assessment

An annual report summarizing proposed additions and expansions to ensure electric system reliability.

2011

September 2011 10-Year Assessment
www.atc10yearplan.com

available on ATC's Web site: www.atcllc.com. Those shown are on the Project Management worksheet of the D-T queue.

*Table PR-1
Projects Placed In Service Since 2010 10-Year Assessment
As of May 23, 2011*

Project	Zone
Construct 69-kV line from new Warrens Substation to the Council Creek-Tunnel City 69-kV line	1
Install reactors at Straits Substation	2
Install 2-8.0 Mvar capacitor bank at Indian Lake 69-kV Substation	2
Uprate Y-40 Gran Grae-Boscobel 69-kV line to achieve a 99 MVA summer emergency rating*	3
Uprate the Royster Substation terminals	3
Uprate terminal limitations at McCue for the Y-79 McCue-Milton Lawns 69-kV line	3
Uprate Y-61 Sheepskin-Dana 69-kV line to 95 MVA	3
Uprate Y-61 McCue-Lamar 69-kV line to achieve 300 deg F line ratings and install 2-12.45 Mvar 69-kV capacitor banks at Lamar Substation	3
Install 2-16.33 Mvar 69-kV capacitor banks at Spring Green Substation	3
Install 1-32.66 Mvar 138-kV capacitor bank at Femrite Substation	3
Replace two overhead Blount-Ruskin 69-kV lines with one underground 69-kV line	3
Install 1-32.66 Mvar 138-kV capacitor bank at Kegonsa Substation	3
Install a 138/69-kV transformer at Bass Creek Substation	3
Uprate X-12 Town Line Road-Bass Creek 138-kV line to 300 deg F	3
Reconfigure Kewaunee 345/138-kV switchyard and install a second 500 MVA 345/138-kV transformer	4
Construct second Shorewood-Humboldt 138-kV underground cable	5
Construct a 138-kV bus at Pleasant Valley Substation to permit second distribution transformer interconnection	5
Expand 345-kV switchyard at Oak Creek to interconnect one new generator	5

Table PR-2
Transmission System Additions for 2011

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Upgrade McKenna 6.3 MVAR capacitor bank to 15.3 MVAR and upgrade Chaffee Creek 8.1 MVAR bank to 14.4 MVAR	2011	2011	1	reliability (69B2, 69B3)	Proposed
Install 69-kV bus tie breaker at Delta Substation	2011	2011	2	reliability (C1), operating flexibility	Proposed
Rebuild Y-33 Brodhead to South Monroe 69-kV line	2011*	2011	3	reliability (B2, 69B2, 69B3)	Planned

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-3
Transmission System Additions for 2012

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct 115-kV line from new Woodmin Substation to the Clear Lake Substation	2012	2012	1	T-D interconnection	Planned
Uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	2012	2012	2	reliability (B2)	Proposed
Install second 138/69-kV transformer and a 138-kV ring bus at Chandler Substation	2012	2012	2	reliability (69B3)	Proposed
Replace five 69-kV breakers at Delta Substation	2012	2012	2	stability, operating flexibility	Proposed
Relocate Engadine 69-kV load	2011	2012	2	reliability (69B2)	Proposed
Rebuild 2.37 miles of 69 kV from Sunset Point to Pearl Ave with 477 ACSR	2011	2012	4	reliability (69B2, 69B3)	Planned
Construct Canal-Dunn Road 138-kV line	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Planned
Install 100 MVA 138/69-kV transformer at Dunn Road	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Planned
Rebuild part of the Y-8 Dane-Dam Heights 69-kV line*	>2026	2012	3b	reliability, asset renewal, potential T-D interconnection	Planned

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-4
Transmission System Additions for 2013

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Rebuild M38-Atlantic 69-kV line	2011	2013	2	reliability (69B2)	Planned
Construct 345-kV line from Rockdale to Cardinal	2013*	2013	3	reliability (B2, C5)	Planned
Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at Cardinal Substation	2013*	2013	3	reliability (B2, C5)	Planned
Install 2-16.33 MVAR 69-kV capacitor banks at Nine Springs Substation	2008*	2013	3	reliability (69B2)	Proposed
Uprate Fitchburg-Nine Springs 69-kV and Royster-Pflaum 69-kV lines and move AGA load to the Royster-Femrite 69-kV line	2008*	2013	3	reliability (69B2)	Proposed
Rebuild Pleasant Prairie 345-kV bus	2013	2013	5	operating flexibility	Proposed

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-5
Transmission System Additions for 2014

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	2013	2014	1	economics, reliability (B2, C3)	Proposed
Install a 161/138-kV transformer at Council Creek Substation	2013	2014	1	economics, reliability (B2, C3)	Proposed
Uprate Council Creek-Petenwell 138-kV line	2013	2014	1	economics, reliability (B2)	Proposed
Rebuild Straits-Pine River lines 6904/5 for 138 kV and operate at 69 kV	2014	2014	2	reliability (B2)	Proposed
Install power flow control at Straits 138-kV Substation	2010	2014	2	reliability (B1)	Proposed
Energize Hiawatha-Indian Lake at 138 kV	2014	2014	2	reliability (B2)	Proposed
Uprate Munising-Seney-Blaney Park 69-kV line to 167 degrees F	2014	2014	2	reliability (69B2)	Provisional
Construct 18th Road-Chandler double circuit 138-kV lines and operate at 138/69	2014	2014	2	reliability (69B3), economics	Proposed
Construct 18th Road 138/69-kV Substation and install two 138/69-kV transformers	2014	2014	2	reliability (69B3)	Proposed
Install 1-8.16 MVAR 69-kV capacitor banks at 18th Road	2014	2014	2	reliability (69B3)	Proposed
Construct Pleasant Prairie-Zion Energy Center 345-kV line	2017	2014	5	economics	Proposed

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-6
Transmission System Additions for 2015

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Reconfigure Petenwell 138-kV bus	2011	2015	1	operating flexibility	Provisional
Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and install a new 8.2 MVAR capacitor bank at Ripon 69-kV Substation	>2026	2015	1	reliability (69B2)	Provisional
Replace Petenwell 138/69-kV transformer	2018	2015	1	reliability (A, 69B2)	Provisional
Construct a new Arnold 345-kV Substation and install a 345/138-kV transformer	2015	2015	2	reliability (B1)	Proposed
Install 1-8.16 MVAR capacitor bank at Boscobel 69-kV Substation and upgrade existing 5.4 MVAR bank with an 8.16 MVAR bank	>2026	2015	3	reliability (69B2)	Provisional
Upgrade 6927 West Middleton-Stage Coach 69-kV line to 106 MVA SE	>2026	2015	3	reliability (69B2, 69B3)	Provisional
Install 3-75 MVAR capacitor banks at Bluemound Substation	>2026	2015	5	reliability (B1)	Provisional
Construct 138-kV lines to serve Milwaukee County T-D interconnection	2015	2015	5	T-D interconnection	Proposed

Defined in Previous 10-Year Assessment
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Revised in scope from Previous 10-Year Assessment

New to this 10-Year Assessment

Table PR-7
Transmission System Additions for 2016

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Replace existing 56 MVA Harrison 138/69-kV transformer with a 100 MVA transformer	>2026	2016	1	reliability (A)	Provisional
Uprate Pine River-Nine Mile 69-kV line 6923 to 167 degrees F and asset renewal for 6921/3	2016	2016	2	reliability (69B2), condition	Proposed
Rebuild Arcadian-Waukesha 138-kV lines KK9942/KK9962	2016	2016	5	reliability (B2)	Proposed

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-8
Transmission System Additions for 2017

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Replace 138/69-kV transformer at Metomen Substation	2017	2017	1	reliability (A, 69B3)	Proposed
Uprate Castle Rock-Mckenna 69-kV line	2024	2017	1	reliability (69B2, 69B3)	Provisional
Construct Fairwater-Mackford Prairie 69-kV line	>2026	2017	1	economics, reliability (69B2)	Provisional
Reconfigure the North Randolph-Ripon 69-kV line to form a second Ripon-Metomen 69-kV line and retire the circuit between Metomen and the Mackford Prairie tap	>2026	2017	1	economics, reliability (69B2)	Provisional
Install 2-24.5 Mvar 138-kV capacitor bank and 1-18 Mvar 69-kV capacitor bank at Brick Church substation	>2026	2017	3b	reliability (69B2)	Provisional

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-9
Transmission System Additions for 2018

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install a second 138/69-kV transformer at Wautoma Substation	>2026	2018	1	reliability (A, 69B2)	Provisional
Convert Necedah distribution substation from 69 kV to 138 kV	>2026	2018	1	reliability (69B2, 69B3)	Provisional
Replace existing Caroline 115/69-kV transformer	>2026	2018	1	reliability (69B3)	Provisional
Uprate the 6986 Royster to Sycamore 69-kV line to 115 MVA	2018	2018	3	reliability (69B3)	Provisional
Install a second 100 MVA 138/69 kV transformer at Hillman Substation	>2026	2018	3	reliability (69B2, 69B3)	Provisional
Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	>2026	2018	3	reliability (69B3)	Provisional
Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	>2026	2018	3	reliability (69B2)	Provisional
Construct Badger Coulee 345-kV line	2018	2018	3	policy benefits	Proposed
Convert Forest Junction - Howards Grove and a portion of the Howards Grove - Holland 138-kV circuits to 345-kV	2018	2018	4	new generation	Proposed
Barnhart Substation: Construct new 345/138-kV substation with new 500 MVA 345/138-kV transformer	2018	2018	4	new generation	Proposed
Branch River Substation: Construct new 345-kV switching station	2018	2018	4	new generation	Proposed
Uprate the Edgewater-Cedarsauk 345-kV circuit	2018	2018	4	new generation	Proposed
Construct a new Barnhart - Plymouth - Howards Grove - Erdman 138-kV circuit	2018	2018	4	new generation	Proposed
Point Beach Substation: Install new series 345-kV breaker for circuit Q-303	2018	2018	4	new generation	Proposed

Table PR-9
Transmission System Additions for 2018 (continued)

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	>2026	2018	3b	reliability (69B2)	Provisional
Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation	>2026	2018	3b	reliability (69B2), T-D interconnection	Provisional
Rebuild Y-32 Colley Road-Brick Church 69-kV line	>2026	2018	3b	reliability (B2, 69B3, 69C5, C3) condition	Provisional

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-10
Transmission System Additions for 2019

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Uprate Winneconne-Sunset Point 69-kV line Y-103	>2026	2019	1	reliability (69B2)	Provisional
Uprate Ripon-Northwest Ripon 69-kV line Y-93	>2026	2019	1	reliability (69B2)	Provisional
Construct 69-kV double-circuit line between McCue and Lamar substations	>2026	2019	3	reliability (A, 69B2)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	>2026	2019	3	reliability (A, B2)	Provisional
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2019	2019	3 & 5	T-D interconnection, reliability (69B2)	Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at Dam Heights	>2026	2019	3b	reliability (69B2)	Provisional

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-11
Transmission System Additions for 2020

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Rebuild the Y-119 Sun Valley Tap to Oregon 69-kV line	>2026	2020	3	reliability, condition (69B3, 69C3)	Provisional
Construct Dubuque-Spring Green-Cardinal 345-kV line	2020	2020	3	policy benefits	Provisional
Construct Cardinal-Blount 138-kV line	>2026	2020	3	reliability (C5)	Provisional
Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	2023	2020	5	reliability (B3)	Provisional
Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	>2026	2020	3b	reliability (B2)	Provisional
Construct a Lake Delton-Birchwood 138-kV line	>2026	2020	3b	reliability (B2)	Provisional

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-12
Transmission System Additions for 2021

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at North Monroe	>2026	2021	3	reliability (B2)	Provisional
Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	>2026	2021	3	reliability (A, B2, B3)	Provisional
Construct second Dunn Road-Egg Harbor 69-kV line	>2026	2021	4	reliability (69B2)	Provisional
Uprate Oak Creek-Bluemound 230-kV line	2021	2021	5	operating flexibility	Provisional
Uprate Y159 Brick Church-Walworth 69-kV line to 115 MVA	>2026	2021	3b	reliability (69B2)	Provisional

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-13
Transmission System Additions beyond 2021

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at Sun Prairie	>2026	2022	3	reliability (69B2, 69B3)	Provisional
Rebuild West Middleton-Pheasant Branch 69-kV line with double circuits to achieve a 240 MVA SE on each circuit	2022	2022	3	reliability (69B2)	Provisional
Construct Shoto to Custer 138-kV line	>2026	2022	4	reliability (69B2, 69B3)	Provisional
Install 138/69-kV transformer at Custer Substation	>2026	2022	4	reliability (69B2, 69B3)	Provisional
Upgrade Oak Creek-Pennsylvania 138-kV line	>2026	2022	5	reliability (B2)	Provisional
Construct a Hubbard-East Beaver Dam 138-kV line	>2026	2022	3b	reliability (B2)	Provisional
Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	>2026	2022	3b	reliability (69B2)	Provisional
Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	>2026	2023	3	reliability (69B2)	Provisional
Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	>2026	2024	4	reliability (69B3)	Provisional
Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	>2026	2025	4	reliability (69B3)	Provisional
Construct a 345-kV bus, install a 345/138-kV 500 MVA transformer at North Randolph and loop the Columbia to South Fond Du Lac 345-kV line into the substation	>2026	2025	3b	reliability (B2)	Provisional
Reconductor Harbor-Kansas 138-kV line	2021	TBD	5	reliability	Provisional
Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	>2026	TBD	3b	reliability (B3)	Provisional

Defined in Previous 10-Year Assessment
Revised in scope from Previous 10-Year Assessment
New to this 10-Year Assessment

