



Zone 3 Updated Study Results

Refer to Table PR-22 Summary of Changes.

Cancelled projects

Construct Huiskamp-Blount 138-kV line

A major driver to watch that may affect the possible construction of Huiskamp-Blount is the announcement that the Blount Coal Units are scheduled for retirement in 2011. This news will require a careful impact study including re-evaluation of the Huiskamp-Blount project. This 2012 project has been deferred outside of the 10-Year Assessment timeframe because further studies are needed to determine the need, scope and in-service date.

Uprate North Monroe-Idle Hour 69-kV line

This 2012 project has been cancelled due to recently updated study results.

Deferred projects

Construct a Jefferson-Lake Mills-Stony Brook (Waterloo) 138-kV line

Uprate Rockdale to Jefferson 138-kV line

Uprate Rockdale to Boxelder 138-kV line

Uprate Boxelder to Stony Brook (Waterloo) 138-kV line

The construction of a new 138-kV line from Jefferson Substation to Stony Brook Substation in Waterloo has previously been identified as a long-term solution to area voltage problems. The PSCW issued an order to ATC in August of 2006 for the construction of this line with an expectation that it would be completed by 6/1/2008. Several subsequent legal challenges to the PSCW order have been resolved only recently, and ATC has not yet obtained consent from the PSCW on how the design for this project will address the potential of induced voltage on a nearby distribution neutral conductor. It is expected that resolution of this issue may take several additional months. Lack of resolution of these issues has resulted in and will continue to limit ATC's ability to complete detailed design, procure necessary materials, or procure the necessary easement to support the start of construction on the new line in the fall of 2007 to meet the in-service date of 6/1/2008. The new anticipated in-service date of these projects is 2009.

Construct new Oak Ridge (Fitchburg)-Verona 138-kV line and install a 138/69-kV transformer at Verona (2010)

Rebuild the Verona-Oregon 69-kV line Y119 (2011)

These projects have been deferred from the 2008/9 timeframe to 2010/11 as a result of regulatory delays and alignment of construction schedules. The Fitchburg to Verona 138-kV line and the Rockdale-West Middleton 345-kV line have potential shared corridors with parts or all of the existing Verona-Oregon 69-kV line. Due to the uncertainty of routing decisions on these projects, ATC has decided to delay the rebuild of the Verona-Oregon 69-kV line until these issues are resolved by the PSCW.



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Construct new North Madison-Huiskamp 138-kV line (2009)

Construct a new 138/69-kV substation near Huiskamp and install a 187 MVA 138/69-kV transformer (2009)

These projects were deferred from 2008 to early 2009 as a result of regulatory delays and alignment of construction schedules.

Rebuild Brodhead-South Monroe 69-kV line

This 2008 project has been deferred to 2011. A detailed study is nearly completed which will determine the ultimate scope of the rebuild. In conjunction with the Bass Creek project (2013 in-service date), this rebuild will bolster the Brodhead/Monroe/Evansville area voltages and resolve thermal overloads in the foreseeable future. This project might further be delayed to 2012/2013 pending the regulatory application process and resource availability.

Construct 345-kV line from Rockdale to West Middleton

Construct a 345-kV bus and install a 345/138-kV 500 MVA transformer at West Middleton Substation

The Rockdale-West Middleton 345-kV line will address line overloads and low voltage issues in Dane County and is planned to be in-service by 2013. Demand in Dane County is projected to grow at an above-average rate for the ATC system. High demand coupled with generation retirements, concerns about the age and high cost of remaining generators, and stress on the transmission lines that are critical for importing power to Dane County will continue to increase. These projects have been deferred from 2011 to 2013 due to recently updated study results.

Loop the Deforest to Token Creek 69-kV line into the Yahara River Substation and install a 138/69-kV transformer at Yahara River

Uprate Yahara River-Token Creek 69-kV line

Low voltages in northeastern Dane County in the future call for additional transmission reinforcement into the area. The provisional project of installing a 138/69-kV transformer at Yahara River Substation and looping the Deforest-Token Creek 69-kV line in and out of Yahara River can address these problems. These two projects have been deferred from 2011 to 2014 due to a recent Columbia-Deforest line rating revision and updated system study results. The in-service date and project scope may be adjusted or changed depending on load forecast changes and project alternative evaluation.

Uprate Columbia 345/138-kV transformer T-22 to 527 MVA

This project has been deferred from 2008 to 2013 due recently updated transformer ratings.



Loop Nine Springs-Pflaum 69-kV line into Femrite Substation

This project has been recently deferred from 2010 to 2013. This delay will facilitate developing alternatives and anticipated regulatory schedule constraints. A possible interim system solution could be a mixture of dispatching the Nine Springs generation and/or bridging load (i.e. transferring load from one source to another). The project scope could change after a comprehensive project alternative evaluation.

Install a 138/69-kV transformer at Bass Creek Substation

Rebuild/reconductor Town Line Road-Bass Creek 138-kV line

The Evansville and Brodhead areas are facing unacceptably low voltages under single contingency conditions. In addition, the North Monroe 138/69-kV transformer loading is approaching its summer normal rating under system intact conditions in the foreseeable future under some system conditions. These projects will address these problems and provide one additional 138-kV source into Green County. In conjunction with the Brodhead-South Monroe project (2011 in-service date), these projects will bolster Brodhead/Monroe/Evansville area voltages and resolve thermal overloads in the foreseeable future. These projects have been recently deferred from 2010 to 2013 due to longer lead times and resulting schedule constraints. A possible interim system solution could be distribution capacitor bank additions at the Evansville Substation.

Replace the existing 46 MVA Hillman 138/69-kV transformer with a 100 MVA transformer

The project scope has been revised since the 2006 Assessment, which was to install a second 46 MVA transformer in 2010. The deferral (from 2010 to 2013) and project scope revision are due to updated transformer ratings and study results.

Construct new line from Southwest Delavan to Bristol at 138 kV and operate at 69 kV

This project has been deferred from 2007 to 2008 due to a revised construction schedule.

Other project changes

Install 2-8.16 MVAR capacitor banks at South Lake Geneva 69-kV Substation (2008)

ATC continues to assess reactive power requirements in an effort to optimize the size and location of the capacitor banks. Recently completed studies indicate that 2-8.16 MVAR capacitor banks will provide sufficient voltage support to the area and better support ATC Operations with regard to voltage switching than the previously proposed 1-16.32 MVAR bank.

Install 3-16.33 MVAR capacitor banks at North Beaver Dam 138-kV Substation (2009)

ATC continues to assess reactive power requirements in an effort to optimize the size and location of the capacitor banks. Recently completed studies indicate that 3-16.33 MVAR capacitor banks will provide sufficient voltage support to the area and better support ATC



Operations with regard to voltage switching than the previously proposed 2-24.5 MVAR banks. This 2009 project has also been upgraded from a provisional to a proposed status.

Install 2-24.5 MVAR capacitor banks at Kilbourn 138-kV Substation and 2-24.5 MVAR capacitor banks at Artesian Substation (2009)

ATC continues to assess reactive power requirements in an effort to optimize the size and location of the capacitor banks. Recently completed studies indicate that 2-24.5 MVAR capacitor banks at Kilbourn and Artesian (2009) will provide sufficient voltage support to the area.

Expand the existing 69-kV capacitor bank from 5.4 to 8.1 MVAR at Richland Center Olson Substation and install 1-7.8 MVAR 12.4-kV capacitor bank at Brewer Substation (2009)

ATC continues to assess reactive power requirements in an effort to optimize the size and location of the capacitor banks. Recent studies indicate that an additional 10.9 MVAR of capacitance in the Richland Center area (2009) will provide sufficient voltage support to the area for the foreseeable future. Currently, another alternative mix of distribution and transmission capacitor banks is under evaluation. The project scope could be altered again if this recent alternative is found to be the best value plan for the area.