Table PR-14
Zone 1 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Upgrade McKenna 6.3 MVAR capacitor bank to 15.3 MVAR and upgrade Chaffee Creek 8.1 MVAR bank to 14.4 MVAR	2011	2011	1	reliability (69B2, 69B3)	Proposed
Construct 115-kV line from new Woodmin Substation to the Clear Lake Substation	2012	2012	1	T-D interconnection	Planned
Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	2013	2014	1	economics, reliability (B2, C3)	Proposed
Install a 161/138-kV transformer at Council Creek Substation	2013	2014	1	economics, reliability (B2, C3)	Proposed
Uprate Council Creek-Petenwell 138-kV line	2013	2014	1	economics, reliability (B2)	Proposed
Reconfigure Petenwell 138-kV bus	2011	2015	1	operating flexibility	Provisional
Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and install a new 8.2 MVAR capacitor bank at Ripon 69-kV Substation	>2026	2015	1	reliability (69B2)	Provisional
Replace Petenwell 138/69-kV transformer	2018	2015	1	reliability (A, 69B2)	Provisional
Replace existing 56 MVA Harrison 138/69-kV transformer with a 100 MVA transformer	>2026	2016	1	reliability (A)	Provisional
Replace 138/69-kV transformer at Metomen Substation	2017	2017	1	reliability (A, 69B3)	Proposed
Uprate Castle Rock-Mckenna 69-kV line	2024	2017	1	reliability (69B2, 69B3)	Provisional
Construct Fairwater-Mackford Prairie 69-kV line	>2026	2017	1	economics, reliability (69B2)	Provisional
Reconfigure the North Randolph-Ripon 69-kV line to form a second Ripon-Metomen 69-kV line and retire the circuit between Metomen and the Mackford Prairie tap	>2026	2017	1	economics, reliability (69B2)	Provisional
Install a second 138/69-kV transformer at Wautoma Substation	>2026	2018	1	reliability (A, 69B2)	Provisional
Convert Necedah distribution substation from 69 kV to 138 kV	>2026	2018	1	reliability (69B2, 69B3)	Provisional
Replace existing Caroline 115/69-kV transformer	>2026	2018	1	reliability (69B3)	Provisional
Uprate Winneconne-Sunset Point 69-kV line Y-103	>2026	2019	1	reliability (69B2)	Provisional
Uprate Ripon-Northwest Ripon 69-kV line Y-93	>2026	2019	1	reliability (69B2)	Provisional

Table PR-15
Zone 2 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install 69-kV bus tie breaker at Delta Substation	2011	2011	2	reliability (C1), operating flexibility	Proposed
Uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	2012	2012	2	reliability (B2)	Proposed
Install second 138/69-kV transformer and a 138-kV ring bus at Chandler Substation	2012	2012	2	reliability (69B3)	Proposed
Replace five 69-kV breakers at Delta Substation	2012	2012	2	stability, operating flexibility	Proposed
Relocate Engadine 69-kV load	2011	2012	2	reliability (69B2)	Proposed
Rebuild M38-Atlantic 69-kV line	2011	2013	2	reliability (69B2)	Planned
Rebuild Straits-Pine River lines 6904/5 for 138 kV and operate at 69 kV	2014	2014	2	reliability (B2)	Proposed
Install power flow control at Straits 138-kV Substation	2010	2014	2	reliability (B1)	Proposed
Energize Hiawatha-Indian Lake at 138 kV	2014	2014	2	reliability (B2)	Proposed
Uprate Munising-Seney-Blanney Park 69-kV line to 167 degrees F	2014	2014	2	reliability (69B2)	Provisional
Construct 18th Road-Chandler double circuit 138-kV lines and operate at 138/69	2014	2014	2	reliability (69B3), economics	Proposed
Construct 18th Road 138/69-kV Substation and install two 138/69-kV transformers	2014	2014	2	reliability (69B3)	Proposed
Install 1-8.16 MVAR 69-kV capacitor banks at 18th Road	2014	2014	2	reliability (69B3)	Proposed
Construct a new Arnold 345-kV Substation and install a 345/138-kV transformer	2015	2015	2	reliability (B1)	Proposed
Uprate Pine River-Nine Mile 69-kV line 6923 to 167 degrees F and asset renewal for 6921/3	2016	2016	2	reliability (69B2), condition	Proposed

Table PR-16
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Rebuild Y-33 Brodhead to South Monroe 69-kV line	2011*	2011	3	reliability (B2, 69B2, 69B3)	Planned
Rebuild part of the Y-8 Dane-Dam Heights 69-kV line*	>2026	2012	3	reliability, asset renewal, potential T-D interconnection	Planned
Construct 345-kV line from Rockdale to Cardinal	2013*	2013	3	reliability (B2, C5)	Planned
Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at Cardinal Substation	2013*	2013	3	reliability (B2, C5)	Planned
Install 2-16.33 MVAR 69-kV capacitor banks at Nine Springs Substation	2008*	2013	3	reliability (69B2)	Proposed
Uprate Fitchburg-Nine Springs 69-kV and Royster-Pflaum 69-kV lines and move AGA load to the Royster-Femrite 69-kV line	2008*	2013	3	reliability (69B2)	Proposed
Install 1-8.16 MVAR capacitor bank at Boscobel 69-kV Substation and upgrade existing 5.4 MVAR bank with an 8.16 MVAR bank	>2026	2015	3	reliability (69B2)	Provisional
Uprate 6927 West Middleton-Stage Coach 69-kV line to 106 MVA SE	>2026	2015	3	reliability (69B2, 69B3)	Provisional
Install 2-24.5 Mvar 138-kV capacitor bank and 1-18 Mvar 69-kV capacitor bank at Brick Church substation	>2026	2017	3	reliability (69B2)	Provisional
Uprate the 6986 Royster to Sycamore 69-kV line to 115 MVA	2018	2018	3	reliability (69B3)	Provisional
Install a second 100 MVA 138/69 kV transformer at Hillman Substation	>2026	2018	3	reliability (69B2, 69B3)	Provisional
Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	>2026	2018	3	reliability (69B3)	Provisional
Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	>2026	2018	3	reliability (69B2)	Provisional
Construct Badger Coulee 345-kV line	2018	2018	3	policy benefits	Proposed

Table PR-16 (continued)
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	>2026	2018	3	reliability (69B2)	Provisional
Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation	>2026	2018	3	reliability (69B2), T-D interconnection	Provisional
Rebuild Y-32 Colley Road-Brick Church 69-kV line	>2026	2018	3	reliability (B2, 69B3, 69C5, C3) condition	Provisional
Construct 69-kV double-circuit line between McCue and Lamar substations	>2026	2019	3	reliability (A, 69B2)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	>2026	2019	3	reliability (A, B2)	Provisional
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2019	2019	3 & 5	T-D interconnection, reliability (69B2)	Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at Dam Heights	>2026	2019	3	reliability (69B2)	Provisional
Rebuild the Y-119 Sun Valley Tap to Oregon 69-kV line	>2026	2020	3	reliability, condition (69B3, 69C3)	Provisional
Construct Dubuque-Spring Green-Cardinal 345-kV line	2020	2020	3	policy benefits	Provisional
Construct Cardinal-Blount 138-kV line	>2026	2020	3	reliability (C5)	Provisional
Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	>2026	2020	3	reliability (B2)	Provisional
Construct a Lake Delton-Birchwood 138-kV line	>2026	2020	3	reliability (B2)	Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at North Monroe	>2026	2021	3	reliability (B2)	Provisional
Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	>2026	2021	3	reliability (A, B2, B3)	Provisional
Uprate Y159 Brick Church-Walworth 69-kV line to 115 MVA	>2026	2021	3	reliability (69B2)	Provisional

Table PR-16 (continued)
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at Sun Prairie	>2026	2022	3	reliability (69B2, 69B3)	Provisional
Rebuild West Middleton-Pheasant Branch 69-kV line with double circuits to achieve a 240 MVA SE on each circuit	2022	2022	3	reliability (69B2)	Provisional
Construct a Hubbard-East Beaver Dam 138-kV line	>2026	2022	3	reliability (B2)	Provisional
Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	>2026	2022	3	reliability (69B2)	Provisional
Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	>2026	2023	3	reliability (69B2)	Provisional
Construct a 345-kV bus, install a 345/138-kV 500 MVA transformer at North Randolph and loop the Columbia to South Fond Du Lac 345-kV line into the substation	>2026	2025	3	reliability (B2)	Provisional
Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	>2026	TBD	3	reliability (B3)	Provisional

Table PR-17
Zone 4 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Rebuild 2.37 miles of 69 kV from Sunset Point to Pearl Ave with 477 ACSR	2011	2012	4	reliability (69B2, 69B3)	Planned
Construct Canal-Dunn Road 138-kV line	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Planned
Install 100 MVA 138/69-kV transformer at Dunn Road	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Planned
Convert Forest Junction - Howards Grove and a portion of the Howards Grove - Holland 138-kV circuits to 345-kV	2018	2018	4	new generation	Proposed
Barnhart Substation: Construct new 345/138-kV substation with new 500 MVA 345/138-kV transformer	2018	2018	4	new generation	Proposed
Branch River Substation: Construct new 345-kV switching station	2018	2018	4	new generation	Proposed
Uprate the Edgewater-Cedarsauk 345-kV circuit	2018	2018	4	new generation	Proposed
Construct a new Barnhart - Plymouth - Howards Grove - Erdman 138-kV circuit	2018	2018	4	new generation	Proposed
Point Beach Substation: Install new series 345-kV breaker for circuit Q-303	2018	2018	4	new generation	Proposed
Construct second Dunn Road-Egg Harbor 69-kV line	>2026	2021	4	reliability (69B2)	Provisional
Construct Shoto to Custer 138-kV line	>2026	2022	4	reliability (69B2, 69B3)	Provisional
Install 138/69-kV transformer at Custer Substation	>2026	2022	4	reliability (69B2, 69B3)	Provisional
Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	>2026	2024	4	reliability (69B3)	Provisional
Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	>2026	2025	4	reliability (69B3)	Provisional

Table PR-18
Zone 5 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Rebuild Pleasant Prairie 345-kV bus	2013	2013	5	operating flexibility	Proposed
Construct Pleasant Prairie-Zion Energy Center 345-kV line	2017	2014	5	economics	Proposed
Install 3-75 MVAR capacitor banks at Bluemound Substation	>2026	2015	5	reliability (B1)	Provisional
Construct 138-kV lines to serve Milwaukee County T-D interconnection	2015	2015	5	T-D interconnection	Proposed
Rebuild Arcadian-Waukesha 138-kV lines KK9942/KK9962	2016	2016	5	reliability (B2)	Proposed
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2019	2019	3 & 5	T-D interconnection, reliability (69B2)	Provisional
Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	2023	2020	5	reliability (B3)	Provisional
Uprate Oak Creek-Bluemound 230-kV line	2021	2021	5	operating flexibility	Provisional
Upgrade Oak Creek-Pennsylvania 138-kV line	>2026	2022	5	reliability (B2)	Provisional
Reconductor Harbor-Kansas 138-kV line	2021	TBD	5	reliability	Provisional

**Table PR-19
Identified Needs and Transmission Lines Requiring New Right-of-Way**

Identified Need	Potential Solutions	Approx. line mileage		System Need Year	Projected In-service Year	Planning Zone
		Total	New ROW			
T-D interconnection request	Construct 115-kV line from new Woodmin Substation to the Clear Lake Substation	7.5	7.5	2012	2012	1
relieve overloads or low voltages under contingency (B2, C5)	Construct 345-kV line from Rockdale to Cardinal	32.4	32.4	2013	2013	3
relieve overloads or low voltages under contingency (69B3), economics	Construct 18th Road-Chandler double circuit 138-kV lines and operate at 138/69	4	4	2014	2014	2
economics	Construct Pleasant Prairie-Zion Energy Center 345-kV line	7	7	2014	2014	5
T-D interconnection request	Construct 138-kV lines to serve Milwaukee County T-D interconnection request	2	2	2015	2015	5
economics, relieve overloads or low voltages under contingency (69B2)	Construct Fairwater-Mackford Prairie 69-kV line	4	4	>2026	2017	1
policy benefits	Construct Badger Coulee 345-kV line	118	118	2018	2018	3
accommodate new generation	Construct a new Barnhart - Plymouth - Howards Grove - Erdman 138-kV circuit	18	18	2018	2018	4
relieve overloads or low voltages under contingency (69B2), T-D interconnection request	Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation	3.4	3.4	>2026	2018	3
T-D interconnection request,relieve overloads or low voltages under contingency (69B2)	Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	24	15	2019	2019	3 & 5
policy benefits	Construct Dubuque-Spring Green-Cardinal 345-kV line	80	80	2020	2020	3
relieve overloads or low voltages under contingency (B2)	Construct a Lake Delton-Birchwood 138-kV line	5	5	>2026	2020	3
relieve overloads or low voltages under contingency (69B2)	Construct second Dunn Road-Egg Harbor 69-kV line	12.66	12.66	>2026	2021	4
relieve overloads or low voltages under contingency (69B2, 69B3)	Construct Shoto to Custer 138-kV line	6.9	6.9	>2026	2022	4
relieve overloads or low voltages under contingency (B2)	Construct a Hubbard-East Beaver Dam 138-kV line	10	10	>2026	2022	3

**Table PR-20
Transmission Line Rebuild/Reconductors, New Circuits and
Voltage Conversions on Existing Right-of-Way**

Identified Need	Lines to be Rebuilt/Reconducted on Existing ROW	Approx. Mileage of Rebuilt, Reconducted or Uprated Lines	System Need Year	Projected In-service Year	Planning Zone
relieve overloads or low voltages under contingency (B2, 69B2, 69B3)	Rebuild Y-33 Brodhead to South Monroe 69-kV line	18	2011*	2011	3
relieve overloads or low voltages under contingency (69B2, 69B3)	Rebuild 2.37 miles of 69 kV from Sunset Point to Pearl Ave with 477 ACSR	2.37	2011	2012	4
relieve overloads or low voltages under contingency (69A, 69B2, 69B3, 69C3)	Construct Canal-Dunn Road 138-kV line	7.64	2012	2012	4
relieve overloads or low voltages under contingency, asset renewal, potential T-D interconnection request	Rebuild part of the Y-8 Dane-Dam Heights 69-kV line*	5	>2026	2012	3
relieve overloads or low voltages under contingency (69B2)	Rebuild M38-Atlantic 69-kV line	22	2013	2013	2
economics, relieve overloads or low voltages under contingency (B2, C3)	Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	17.9	2013	2014	1
economics, relieve overloads or low voltages under contingency (B2)	Uprate Council Creek-Petenwell 138-kV line	32	2013	2014	1
relieve overloads or low voltages under contingency (B2)	Rebuild Straits-Pine River lines 6904/5 for 138 kV and operate at 69 kV	25.3	2014	2014	2
relieve overloads or low voltages under contingency (B2)	Energize Hiawatha-Indian Lake at 138 kV	40	2014	2014	2
relieve overloads or low voltages under contingency (69B2)	Uprate Munising-Seney-Blaney Park 69-kV line to 167 degrees F	52	2014	2014	2