Construct second Paddock-Rockdale 345-kV line and replace 345/138-kV transformer T22 at Rockdale Substation (2010)

Congestion related to importing power from the areas to the south and southwest of Zone 3 continues to be a major concern. To address this concern, ATC submitted a Certificate of Public Convenience and Necessity (CPCN) application for Paddock-Rockdale on April 16, 2007 with a projected 2010 in-service date. ATC's report entitled, "Planning Analysis of the Paddock-Rockdale Project", showed that this project will provide significant ratepayer benefits. As a result of updated study results, this project includes replacement of the 345/138-kV transformer T22 at Rockdale.

Upgrade the existing 2-8.16 MVAR banks to 2-16.33 MVAR banks at South Lake Geneva (2010)

The scope of this provisional project was previously to install a second capacitor bank (16.33 MVAR) at South Lake Geneva. Since the 2008 South Lake Geneva capacitor bank project has been changed from installing one 16.33 MVAR bank to two 8.16 MVAR banks, this 2010 project was accordingly changed to upgrading the two 8.16 MVAR banks to 16.33 MVAR banks. This project could be revised again if a detailed analysis indicates that switching a 16.33 MVAR bank could cause any switching issues.



Construct West Middleton-North Madison 345-kV line (TBD)

This project has been changed from proposed in 2016 to provisional with a yet to be determined in-service date. Further study is needed to determine the scope and in-service date of this project.

New projects

Uprate the Portage 138/69-kV transformer to 143 MVA (2008)

Due to recently validated ratings on the transformer, it was determined that the Portage transformer would overload at 114% under certain contingencies. As a result, this transformer uprate was proposed to be installed as soon as possible.

Uprate X-17 Eden-Spring Green 138-kV line to 167 MVA (2008)

This project was proposed due to a recent as-built line survey, in which it was determined that the existing line clearances were inadequate for reliable system operation.

Install 12.45 MVAR 69-kV mobile capacitor bank at Brick Church Substation (2009)

Due to several industrial load additions, by the summer of 2009 the 138-kV bus voltages at the Dickinson Substation will fall below ATC's (NERC Category B) acceptable voltage level of 90% for the loss of the Colley Road-Dickinson 138-kV line. Before a robust long-term system solution is developed, the mobile capacitor bank with distribution power factor correction is needed to provide sufficient voltage support in this area.

Install 24.5 MVAR 138-kV temporary capacitor bank at Boxelder Substation (2008)

Due to the delay of the Jefferson-Stony Brook (Waterloo) project, additional voltage support is needed for the summer of 2008 under certain contingencies.

Replace two overhead Blount-Ruskin 69-kV lines with one underground 69-kV line (schedule to be determined)

Detailed studies need to be performed to determine the need for, schedule, and final scope of this project.

For a graphical depiction of projects in Zone 3, please refer to [Figure PR-3](#).

*Table PR-15
Transmission System Additions for Zone 3*

System additions	System need year	Projected in-service year	Planning zone	Need category	Planned, Proposed or Provisional
Construct new line from Southwest Delavan to Bristol at 138 kV and operate at 69 kV	2007	2008	3	T-D interconnection	Planned
Uprate Portage 138/69-kV transformer to 143 MVA	2007	2008	3	reliability	Planned
Install temporary 24.5 MVAR capacitor bank at Boxelder 138-kV Substation	2008	2008	3	reliability	Proposed
Install 2-8.16 MVAR 69-kV capacitor bank at South Lake Geneva Substation	2007	2008	3	reliability	Planned
Construct a Rubicon-Hustisford 138-kV line	2008	2008	3	reliability	Planned
Rebuild Hustisford-Horicon 69 kV to 138 kV	2008	2008	3	reliability	Planned
Construct 138/69 kV substation at a site near Horicon and install a 138/69-kV transformer	2008	2008	3	reliability	Planned
Uprate Brick Church-Zenda 69-kV line to 115 MVA	2008	2008	3	reliability	Proposed
Uprate X-17 Eden-Spring Green 138-kV line to 167 degrees F	2008	2008	3	reliability	Planned
Uprate Portage-Trienda 138-kV line to 339 MVA	2008	2008	3	reliability	Proposed
Construct a new 138-kV line from North Madison to Huiskamp (was Waunakee)	2008	2009	3	reliability	Planned
Construct a new 138/69-kV substation near Huiskamp and install a 187 MVA 138/69-kV transformer	2008	2009	3	reliability	Planned
Construct a Jefferson-Lake Mills-Stony Brook 138-kV line	2006	2009	3	reliability	Planned
Convert Rock River to Bristol to Elkhorn 138-kV operation; rebuild Bristol with a new 138 kV bus	2008	2009	3	reliability	Planned
Uprate Rockdale to Jefferson 138-kV line	2008	2009	3	reliability	Planned
Uprate Rockdale to Boxelder 138-kV line	2008	2009	3	reliability	Planned
Uprate Boxelder to Stony Brook 138-kV line	2008	2009	3	reliability	Planned
Install 3-16.33 MVAR 138-kV capacitor banks at North Beaver Dam Substation	2005	2009	3	reliability	Proposed
Uprate North Lake Geneva-Lake Geneva 69-kV line to 115 MVA	2009	2009	3	reliability	Proposed

*Table PR-15
Transmission System Additions for Zone 3 (continued)*

System additions	System need year	Projected in-service year	Planning zone	Need category	Planned, Proposed or Provisional
Uprate Walworth- North Lake Geneva 69-kV to 69 MVA	2009	2009	3	reliability	Proposed
Install 2-24.5 MVAR 138 kV capacitor banks at Kilbourn Substation and install 2-24.5 MVAR 138-kV capacitor banks at Artesian Substation	2009	2009	3	reliability	Proposed
Install 12.45 MVAR 69-kV mobile capacitor bank at Brick Church Substation	2008	2009	3	reliability	Proposed
Expand the existing 69-kV capacitor bank from 5.4 to 8.1 MVAR at Richland Center Olson Substation and install 1-7.8 MVAR 12.4-kV capacitor bank at Brewer Substation	2009	2009	3	reliability	Proposed
Construct new Oak Ridge-Verona 138-kV line and install a 138/69-kV transformer at Verona	2009	2010	3	reliability	Planned
Construct second Paddock-Rockdale 345-kV line and replace 345/138-kV transformer T22 at Rockdale Substation	2010	2010	3	access initiative	Planned
Install 2-16.33 MVAR capacitor banks at Spring Green 69-kV Substation	2010	2010	3	reliability	Provisional
Upgrade the existing 2-8.16 MVAR to 2-16.33 MVAR capacitor banks at South Lake Geneva Substation	2010	2010	3	reliability	Provisional
Rebuild the Verona to Oregon 69-kV line Y119	2008	2011	3	reliability, maintenance	Proposed
Uprate McCue-Milton Lawns 69-kV line	2011	2011	3	reliability	Provisional
Rebuild Brodhead to South Monroe 69-kV line	2011	2011	3	generation interconnection, reliability	Proposed
Construct a North Lake Geneva-White River 138-kV line	2012	2012	3	T-D interconnection	Provisional
Uprate Brick Church-Walworth 69-kV line to 115 MVA	2012	2012	3	reliability	Provisional
Construct 345-kV line from Rockdale to West Middleton	2013	2013	3	reliability	Planned
Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at West Middleton Substation	2013	2013	3	reliability	Planned
Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	2013	2013	3	reliability	Provisional