**Table PR-20
Transmission Line Rebuild/Reconductors, New Circuits and
Voltage Conversions on Existing Right-of-Way (continued)**

Identified Need	Lines to be Rebuilt/Reconducted on Existing ROW	Approx. Mileage of Rebuilt, Reconducted or Uprated Lines	System Need Year	Projected In-service Year	Planning Zone
relieve overloads or low voltages under contingency (69B2), replace aging facilities	Uprate Pine River-Nine Mile 69-kV line 6923 to 167 degrees F and asset renewal for 6921/3	16.4	2016	2016	2
relieve overloads or low voltages under contingency (69B3)	Uprate the 6986 Royster to Sycamore 69-kV line to 115 MVA	3.35	2018	2018	3
accommodate new generation	Convert Forest Junction - Howards Grove and a portion of the Howards Grove - Holland 138-kV circuits to 345-kV	51	2018	2018	4
accommodate new generation	Uprate the Edgewater-Cedarsauk 345-kV circuit	33	2018	2018	4
relieve overloads or low voltages under contingency (B2, 69B3, 69C5, C3) replace aging facilities	Rebuild Y-32 Colley Road-Brick Church 69-kV line	19.7	>2026	2018	3
relieve overloads or low voltages under contingency (A, 69B2)	Construct 69-kV double-circuit line between McCue and Lamar substations	4.0	>2026	2019	3
relieve overloads or low voltages under contingency, replace aging facilities (69B3, 69C3)	Rebuild the Y-119 Sun Valley Tap to Oregon 69-kV line	11	>2026	2020	3
relieve overloads or low voltages under contingency (C5)	Construct Cardinal-Blount 138-kV line	5	>2026	2020	3
operating flexibility	Uprate Oak Creek-Bluemound 230-kV line	39	2021	2021	5
relieve overloads or low voltages under contingency (69B2)	Rebuild West Middleton-Pheasant Branch 69-kV line with double circuits to achieve a 240 MVA SE on each circuit	5	2022	2022	3
relieve overloads or low voltages under contingency	Reconductor Harbor-Kansas 138-kV line	8.4	2021	TBD	5

**Table PR-21
New Substations, Transformer Additions, and Replacements**

Identified need	Potential additions or replacements	Transformer Capacity (MVA)		System Need Year	Projected In-service Year	Planning Zone
		Install	Replace			
relieve overloads under contingency (69B3)	Install second 138/69-kV transformer and a 138-kV ring bus at Chandler Substation	60	0	2012	2012	2
relieve overloads under contingency (69A, 69B2, 69B3, 69C3)	Install 100 MVA 138/69-kV transformer at Dunn Road	100	0	2012	2012	4
relieve overloads under contingency (B2, C5)	Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at Cardinal Substation	500	0	2013*	2013	3
economics, relieve overloads under contingency (B2, C3)	Install a 161/138-kV transformer at Council Creek Substation	100	0	2013	2014	1
relieve overloads under contingency (69B3)	Construct 18th Road 138/69-kV Substation and install two 138/69-kV transformers	120	N/A	2014	2014	2
relieve overloads under contingency (A, 69B2)	Replace Petenwell 138/69-kV transformer	60	33	2018	2015	1
relieve overloads under contingency (B1)	Construct a new Arnold 345-kV Substation and install a 345/138-kV transformer	500	0	2015	2015	2
relieve overloads under contingency (A)	Replace existing 56 MVA Harrison 138/69-kV transformer with a 100 MVA transformer	100	56	>2026	2016	1
relieve overloads under contingency (A, 69B3)	Replace 138/69-kV transformer at Metomen Substation	100	47	2017	2017	1
relieve overloads under contingency (A, 69B2)	Install a second 138/69-kV transformer at Wautoma Substation	100	0	>2026	2018	1
relieve overloads under contingency (69B2, 69B3)	Convert Necedah distribution substation from 69 kV to 138 kV	N/A	0	>2026	2018	1
relieve overloads under contingency (69B3)	Replace existing Caroline 115/69-kV transformer	60	33	>2026	2018	1

**Table PR-21
New Substations, Transformer Additions, and Replacements (continued)**

Identified need	Potential additions or replacements	Transformer Capacity (MVA)		System Need Year	Projected In-service Year	Planning Zone
		Install	Replace			
relieve overloads under contingency (69B2, 69B3)	Install a second 100 MVA 138/69 kV transformer at Hillman Substation	100	0	>2026	2018	3
relieve overloads under contingency (69B3)	Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	100	0	>2026	2018	3
accommodate new generation	Barnhart Substation: Construct new 345/138-kV substation with new 500 MVA 345/138-kV transformer	500	0	2018	2018	4
accommodate new generation	Branch River Substation: Construct new 345-kV switching station	N/A	N/A	2018	2018	4
relieve overloads under contingency (69B2)	Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	100	0	>2026	2018	3
relieve overloads under contingency (B3)	Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	500	672	2023	2020	5
relieve overloads under contingency (69B2, 69B3)	Install 138/69-kV transformer at Custer Substation	100	0	>2026	2022	4
relieve overloads under contingency (69B3)	Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	200	142	>2026	2024	4

**Table PR-21
New Substations, Transformer Additions, and Replacements (continued)**

Identified need	Potential additions or replacements	Transformer Capacity (MVA)		System Need Year	Projected In-service Year	Planning Zone
		Install	Replace			
relieve overloads under contingency (69B3)	Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	200	116	>2026	2025	4
relieve overloads under contingency (B2)	Construct a 345-kV bus, install a 345/138-kV 500 MVA transformer at North Randolph and loop the Columbia to South Fond Du Lac 345-kV line into the substation	500	0	>2026	2025	3
relieve overloads under contingency (B3)	Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	527	400	>2026	TBD	3

**Table PR-22
Substation Equipment Additions and Replacements**

Identified Need	Potential Additions or Replacements	Capacitor Bank Capacity (MVAR)	System Need Year	Projected In-service Year	Planning Zone
relieve overloads or low voltages under contingency (69B2, 69B3)	Upgrade McKenna 6.3 MVAR capacitor bank to 15.3 MVAR and upgrade Chaffee Creek 8.1 MVAR bank to 14.4 MVAR	29.7	2011	2011	1
relieve overloads or low voltages under contingency (C1), operating flexibility	Install 69-kV bus tie breaker at Delta Substation	N/A	2011	2011	2
relieve overloads or low voltages under contingency (B2)	Upgrade overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	N/A	2012	2012	2
stability, operating flexibility	Replace five 69-kV breakers at Delta Substation	N/A	2012	2012	2
relieve overloads or low voltages under contingency (69B2)	Relocate Engadine 69-kV load	N/A	2011	2012	2
relieve overloads or low voltages under contingency (69B2)	Install 2-16.33 MVAR 69-kV capacitor banks at Nine Springs Substation	32.66	2008*	2013	3
relieve overloads or low voltages under contingency (69B2)	Upgrade Fitchburg-Nine Springs 69-kV and Royster-Pflaum 69-kV lines and move AGA load to the Royster-Femrite 69-kV line	N/A	2008*	2013	3
operating flexibility	Rebuild Pleasant Prairie 345-kV bus	N/A	2013	2013	5
relieve overloads or low voltages under contingency (B1)	Install power flow control at Straits 138-kV Substation	N/A	2010	2014	2
relieve overloads or low voltages under contingency (69B3)	Install 1-8.16 MVAR 69-kV capacitor banks at 18th Road	8.16	2014	2014	2
operating flexibility	Reconfigure Petenwell 138-kV bus	N/A	2011	2015	1
relieve overloads or low voltages under contingency (69B2)	Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and install a new 8.2 MVAR capacitor bank at Ripon 69-kV Substation	12.3	>2026	2015	1

**Table PR-22
Substation Equipment Additions and Replacements (continued)**

Identified Need	Potential Additions or Replacements	Capacitor Bank Capacity (MVAR)	System Need Year	Projected In-service Year	Planning Zone
operating flexibility	Reconfigure Petenwell 138-kV bus	N/A	2011	2015	1
relieve overloads or low voltages under contingency (69B2)	Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and install a new 8.2 MVAR capacitor bank at Ripon 69-kV Substation	12.3	>2026	2015	1
relieve overloads or low voltages under contingency (69B2)	Install 1-8.16 MVAR capacitor bank at Boscobel 69-kV Substation and upgrade existing 5.4 MVAR bank with an 8.16 MVAR bank	10.92	>2026	2015	3
relieve overloads or low voltages under contingency (69B2, 69B3)	Uprate 6927 West Middleton-Stage Coach 69-kV line to 106 MVA SE	N/A	>2026	2015	3
relieve overloads or low voltages under contingency (B1)	Install 3-75 MVAR capacitor banks at Bluemound Substation	225	>2026	2015	5
relieve overloads or low voltages under contingency (B2)	Rebuild Arcadian-Waukesha 138-kV lines KK9942/KK9962	N/A	2016	2016	5
relieve overloads or low voltages under contingency (69B2, 69B3)	Uprate Castle Rock-Mckenna 69-kV line	8.5	2024	2017	1
economics, relieve overloads or low voltages under contingency (69B2)	Reconfigure the North Randolph-Ripon 69-kV line to form a second Ripon-Metomen 69-kV line and retire the circuit between Metomen and the Mackford Prairie tap	N/A	>2026	2017	1
relieve overloads or low voltages under contingency (69B2)	Install 2-24.5 Mvar 138-kV capacitor bank and 1-18 Mvar 69-kV capacitor bank at Brick Church substation	67	>2026	2017	3
relieve overloads or low voltages under contingency (69B2)	Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	N/A	>2026	2018	3
accommodate new generation	Point Beach Substation: Install new series 345-kV breaker for circuit Q-303	N/A	2018	2018	4

**Table PR-22
Substation Equipment Additions and Replacements (continued)**

Identified Need	Potential Additions or Replacements	Capacitor Bank Capacity (MVAR)	System Need Year	Projected In-service Year	Planning Zone
relieve overloads or low voltages under contingency (69B2)	Uprate Winneconne-Sunset Point 69-kV line Y-103	7.4	>2026	2019	1
relieve overloads or low voltages under contingency (69B2)	Uprate Ripon-Northwest Ripon 69-kV line Y-93	N/A	>2026	2019	1
relieve overloads or low voltages under contingency (A, B2)	Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	32.66	>2026	2019	3
relieve overloads or low voltages under contingency (69B2)	Install 2-16.33 Mvar 69-kV capacitor banks at Dam Heights	32.66	>2026	2019	3
relieve overloads or low voltages under contingency (B2)	Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	196	>2026	2020	3
relieve overloads or low voltages under contingency (B2)	Install 2-16.33 Mvar 69-kV capacitor banks at North Monroe	32.66	>2026	2021	3
relieve overloads or low voltages under contingency (A, B2, B3)	Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	16.33	>2026	2021	3
relieve overloads or low voltages under contingency (69B2)	Uprate Y159 Brick Church-Walworth 69-kV line to 115 MVA	N/A	>2026	2021	3
relieve overloads or low voltages under contingency (69B2, 69B3)	Install 2-16.33 Mvar 69-kV capacitor banks at Sun Prairie	32.66	>2026	2022	3
relieve overloads or low voltages under contingency (B2)	Upgrade Oak Creek-Pennsylvania 138-kV line	N/A	>2026	2022	5
relieve overloads or low voltages under contingency (69B2)	Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	N/A	>2026	2022	3
relieve overloads or low voltages under contingency (69B2)	Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	24.5	>2026	2023	3

Table PR-23
Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects

Projects Canceled	Former In-Service Date	Planning Zone	Reason for Removal
Install 2-32 Mvar capacitor banks at Mukwonago 138-kV Substation	2020	5	updated load/model information
Construct Gwinn-Forsyth second 69-kV line	N/A	2	updated load/model information
Construct a 69-kV line from SW Ripon to the Ripon-Metomen 69-kV line	2015	1	customer postponed
Projects Deferred	New In-Service Date	Planning Zone	Reason for Deferral
Rebuild 2.37 miles of 69 kV from Sunset Point to Pearl Ave with 477 ACSR	2012	4	was 2011, easement issues
Rebuild M38-Atlantic 69-kV line	2013	2	New project scope, schedule and ISD now identified
Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	2014	1	was 2013, regulatory issues
Install a 161/138-kV transformer at Council Creek Substation	2014	1	was 2013, regulatory issues
Uprate Council Creek-Petenwell 138-kV line	2014	1	was 2013, regulatory issues
Reconfigure Petenwell 138-kV bus	2015	1	was 2013, bus reconfiguration will be performed with the transformer replacement for project management efficiencies.
Install 3-75 MVAR capacitor banks at Bluemound Substation	2015	5	Updated load/model information
Rebuild Arcadian-Waukesha 138-kV lines KK9942/KK9962	2016	5	was 2015, was uprate and provisional status (now proposed); updated study results
Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	2018	3	was 2016 and proposed status (now provisional); updated load/model information
Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation	2018	3	was 2016 and proposed status (now provisional); updated load/model information
Construct 69-kV double-circuit line between McCue and Lamar substations	2019	3	was 2017, updated load/model information

Table PR-23
Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects (continued)

Projects Deferred	New In-Service Date	Planning Zone	Reason for Deferral
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2019	3 & 5	was 2018; updated load/model information
Rebuild the Y-119 Sun Valley Tap to Oregon 69-kV line	2020	3	was proposed in 2014 and formerly named Verona to Oregon, increased line ratings
Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	2020	5	was 2015; updated study results
Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	2020	3	was 2019, updated load/model information
Install 2-16.33 Mvar 69-kV capacitor banks at North Monroe	2021	3	was 2018, updated load/model information
Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	2021	3	was 2018, updated load/model information
Construct second Dunn Road-Egg Harbor 69-kV line	2021	4	was 2018, updated load/model information
Install 2-16.33 Mvar 69-kV capacitor banks at Sun Prairie	2022	3	was 2020, updated load/model information
Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	2023	3	was 2020, updated load/model information
Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	2025	4	was 2020, updated load/model information
Other Project Changes and Possible Changes	In-Service Date	Planning Zone	Nature of Change or Update
Uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	2012	2	Project completed ahead of schedule due to availability of construction resources and required outages
Install 1-8.16 MVAR capacitor bank at Boscobel 69-kV Substation and upgrade existing 5.4 MVAR bank with an 8.16 MVAR bank	2015	3	was 2019, Gran Grae 161/69-kV transformer prior outage issues

Table PR-23
Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects (continued)