*Table PR-15
Transmission System Additions for Zone 3 (continued)*

System additions	System need year	Projected in-service year	Planning zone	Need category	Planned, Proposed or Provisional
Loop Nine Springs-Pflaum 69-kV line into Femrite Substation	2006	2013	3	reliability	Provisional
Install a 138/69-kV transformer at Bass Creek Substation	2010	2013	3	reliability	Provisional
Rebuild/reconductor Town Line Road-Bass Creek 138-kV line	2010	2013	3	reliability	Provisional
Replace the existing 46 MVA Hillman 138/69-kV transformer with a 100 MVA transformer	2013	2013	3	reliability	Provisional
Construct a Lake Delton-Birchwood 138-kV line	2013	2013	3	reliability	Provisional
Uprate Sheepskin-Dana 69-kV line to 95 MVA	2013	2013	3	reliability	Provisional
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	2013	2013	3	reliability	Provisional
Construct a Horicon-East Beaver Dam 138-kV line	2014	2014	3	reliability	Provisional
Loop the Deforest to Token Creek 69-kV line into the Yahara River Substation and install a 138/69-kV transformer at Yahara River	2014	2014	3	reliability	Provisional
Uprate Yahara River-Token Creek 69-kV line	2014	2014	3	reliability	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	2014	2014	3	reliability	Provisional
Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	2014	2014	3	reliability	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	2014	2014	3	reliability	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks and 2-24.5 MVAR capacitor banks at Femrite substation	2014	2014	3	reliability	Provisional
Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	2014	2014	3	reliability	Provisional
Install 2-16.33 MVAR capacitor banks at Montrose Substation	2014	2014	3	reliability	Provisional

*Table PR-15
Transmission System Additions for Zone 3 (continued)*

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 McCue Substation	2014	2014	3	reliability	Provisional
Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	2016	2016	3	reliability	Provisional
Upgrade the Royster to Sycamore 69-kV line to 115 MVA	2016	2016	3	reliability	Provisional
Construct Evansville-Brooklyn 69-kV line	2016	2016	3	reliability	Provisional
Construct new 138-kV line from South Lake Geneva to White River Substation	2016	2016	3	reliability, T-D interconnection	Provisional
Construct West Middleton-Blount 138-kV line	TBD	TBD	3	reliability	Provisional
Replace two overhead Blount-Ruskin 69-kV lines with one underground 69-kV line	TBD	TBD	3	negotiated agreement with Madison	Provisional
Construct West Middleton-North Madison 345-kV line	TBD	TBD	3	reliability, access initiative	Provisional

Table PR-22**Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects for the 2007 10-Year Assessment**

PROJECTS CANCELLED	Former In-Service Date	Planning Zone	Reason for Removal
Rebuild/reconductor Petenwell-Saratoga 138-kV line	2010	1	Updated study results
Uprate M38 138/69-kV transformer	TBD	2	Revised load/model information
Install 1-5.4 MVAR capacitor bank at Sawyer 69 kV	TBD	2	Replaced with distribution capacitor bank solution
Construct Huiskamp-Blount 138-kV line	2012	3	Further studies needed to determine scope and in-service date
Uprate North Monroe-Idle Hour 69-kV line	2012	3	Updated study results
Install series reactor at Cornell Substation	2007	5	Updated study results
Expand Oak Creek 345-kV switchyard to interconnect three new generators plus one new 345-kV line and 138-kV switchyard to accommodate new St. Martins line	2013	5	Elm Road generation Phase 3 cancellation
Construct a 345/138-kV switchyard at Hale (Brookdale) to accommodate two 345-kV lines, a 500 MVA 345/138-kV transformer and 4-138-kV lines plus three 138-26.2 kV transformers	2013	5	Elm Road generation Phase 3 cancellation
Install two 345-kV line terminations at Pleasant Prairie Substation and loop Zion-Arcadian 345-kV line into Pleasant Prairie	2013	5	Elm Road generation Phase 3 cancellation
Construct an Oak Creek-Hale (Brookdale) 345-kV line installing 4 mi. new structures, converting 16.2 mi. of non-operative 230 kV and 5 mi. 138 kV	2013	5	Elm Road generation Phase 3 cancellation
Construct Oak Creek-St. Martins 138-kV circuit #2 installing 16.6 mi. conductor on existing towers	2013	5	Elm Road generation Phase 3 cancellation
Construct a Hale (Brookdale)-Granville 345-kV line converting/reconductoring 5.6 mi. 138 kV, rebuilding 7 mi. 138 kV double circuit tower line and converting/reconductoring 3 mi. 138 kV on existing 345-kV structures	2013	5	Elm Road generation Phase 3 cancellation
Reconductor Cornell-Range Line 138-kV line	2014	5	Updated study results

Table PR-22 (continued)**Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects for the 2007 10-Year Assessment**

PROJECTS DEFERRED	New date	Planning Zone	Reason for Deferral
Construct a 345-kV substation at new Cypress; loop existing Forest Junction-Arcadian line into new Cypress Substation	2007	4	Was 2006; revised construction schedule
Construct new line from Southwest Delavan to Bristol at 138 kV and operate at 69 kV	2008	3	Was 2007; revised construction schedule
Construct North Madison-Huiskamp 138-kV line	2009	3	Was 2008; revised construction schedule
Install 1-4.08 MVAR capacitor bank at L'Anse 69 kV	2009	2	Was 1-5.4 MVAR bank in 2008; revised construction schedule
Relocate Cedar Substation (North Lake)	2009	2	Was 2008; deferred due to resource availability
Install second 345/138-kV transformer at Plains Substation	2009	2	Was 2008; revised load/model information
Construct a Jefferson-Lake Mills-Stony Brook 138-kV line	2009	3	Was 2008; deferred due to route contention
Uprate Rockdale to Jefferson 138-kV line	2009	3	Was 2008; deferred because route contention
Uprate Rockdale to Boxelder 138-kV line	2009	3	Was 2008; deferred because of route contention
Uprate Boxelder to Stonybrook 138-kV line	2009	3	Was 2008; deferred because of route contention
Rebuild Crivitz-High Falls 69-kV double circuit line	2009	4	Was 2008; resource availability
Construct Brandon-Fairwater 69-kV line	2010	1	Was 2008; customer's decision to defer
Rebuild/convert Conover-Plains 69-kV line to 138 kV, construct 138-kV bus and install transformers at Iron Grove and Aspen, and relocate Iron River Substation (Iron Grove)	2009	2	Was 2008; deferred due to regulatory delays
Construct new Oak Ridge-Verona 138-kV line and install a 138/69-kV transformer at Verona	2010	3	Was 2009; regulatory delay
Rebuild the Verona to Oregon 69-kV line Y119	2011	3	Was 2008; route overlap complications and associated regulatory delay for portion from Verona to Sun Valley (due to Oak Ridge to Verona delay) and Rockdale to West Middleton overlap for entire route
Install 200 MVAR capacitor bank at Bluemound Substation	2010	5	Was 2008; detailed study in progress to determine scope and in-service date

Table PR-22 (continued)**Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects for the 2007 10-Year Assessment**