Other Project Changes and Possible Changes	In-Service Date	Planning Zone	Nature of Change or Update
Construct Fairwater-Mackford Prairie 69-kV line	2017	1	ISD may be bought forward if project shows economic benefit.
Reconfigure the North Randolph-Ripon 69-kV line to form a second Ripon-Metomen 69-kV line and retire the circuit between Metomen and the Mackford Prairie tap	2017	1	ISD may be bought forward if project shows economic benefit.
Uprate the 6986 Royster to Sycamore 69-kV line to 115 MVA	2018	3	was 2019, updated load/model information
New Projects	In-Service Date	Planning Zone	Reason for Project
Rebuild Pleasant Prairie 345-kV bus	2013	5	operating flexibility
Construct Pleasant Prairie-Zion Energy Center 345-kV line	2014	5	economics
Construct 138-kV lines to serve Milwaukee County T-D interconnection	2015	5	T-D interconnection
Construct Badger Coulee 345-kV line	2018	3	policy benefits
Convert Forest Junction - Howards Grove and a portion of the Howards Grove - Holland 138-kV circuits to 345-kV	2018	4	new generation
Barnhart Substation: Construct new 345/138-kV substation with new 500 MVA 345/138-kV transformer	2018	4	new generation
Branch River Substation: Construct new 345-kV switching station	2018	4	new generation
Uprate the Edgewater-Cedarsauk 345-kV circuit	2018	4	new generation
Construct a new Barnhart - Plymouth - Howards Grove - Erdman 138-kV circuit	2018	4	new generation
Point Beach Substation: Install new series 345-kV breaker for circuit Q-303	2018	4	new generation

Table PR-23

Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects (continued)

New Projects	In-Service Date	Planning Zone	Reason for Project
Construct Dubuque-Spring Green-Cardinal 345-kV line	2020	3	policy benefits
Uprate Oak Creek-Bluemound 230-kV line	2021	5	operating flexibility
Rebuild West Middleton-Pheasant Branch 69-kV line with double circuits to achieve a 240 MVA SE on each circuit	2022	3	updated load/model information

Table PR-24
Projects In Design or Construction

Project	Zone
Construct 69-kV line from new Warrens Substation to the Council Creek-Tunnel City 69-kV line	1
Uprate Y-61 McCue-Lamar 69-kV line to achieve 300 deg F line ratings and install 2-12.45 Mvar 69-kV capacitor banks at Lamar Substation	3
Uprate the Royster Substation terminals	3
Uprate Y-61 Sheepskin-Dana 69-kV line to 95 MVA	3
Uprate Y-40 Gran Grae-Boscobel 69-kV line to achieve a 99 MVA summer emergency rating*	3
Rebuild Y-33 Brodhead to South Monroe 69-kV line	3
Construct a 138-kV bus at Pleasant Valley Substation to permit second distribution transformer interconnection	5
Construct 345-kV line from Rockdale to Cardinal	3
Construct Canal-Dunn Road 138-kV line	4

*Table PR-25
Projects Awaiting Regulatory Review/Approval*

Project	Zone
Reconfigure the 345 kV switchyard and replace breakers at the Pleasant Prairie Power Plant	5
Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	1

*Table PR-26
Former Generator Requests Now In-Service*

<u>Date</u>	<u>Requests on-line</u>	<u>Megawatts</u>
6/14/01	IC006 (Eden/Little Badger)	31
2001	G074 (Combined Locks)	53
6/1/03	G111 (Pulliam CT)	85
6/1/03	G148 (Petenwell/Big Pond)	19.5
3/19/04	G165 & G383 (Kewaunee uprate)	43
6/1/04	G225 (Kaukauna CT)	60
6/15/04	G035 & G072 (Riverside)	655
5/1/05	G096 & G160 (West Campus)	150
6/1/05	G044 (Fox Energy)	602
6/2/05	G103 (Sheboygan)	370
7/16/05, 9/1/06, 6/1/08,	G014 & G093 (Port Washington) G510 (Port Washington increase)	1200
4/1/07	G240 (Manitowoc)	54
5/07, 6/09	G550 (Concord uprate)	24
4/30/08	G353 & G354 (Blue Sky Green Field)	145
3/31/08	G368 (Forward)	129
6/26/08	G144 (Weston Unit 4)	550
12/11/08	G507 & G507B (Cedar Ridge)	68
3/16/09	G338 (Butler Ridge)	54
12/29/09, 1/12/11	G051 (Oak Creek Units 1 and 2)	1300
6/1/11	G588 (Marshfield CT)	59.7
6/22/11	G833 & J023 (Point Beach Unit 2 uprate)	59

*Table PR-27
Proposed Projects Active in the Generation Queue as of July 1, 2011*

Zone	Queue #	County	Project capacity	Interconnection voltage	Generator technology and fuel	Developer projected in-service date
1	none					
1	Total		0 MW			
2	J060	Delta	29 MW	138 kV	wind turbine	12/2011
2	J061	Delta	70 MW	138 kV	wind turbine	12/2013
2	J066	Chippewa	60 MW	69 kV	wind turbine	8/2011
2	J119	Chippewa	61.2 MW	69 kV	wind turbine	7/2012
2	J147	Chippewa	60 MW	69 kV	wind turbine	12/2013
2	Total		280.2 MW			
3	G282	Lafayette	99 MW	138 kV	wind turbine	12/2010
3	G706/H012	Columbia	249 MW	138 kV	wind turbine	3/2011
3	G749	Lafayette	50 MW	69 kV	wind turbine	11/2012
3	J084	Grant	50 MW	69 kV	wind turbine	12/2015
3	J109	Lafayette	99 MW	138 kV	wind turbine	12/2012
3	J116	Dane	999 MW	345 kV	wind turbine	9/2013
3	J134	Dane	150 MW	138 kV	wind turbine	6/2013
3	J174	Jefferson	43.75 MW	138 kV	gas	N/A
3	J217	Columbia	50 MW	138 kV	wind turbine	12/2012
3	Total		1789.75 MW			
4	G427	Fond du Lac	98 MW	345 kV	wind turbine	10/2013
4	G590	Calumet	98 MW	138 kV	wind turbine	12/2010 suspended
4	G611/G927	Calumet	100.5 MW	138 kV	wind turbine	11/2012 suspended
4	G834/J022	Manitowoc	59 MW	345 kV	nuclear	12/2011
4	J094	Manitowoc and Kewaunee	200 MW	138 or 345 kV	wind turbine	9/2012 9/2013
4	Total		555.5 MW			
5	none					
5	Total		0 MW			

Notes:

1. Suspended = Interconnection Agreement has been suspended by the customer.
2. TBD = Customer has lifted suspension and the new in-service date is to be determined.

*Table PR-28
Requests Previously in the Generation Queue
Which Have been Withdrawn/Removed between July 1, 2010
and July 1, 2011*

Zone	Queue no.	County	Size	Voltage	Type	In-Service Date
1	J040	Marathon	50 MW	115 kV	Biomass	12/2013
2	J078	Marquette, MI	26 MW	69 kV	wind turbine	7/2011
3	G546	Walworth	100 MW	138 kV	wind turbine	12/2008
4	G376	Green Lake/Fond du Lac	160 MW	138 kV	wind turbine	9/2010
4	G773	Brown	150 MW	138 kV	wind turbine	12/2012
4	J146	Fond du Lac	99 MW	138 kV	wind turbine	8/2011
5	none					

Table PR-29
Required Upgrades for Active Projects in the Generator Queue with a Signed Interconnection Agreement as of July 1, 2011

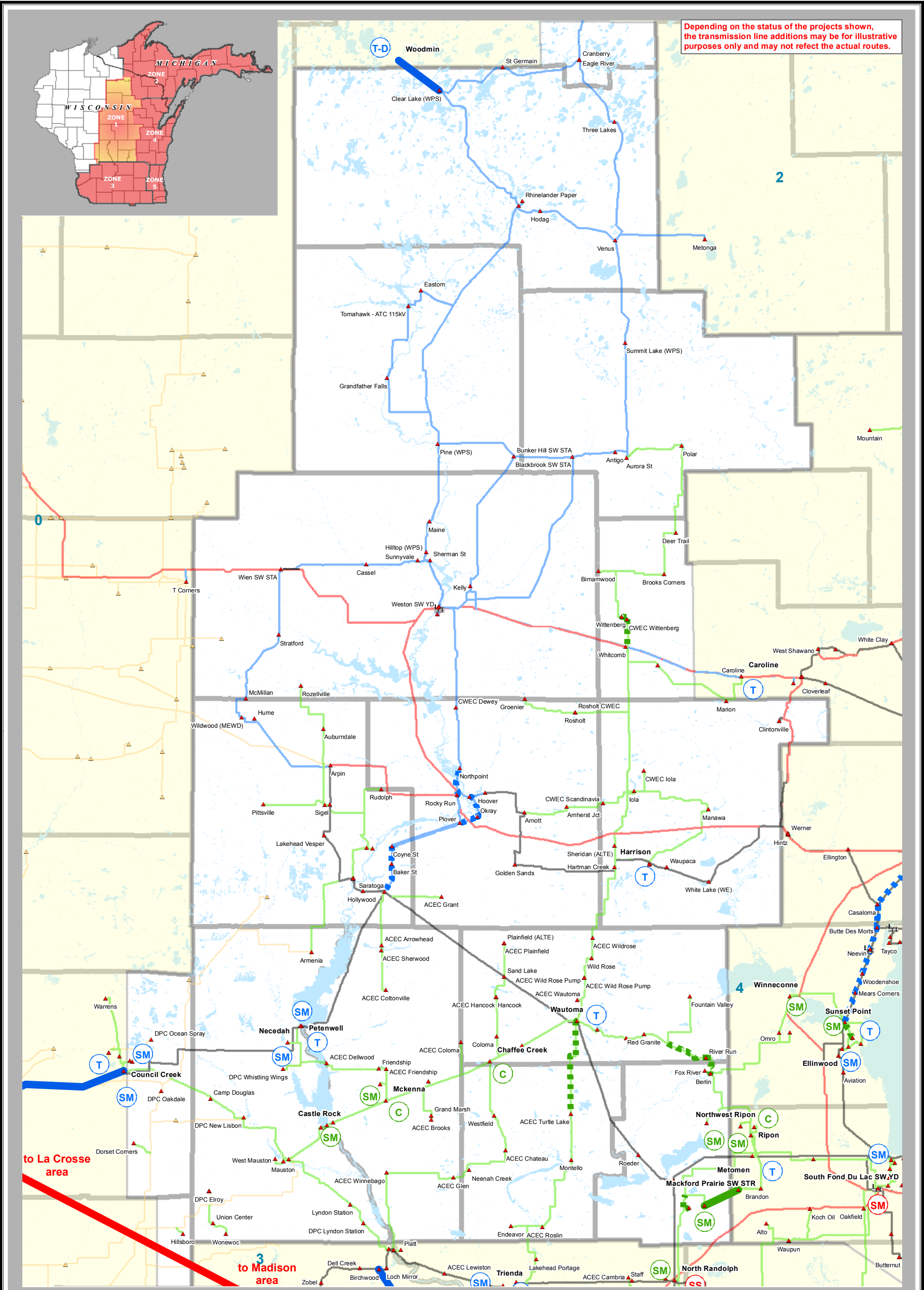
Zone	Queue #	County	Project Capacity	Upgrades
1	None			
2	J060	Delta	29 MW	<ul style="list-style-type: none"> ▪ New 138 kV Interconnection Substation. ▪ Engineering Upgrades at Perkins and Indian Lake 138 kV Substations.
3	G282	Lafayette	99 MW	<ul style="list-style-type: none"> ▪ New 138 kV Interconnection Substation. ▪ Engineering Upgrades at Hillman and Darlington 138 kV Substations.
3	G706	Columbia	99 MW	<ul style="list-style-type: none"> ▪ New 138 kV Interconnection Substation
3	H012	Columbia	150 MW	<ul style="list-style-type: none"> ▪ Upgrade G706 138 kV Interconnection Substation. ▪ Upgrade Portage – N. Randolph 138 kV Line. ▪ Thermal, Communication and Relay Upgrades at North Randolph 138 kV Substation. ▪ Stability and Communication Upgrades at Portage 138 kV Substation.
3	G749	Lafayette	50 MW	<ul style="list-style-type: none"> ▪ New 69 kV Interconnection Substation. ▪ Communication Upgrades at Hillman and Eden 69 kV Substations.
3	J084	Grant	50 MW	<ul style="list-style-type: none"> ▪ New 69 kV Interconnection Substation. ▪ Communication Upgrades at Hillside and Nelson Dewey 69 kV Substations.
3	J174	Jefferson	43.75 MW	<ul style="list-style-type: none"> ▪ None required.
4	G427	Fond du Lac	98 MW	<ul style="list-style-type: none"> ▪ None required.
4	G590	Calumet	98 MW	<ul style="list-style-type: none"> ▪ Expansion of Tecumseh Road Substation for Interconnection Substation ▪ Thermal Upgrades at Melissa Substation
4	G611 & G927	Calumet	100.5 MW	<ul style="list-style-type: none"> ▪ New 138 kV Interconnection Substation ▪ Upgrade Forest Junction – Elkhart Lake 138 kV Line ▪ Thermal Upgrades at Melissa Substation

Table PR-29

Required Upgrades for Active Projects in the Generator Queue with a Signed Interconnection Agreement as of July 1, 2011 (continued)

Zone	Queue #	County	Project Capacity	Upgrades
4	G834 J022	Manitowoc	118 MW	<ul style="list-style-type: none"> ▪ Conversion of portions of existing Forest Junction – Holland 138 kV line to 345 kV to interconnect North and South Switching Stations. ▪ Creation of a New North 345 kV Switching Station and a New South 345 kV and 138 kV Switching Station. ▪ New 345 kV North Switching Station Interconnecting Point Beach – Forest Junction, Point Beach – Sheboygan Energy Center and the new South – North Switching Station 345 kV Lines. ▪ The new 345 kV South Switching Station Interconnecting Sheboygan Energy Center – Granville, Edgewater – Fond du Lac, Edgewater – Cedar Sauk and the new South – North Switching Station 345 kV Lines. ▪ New 138 kV Line from Howards Grove to Holland 138 kV substations. ▪ New 138 kV Line from Howards Grove to Erdman 138 kV substations. ▪ New South 138 kV Switching Station interconnecting 345/138 kV transformation, Howards Grove – Erdman and Mullet River – South Sheboygan Falls 138 kV Lines.
5	None			

Figure PR-1



Depending on the status of the projects shown, the transmission line additions may be for illustrative purposes only and may not reflect the actual routes.