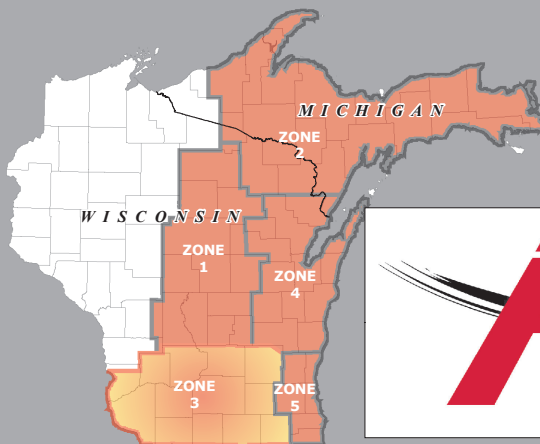
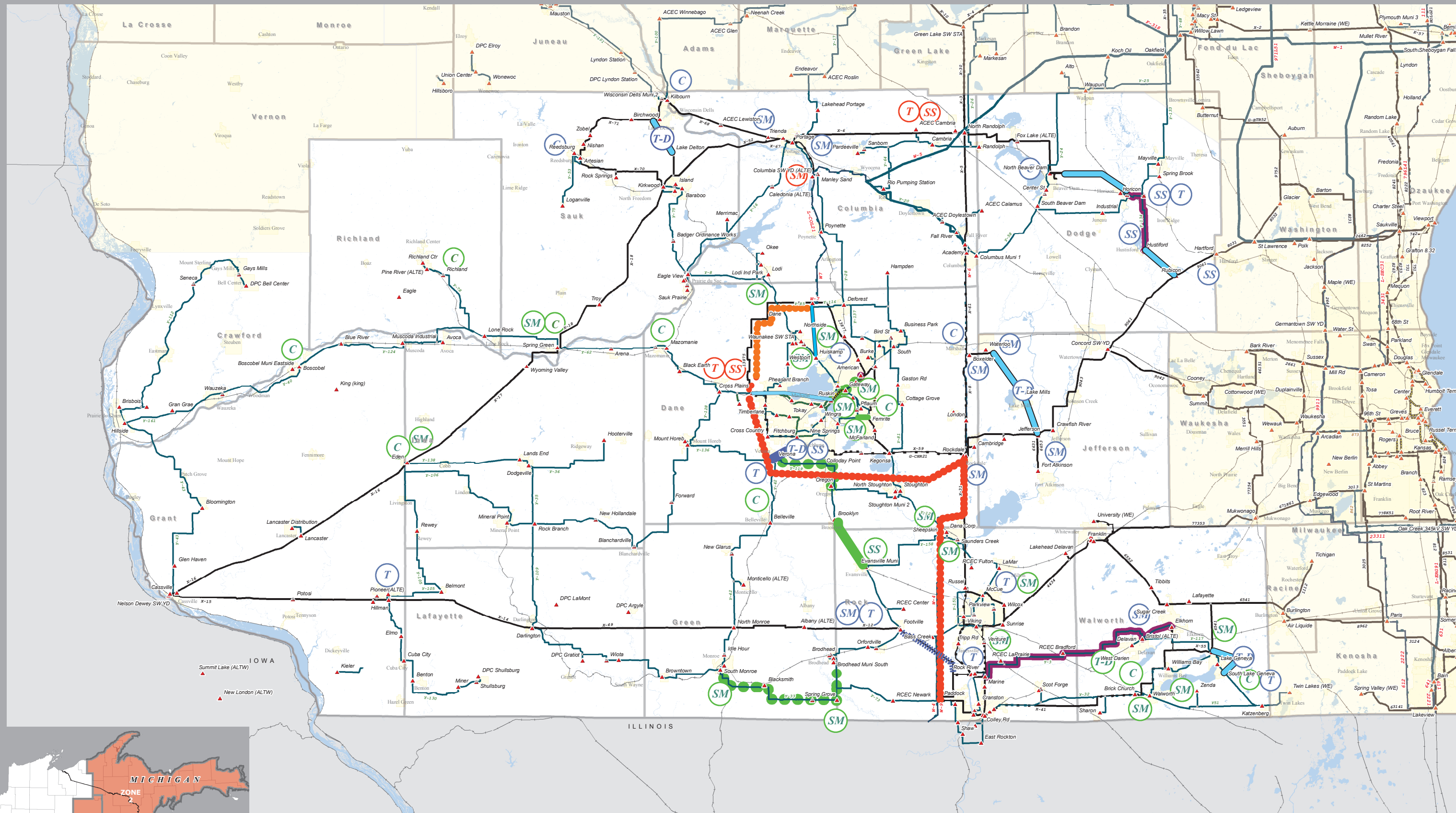
PROJECTS DEFERRED (continued)	New date	Planning Zone	Reason for Deferral
Rebuild Brodhead to South Monroe 69-kV line	2011	3	Was 2008; updated study results and resource availability
Construct Monroe County-Council Creek 161-kV line	2012	1	Was 2010; resource availability
Install a 161/138-kV transformer at Council Creek Substation	2012	1	Was 2010; resource availability
Uprate Council Creek-Petenwell 138-kV line	2012	1	Was 2010; resource availability
Construct a 69-kV line from SW Ripon to the Ripon-Metomen 69-kV line	2013	1	Was 2012; customer's decision to defer
Rebuild Blaney Park-Munising 69 kV to 138 kV	2013	2	Was 2012; Asset Management review
Construct 345-kV line from Rockdale to West Middleton	2013	3	Was 2011; updated study results
Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at West Middleton Substation	2013	3	Was 2011; updated study results
Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	2013	3	Was 2008; revised rating information
Loop Nine Springs-Pflaum 69-kV line into Femrite Substation	2013	3	Was 2010; delayed due to resource availability
Install a 138/69-kV transformer at Bass Creek Substation	2013	3	Was 2010; delayed due to resource availability
Rebuild/reconductor Town Line Road-Bass Creek 138-kV line	2013	3	Was 2010; delayed due to resource availability
Replace the existing 46 MVA Hillman 138/69-kV transformer with a 100 MVA transformer	2013	3	Was second transformer in 2010; updated study results
Loop the Deforest to Token Creek 69-kV line into the Yahara River Substation and install 138/69-kV transformer at Yahara River	2014	3	Was 2011; delayed due to updated study results
Uprate Yahara River-Token Creek 69-kV line	2014	3	Was 2011; delayed due to updated study results
Install 138/69-kV transformer at Custer Substation	2014	4	Was 2012; updated study results
Construct Shoto to Custer 138-kV line	2014	4	Was 2012; updated study results
Construct a 345-kV bus at Bain Substation	2014	5	Was 2009; further study needed to determine scope and in-service date