2011 10-Year Assessment Projects PLANNING ZONE 1

Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota, and the Upper Peninsula of Michigan. Facilities include:
 * Approximately 9440 miles of transmission lines
 * 96 wholly owned substations
 * 419 jointly owned substations
 * ATC offices in Madison, Cottage Grove, Pewaukee, DePere, and Kingsford, MI

- New 69kV Transmission Line
- New 115, 138 or 161 kV Transmission Line
- New 345 kV Transmission Line
- - - Rebuilt 69 kV Transmission Line
- - - Rebuilt 115, 138 or 161 kV Transmission Line
- - - Rebuilt 345 kV Transmission Line
- Transmission Line Voltage Conversion

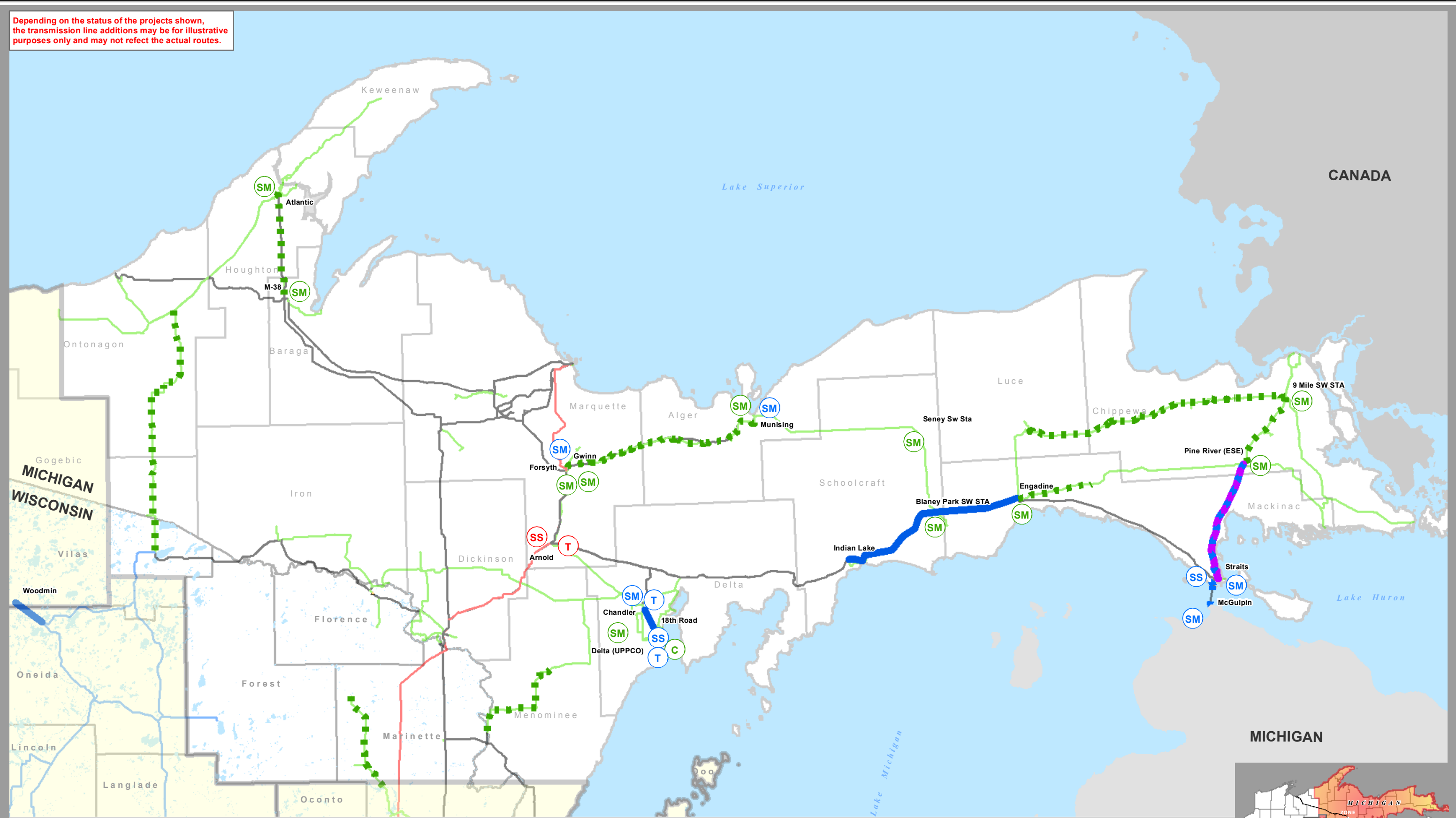
- SS New Substation
- SM Substation Modifications
- T-D T-D Interconnection
- C Capacitor Bank
- T Transformer

- ATC Transmission Lines**
- 69 kV
 - 115 kV
 - 138 kV
 - 161 kV
 - 230 kV
 - 345 kV

- ▲ ATC Substation, Switchyard or Terminal
- ⚡ Generation
- ▲ Non-ATC Substation, Switchyard or Terminal
- Non-ATC Transmission Line

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Depending on the status of the projects shown, the transmission line additions may be for illustrative purposes only and may not reflect the actual routes.



ATC
AMERICAN TRANSMISSION COMPANY

Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota, and the Upper Peninsula of Michigan. Facilities include:

- * Approximately 9440 miles of transmission lines
- * 96 wholly owned substations
- * 419 jointly owned substations
- * ATC offices in Madison, Cottage Grove, Pewaukee, DePere, and Kingsford, MI

**2011 10-Year Assessment Projects
PLANNING ZONE 2**

New 69kV Transmission Line	Rebuilt 69 kV Transmission Line
New 115, 138 or 161 kV Transmission Line	Rebuilt 115, 138 or 161 kV Transmission Line
New 345 kV Transmission Line	Rebuilt 345 kV Transmission Line
Transmission Line Voltage Conversion	

- (SS) New Substation
- (SM) Substation Modifications
- (T-D) T-D Interconnection
- (C) Capacitor Bank or Reactor
- (T) Transformer

Existing Transmission Facilities

- ATC Substation, Switchyard or Terminal
- Generation
- Non-ATC Substation, Switchyard or Terminal
- Non-ATC Transmission Line

ATC Transmission Lines

- 69 kV
- 115 kV
- 138 kV
- 161 kV
- 230 kV
- 345 kV

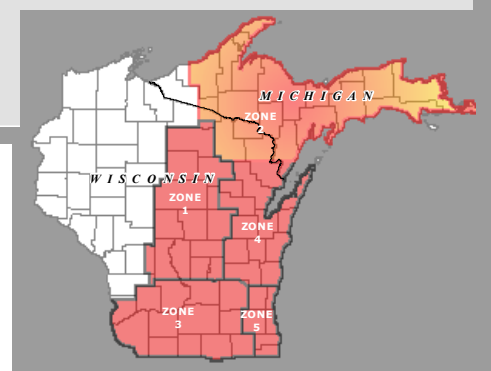
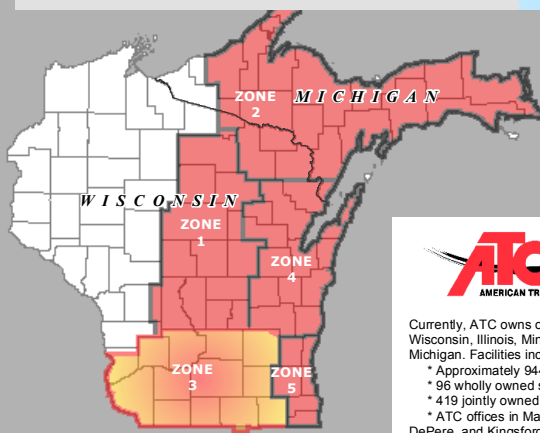
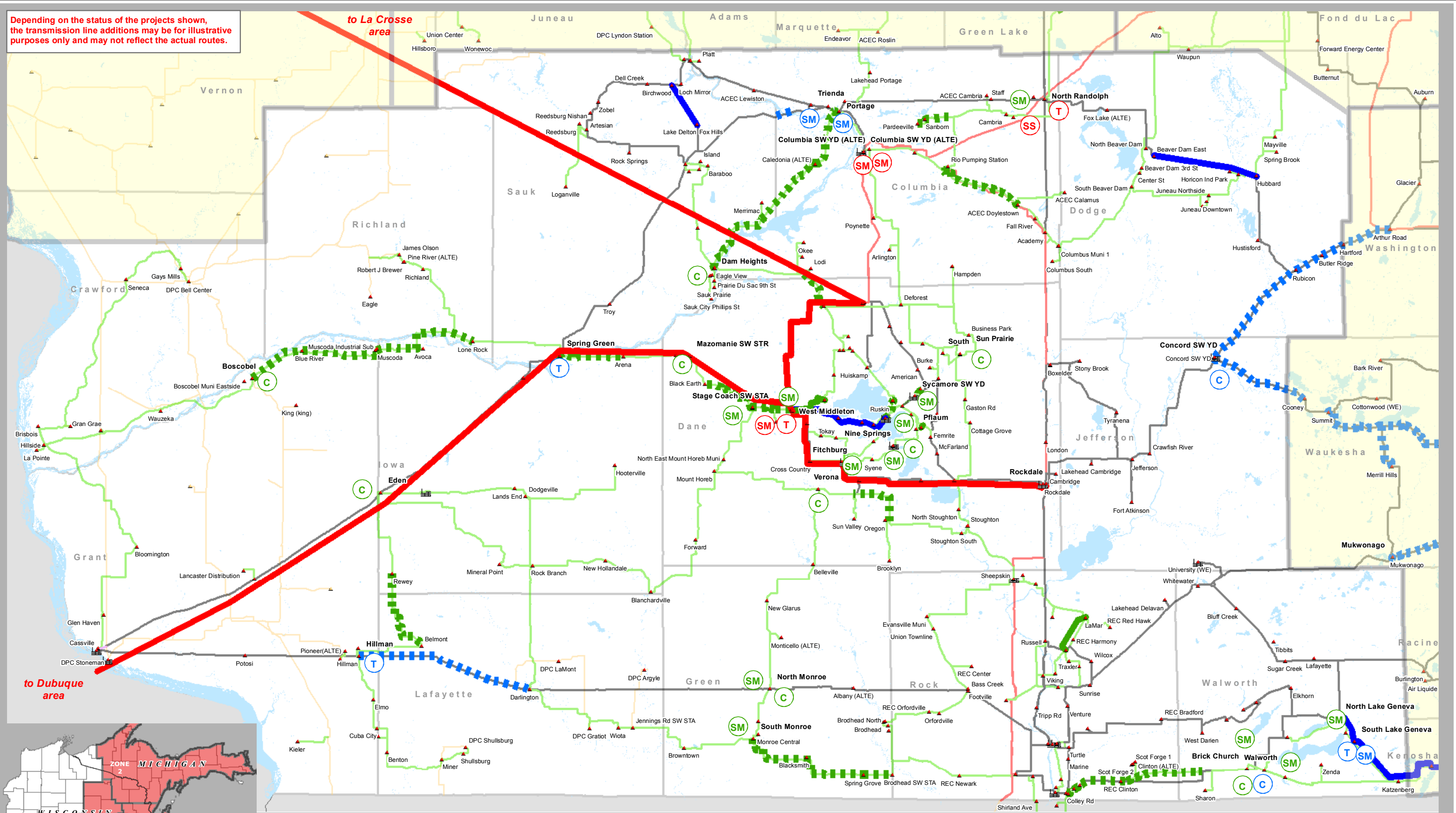


Figure PR-3

Depending on the status of the projects shown, the transmission line additions may be for illustrative purposes only and may not reflect the actual routes.



2011 10-Year Assessment Projects PLANNING ZONE 3

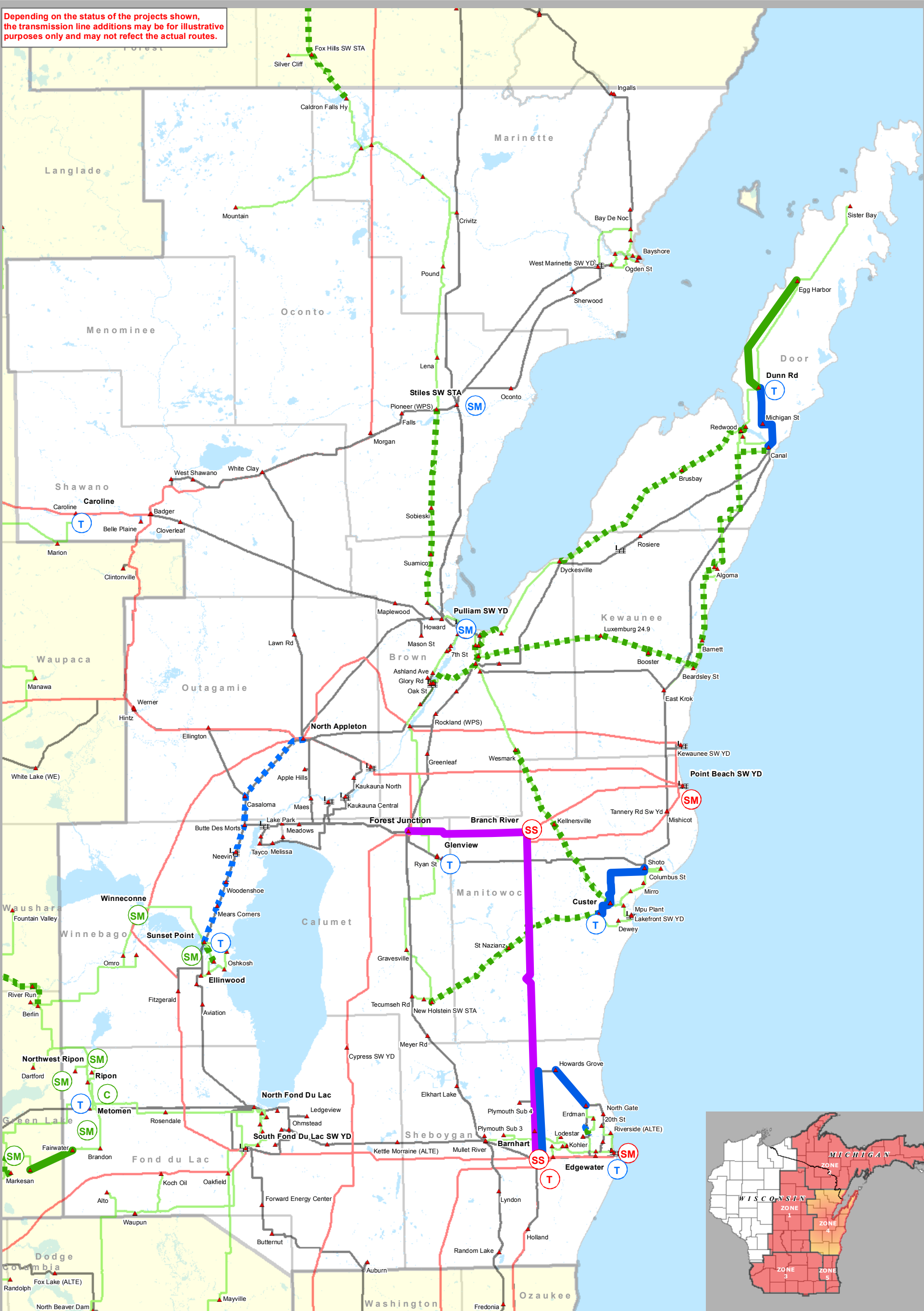
Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota, and the Upper Peninsula of Michigan. Facilities include:
 * Approximately 9440 miles of transmission lines
 * 96 wholly owned substations
 * 419 jointly owned substations
 * ATC offices in Madison, Cottage Grove, Pewaukee, DePere, and Kingsford, MI

- New 69kV Transmission Line
- New 115, 138 or 161 kV Transmission Line
- New 345 kV Transmission Line
- Transmission Line Voltage Conversion
- - - - Rebuilt 69 kV Transmission Line
- - - - Rebuilt 115, 138 or 161 kV Transmission Line
- - - - Rebuilt 345 kV Transmission Line

- SS New Substation
- SM Substation Modifications
- T-D T-D Interconnection
- C Capacitor Bank
- T Transformer

- Existing Transmission Facilities**
- ▲ ATC Substation, Switchyard or Terminal
 - ▲ Non-ATC Substation, Switchyard or Terminal
 - Generation
 - Non-ATC Transmission Line
- ATC Transmission Lines**
- 69 kV
 - 115 kV
 - 138 kV
 - 161 kV
 - 230 kV
 - 345 kV

Depending on the status of the projects shown, the transmission line additions may be for illustrative purposes only and may not reflect the actual routes.



2011 10-Year Assessment Projects PLANNING ZONE 4

Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota, and the Upper Peninsula of Michigan. Facilities include:

- * Approximately 9440 miles of transmission lines
- * 96 wholly owned substations
- * 419 jointly owned substations
- * ATC offices in Madison, Cottage Grove, Pewaukee, DePere, and Kingsford, MI

- New 69kV Transmission Line
- New 115, 138 or 161 kV Transmission Line
- New 345 kV Transmission Line
- - - Rebuilt 69 kV Transmission Line
- - - Rebuilt 115, 138 or 161 kV Transmission Line
- - - Rebuilt 345 kV Transmission Line
- Transmission Line Voltage Conversion

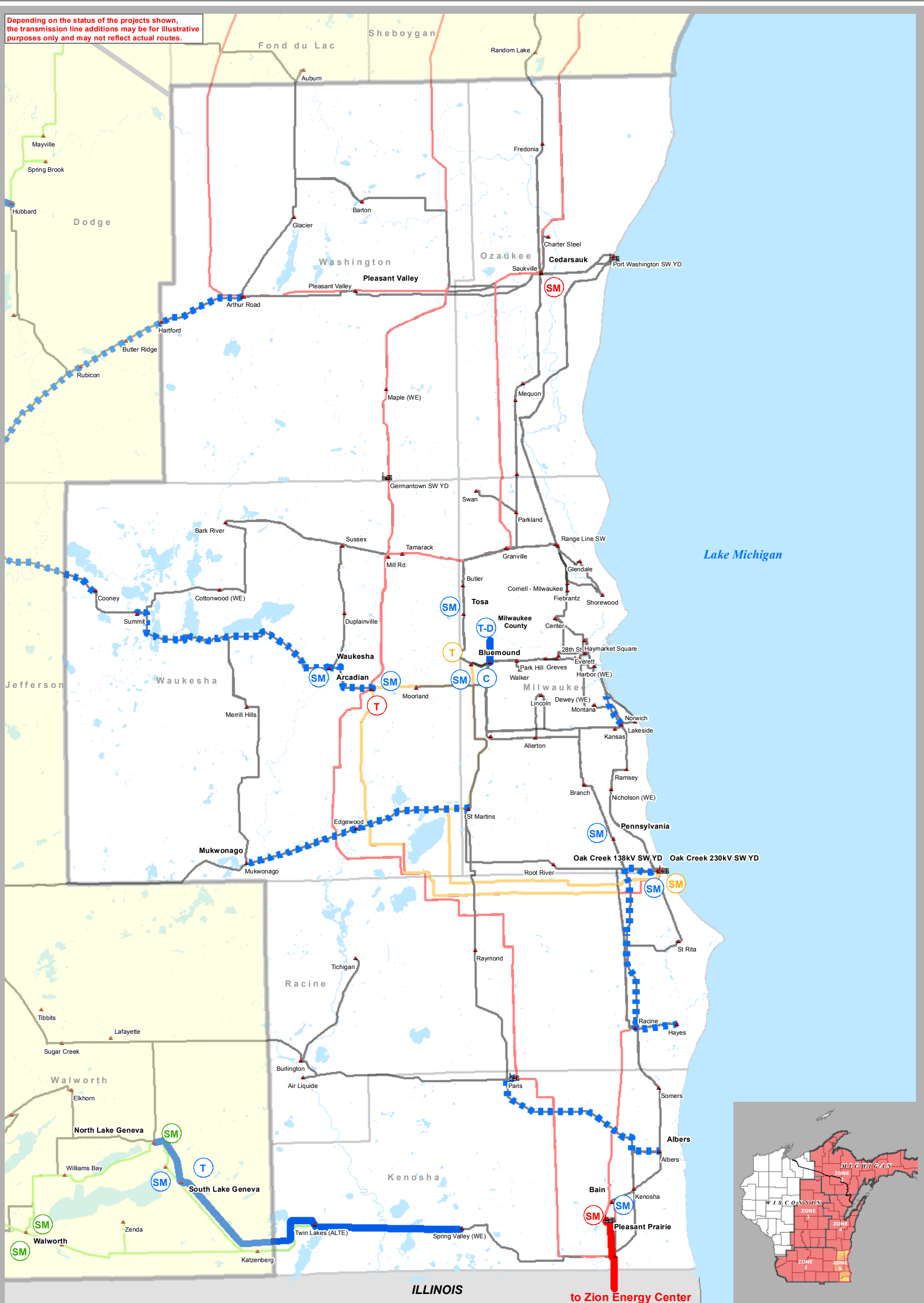
- SS New Substation
- SM Substation Modifications
- T-D T-D Interconnection
- C Capacitor Bank
- T Transformer

- Existing Transmission Facilities**
- 69 kV
 - 115 kV
 - 138 kV
 - 161 kV
 - 230 kV
 - 345 kV

- ☐ Generation
- ▲ ATC Substation, Switchyard or Terminal
- ▲ Non-ATC Substation, Switchyard or Terminal
- Non-ATC Transmission Line

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Depending on the status of the projects shown, the transmission line additions may be for illustrative purposes only and may not reflect actual routes.



2011 10-Year Assessment Projects PLANNING ZONE 5

Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota, and the Upper Peninsula of Michigan. Facilities include:
 * Approximately 9440 miles of transmission lines
 * 96 wholly owned substations
 * 419 jointly owned substations
 * ATC offices in Madison, Cottage Grove, Pewaukee, DePere, and Kingsford, MI

- New 69kV Transmission Line
- New 115, 138 or 161 kV Transmission Line
- New 345 kV Transmission Line
- - - Rebuilt 69 kV Transmission Line
- - - Rebuilt 115, 138 or 161 kV Transmission Line
- - - Rebuilt 345 kV Transmission Line
- Transmission Line Voltage Conversion
- (SS) New Substation
- SM Substation Modifications
- (T-D) T-D Interconnection
- (C) Capacitor Bank
- (T) Transformer

- Existing Transmission Facilities**
- ▲ ATC Substation, Switchyard or Terminal
 - ⚡ Generation
 - ▲ Non-ATC Substation, Switchyard or Terminal
 - Non-ATC Transmission Line
- ATC Transmission Lines**
- 69 kV
 - 115 kV
 - 138 kV
 - 161 kV
 - 230 kV
 - 345 kV

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 PR-6
American Transmission Company - Number of Projects by Status
10-Year Assessments 2001-2011
System Reliability and Economics Projects Only

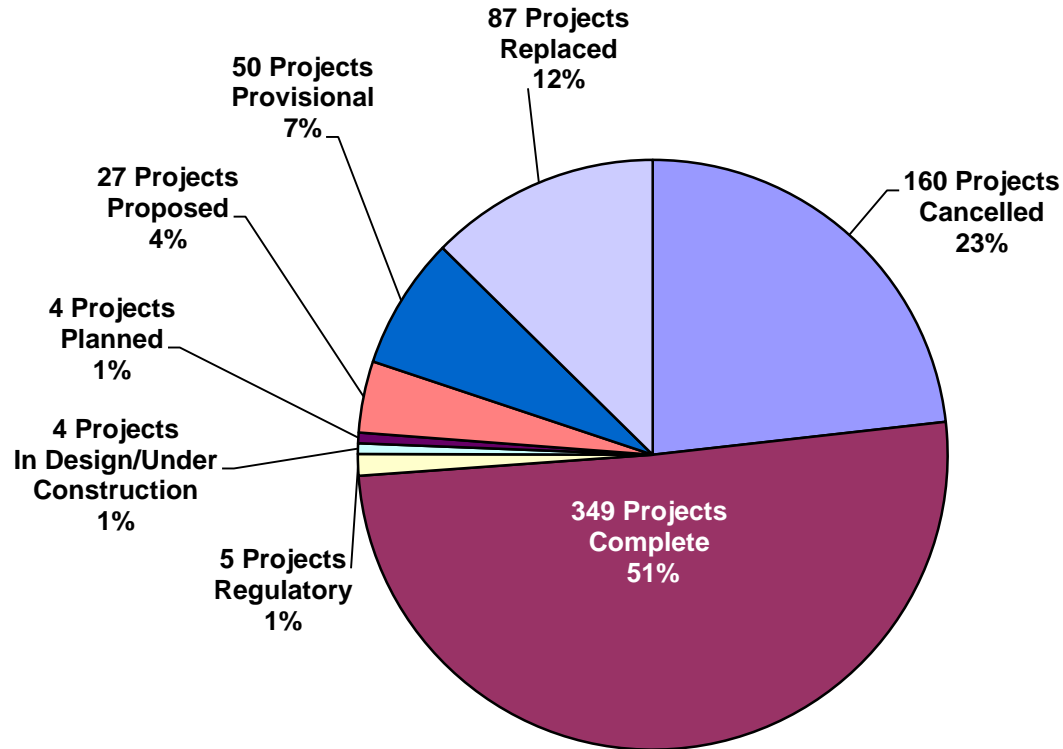


Figure PR-7
American Transmission Company - Cost of Projects by Status
10-Year Assessments 2001-2011
System Reliability and Economics Projects Only

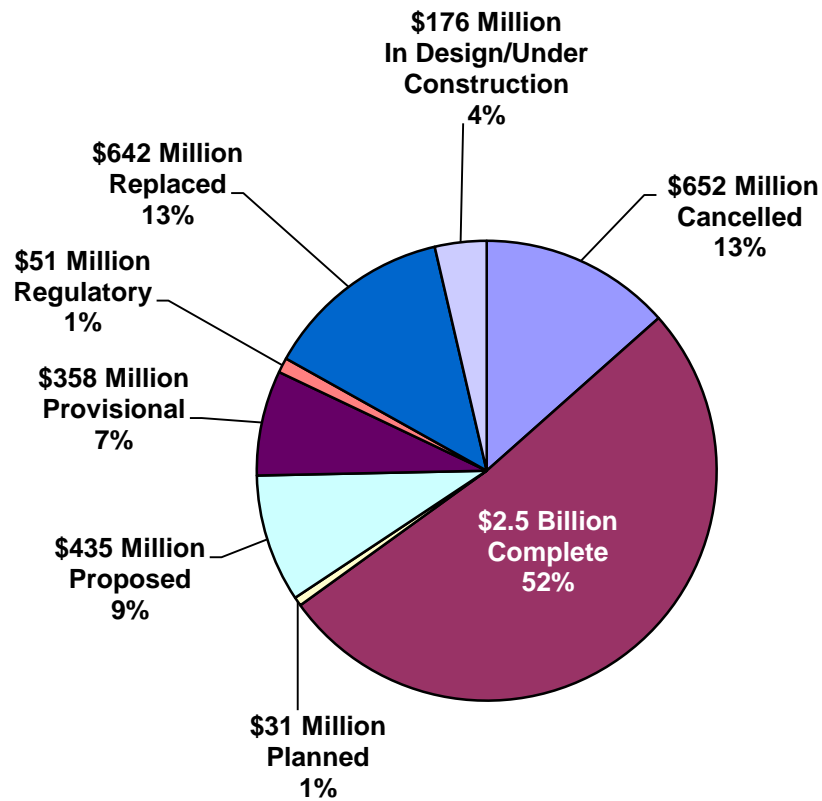


Figure PR-8
American Transmission Company - Cost of Projects by Status
2011 10-Year Assessment
Planned, Proposed and Provisional - System Reliability and Economics Projects Only
Total 2011 Network and Economic (2011-2020) Expenditures = \$1.0 billion

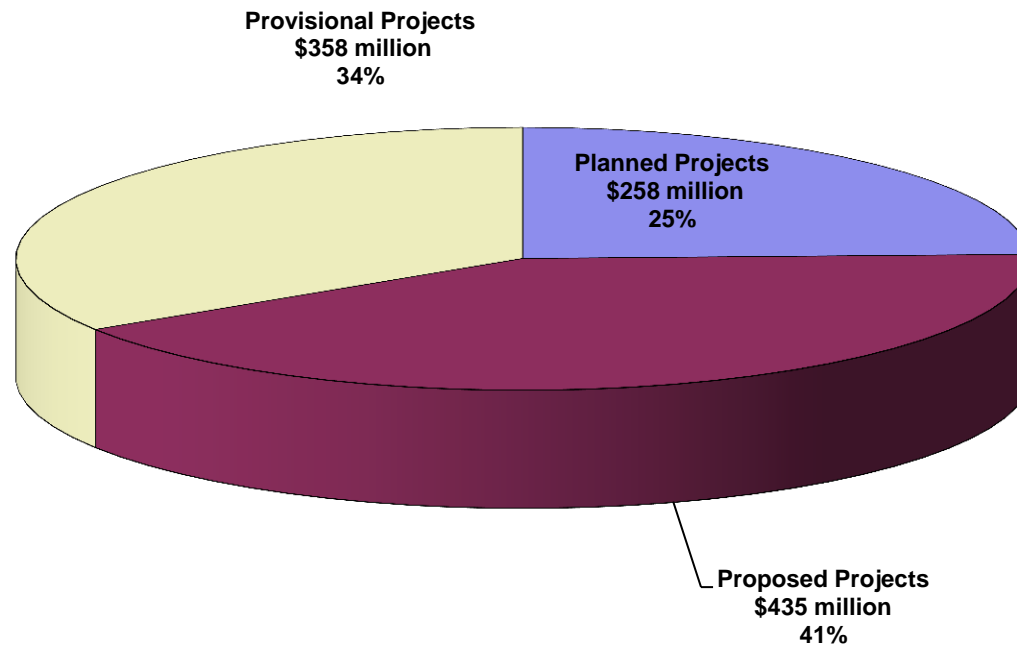


Figure PR-9
 Generation Interconnection Requests
 as of 7/1/11

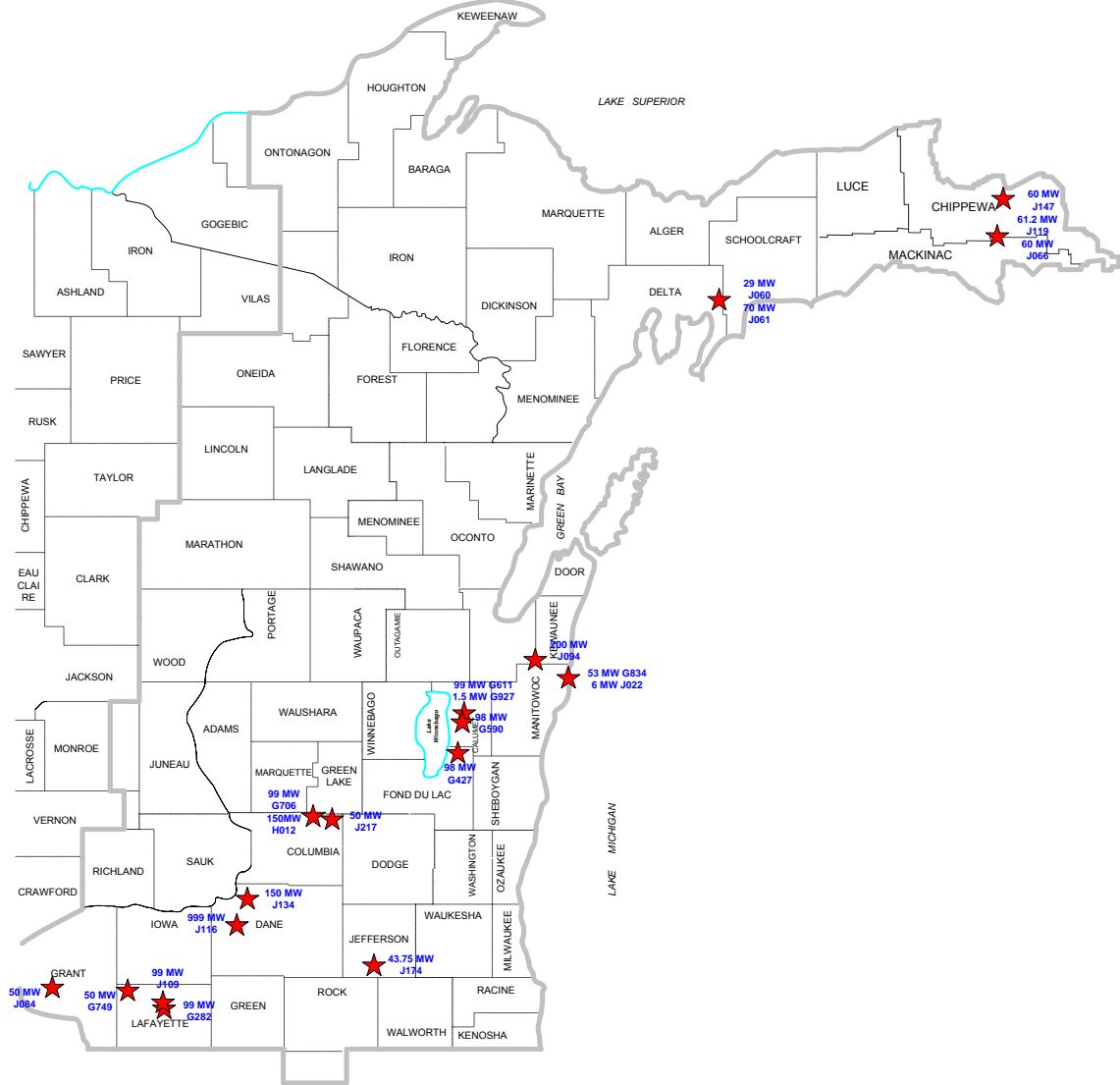
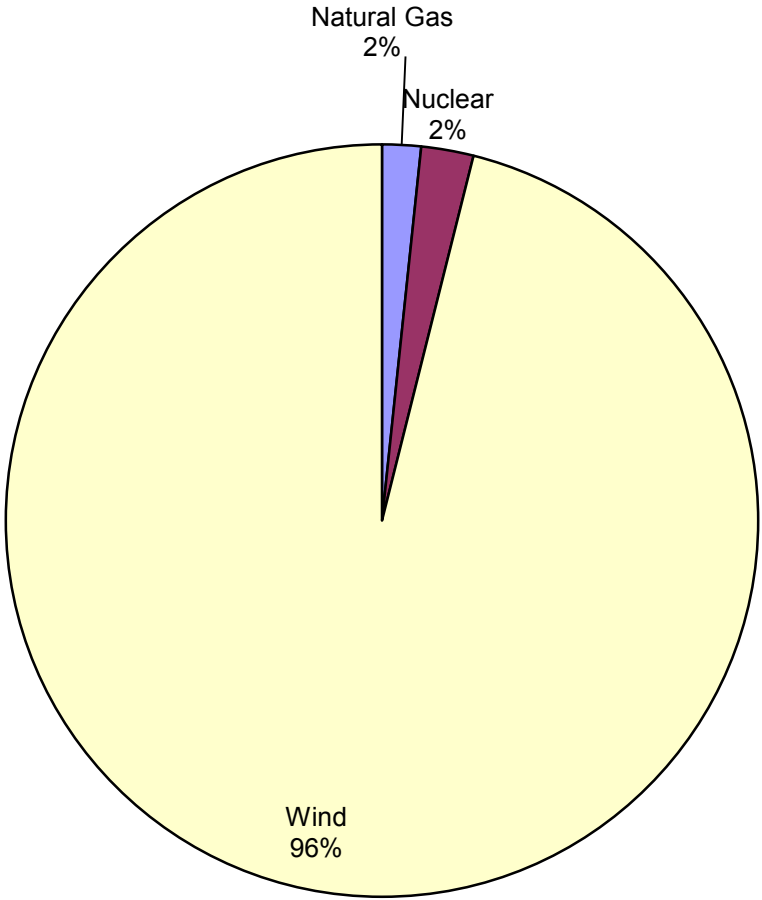
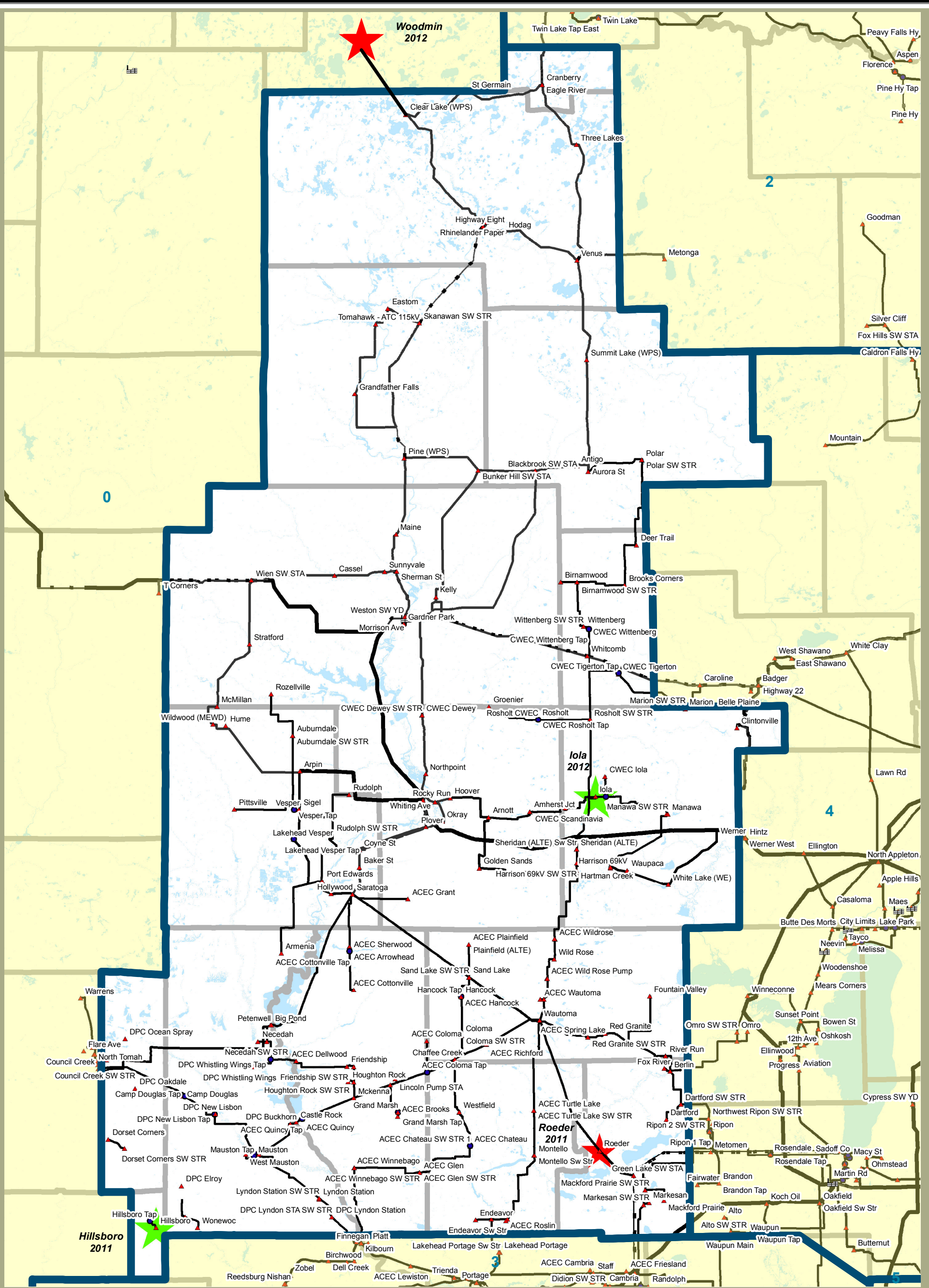


Figure PR-10
ATC Generation in Queue by Type



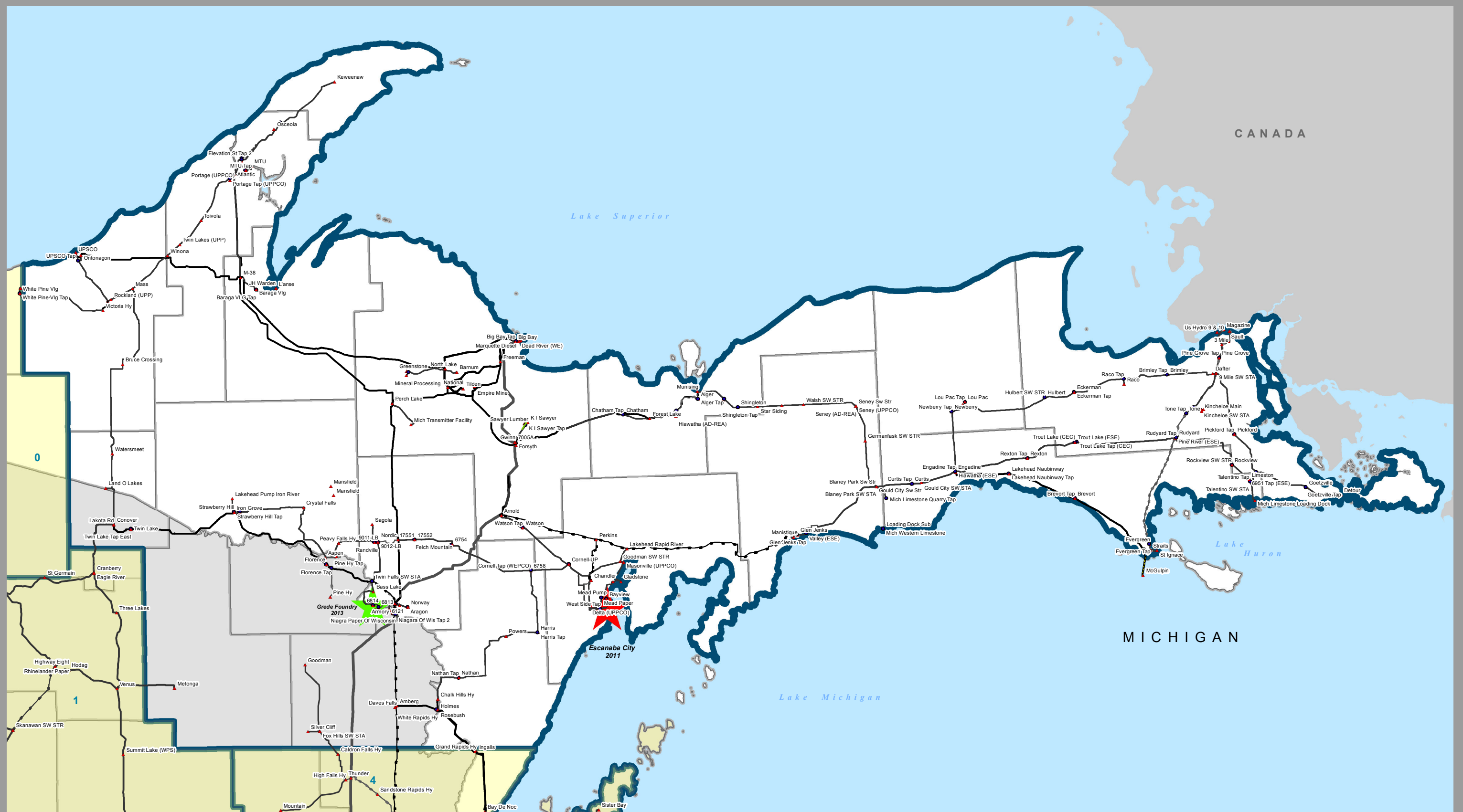


Transmission-Distribution Interconnection Requests PLANNING ZONE 1

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

- | | |
|---|--|
| <ul style="list-style-type: none"> ★ New Substation Interconnection Request ★ Substation Modification | <ul style="list-style-type: none"> ▲ Substation, Switchyard or Terminal ■ 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.



Transmission-Distribution Interconnection Requests
PLANNING ZONE 2



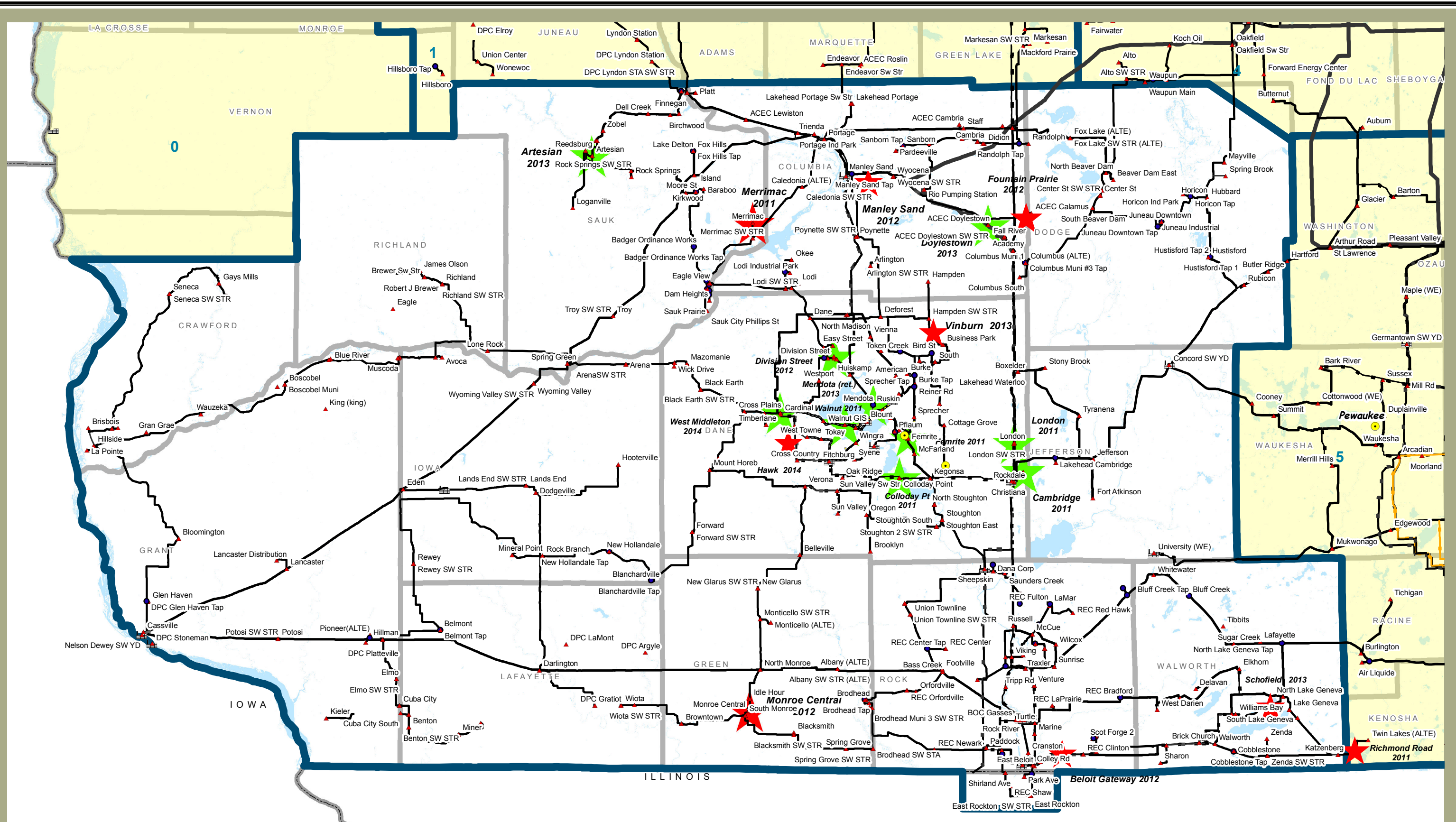
Currently, ATC owns or operates transmission facilities in 50 Wisconsin counties and in 15 Michigan counties. Facilities include:
 * Approximately 8900 miles of transmission lines
 * 98 wholly owned substations
 * 358 jointly owned substations
 * ATC offices in Madison (2), Cottage Grove, Pewaukee, De Pere, Wausau and Kingsford, MI

- ★ New Substation Interconnection Request
- ★ Substation Modification

Transmission Related Facilities

- ▲ Substation, Switchyard or Terminal
- Generation
- Proposed/Design/Construction
- Other Facility

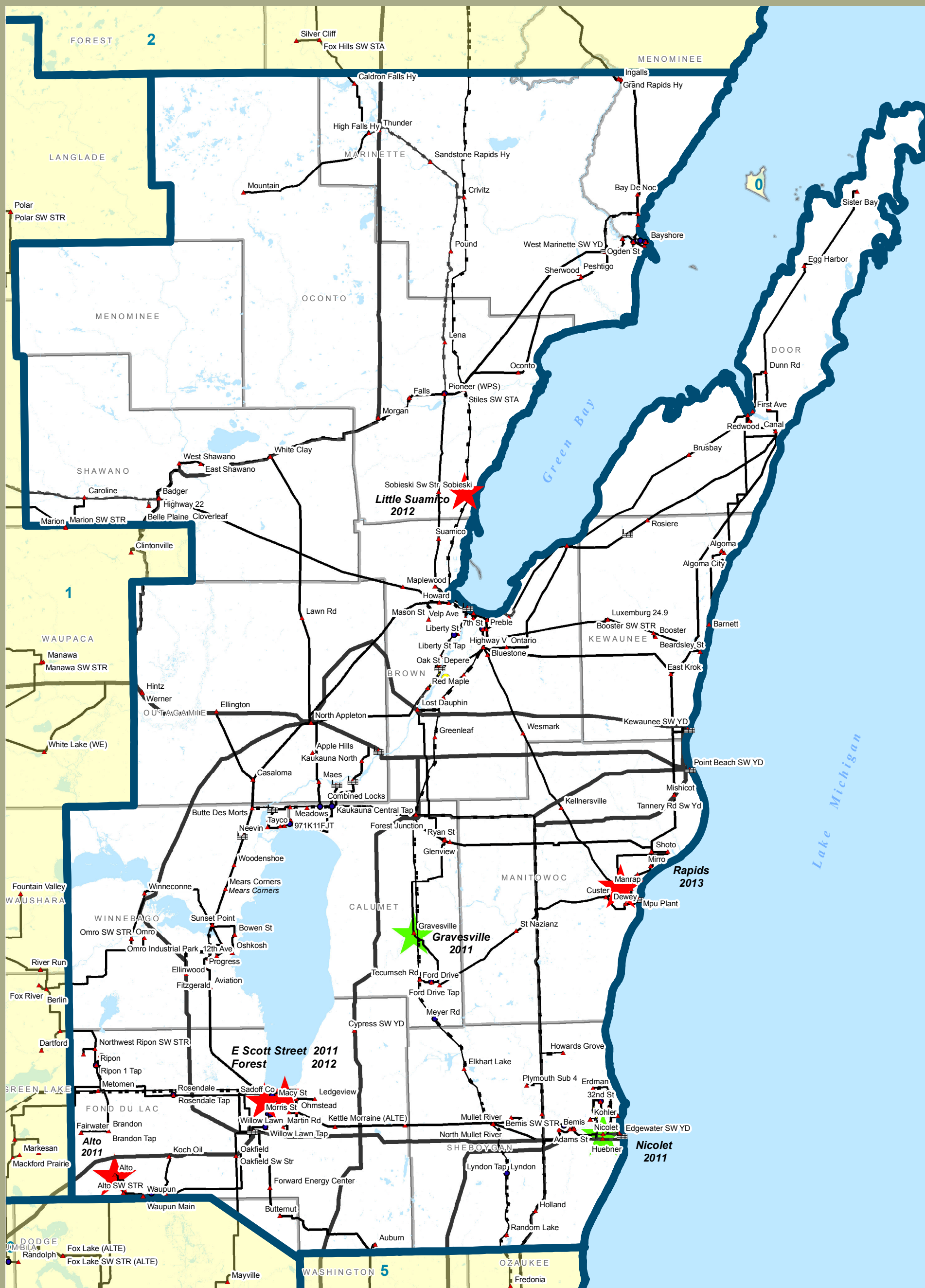
The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate.



Transmission-Distribution Interconnection Requests
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 Related Facilities**
- ▲ Substation, Switchyard or Terminal
 - Generation
 - Other Facility
 - ★ New Substation Interconnection Request
 - ★ Substation Modification
 - Proposed/Design/Construction

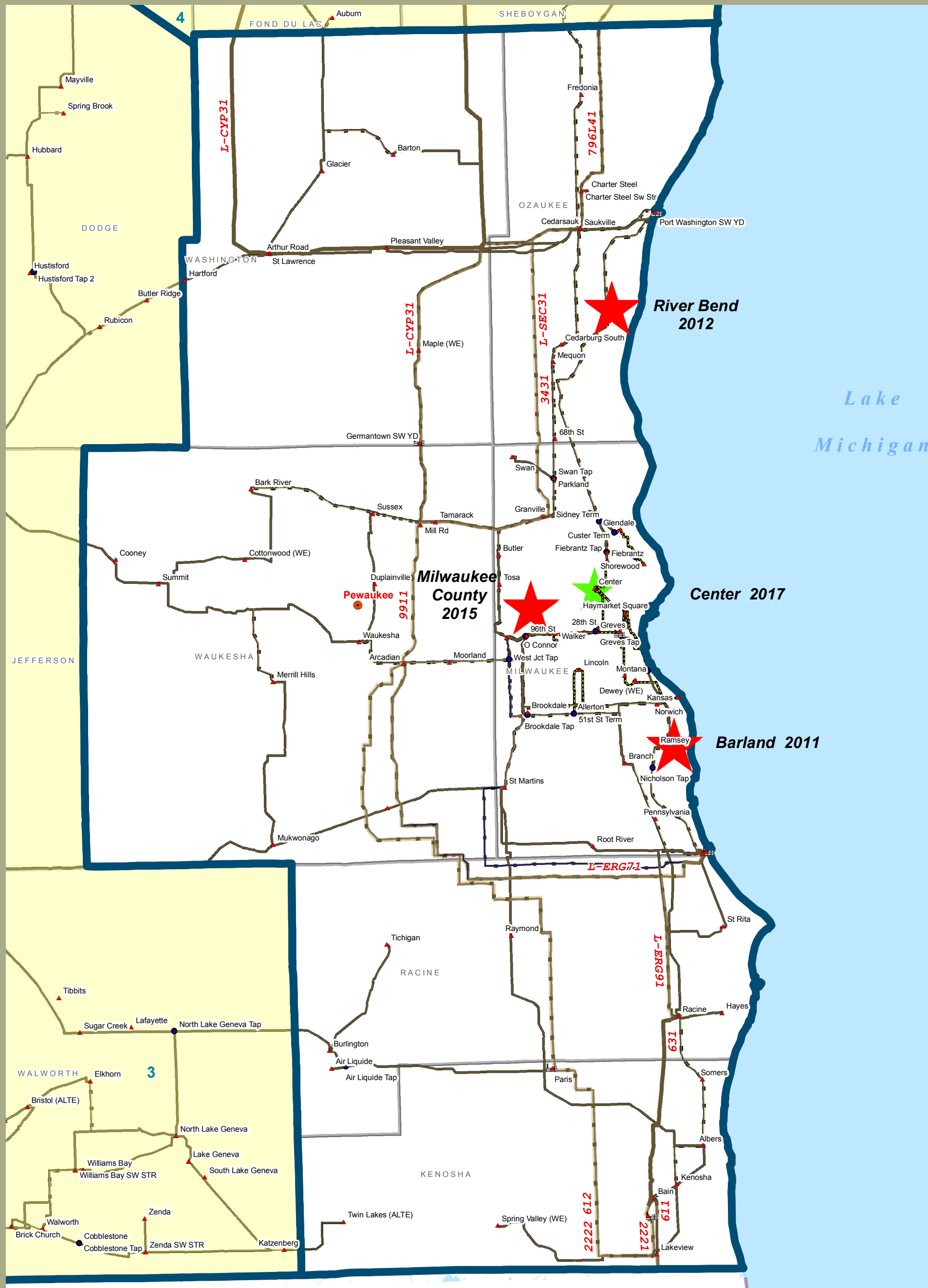


Transmission-Distribution Interconnection Requests
PLANNING ZONE 4

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

- ★ New Substation Interconnection Request
- ★ Substation Modification
- ▲ Substation, Switchyard or Terminal
- Proposed/Design/Construction
- 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.



Transmission-Distribution Interconnection Requests PLANNING ZONE 5

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

- | | |
|---|---|
| <ul style="list-style-type: none"> ★ New Substation Interconnection Request ★ Substation Modification | <ul style="list-style-type: none"> ▲ Substation, Switchyard or Terminal ■ Proposed/Design/Construction ■ 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.