Table PR-22 (continued)**Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects for the 2007 10-Year Assessment**

OTHER PROJECT CHANGES AND POSSIBLE CHANGES	Date	Planning Zone	Nature of Change or Update
Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and upgrade the 5.4 MVAR capacitor bank to 10.8 MVAR at Berlin 69-kV Substation	2008	1	Was total of 12.8 MVAR upgrade
Install 1-4.08 MVAR capacitor bank at Roberts 69-kV Substation	2008	2	Was 5.4 MVAR capacitor bank
Install 2-4.08 MVAR capacitor banks at Munising 69-kV Substation	2008	2	Was 2-5.4 MVAR banks
Install 2-8.16 MVAR 69-kV capacitor bank at South Lake Geneva Substation	2008	3	Was 1-16.33 MVAR bank
Expand the Menominee 69-kV Substation and install 138 kV terminals. Loop the West Marinette-Bay De Noc 138-kV line into the Substation	2008	4	Was provisional, now proposed
Install 138/69-kV transformer at the expanded Menominee Substation	2008	4	Was provisional, now proposed
Install 2-1.2 MVAR distribution capacitor banks at Sister Bay 69 kV	2008	4	Was 2-4.1 MVAR banks on transmission side, was provisional and now is proposed
Construct Gardner Park-Hwy 22 345-kV line	2009	1	Central Wisconsin was renamed Hwy 22
Construct new Hwy 22 345-kV Substation	2009	1	Central Wisconsin was renamed Hwy 22
Upgrade Chandler-Cornell 69-kV line clearance from 120 to 167 deg F	2009	2	Was provisional in 2010; now proposed in 2009
Install 3-16.33 MVAR 138-kV capacitor banks at North Beaver Dam Substation	2009	3	Was provisional, now proposed; was 2-24.5 MVAR banks
Install 2-24.5 MVAR 138 kV capacitor banks at Kilbourn Substation and install 2-24.5 MVAR 138-kV capacitor banks at Artesian Substation	2009	3	Was 2-16.33 capacitor banks at Kilbourn and 2-24.5 at Artesian
Expand the existing 69-kV capacitor bank from 5.4 to 8.1 MVAR at Richland Center Olson Substation and install 1-7.8 MVAR 12.4-kV capacitor bank at Brewer Substation	2009	3	Was 2-8.16 MVAR banks at Brewer
Construct second Paddock-Rockdale 345-kV line and replace 345/138-kV transformer T22 at Rockdale Substation	2010	3	Added the transformer replacement
Upgrade the existing 2-8.16 MVAR to 2-16.33 MVAR capacitor banks at South Lake Geneva Substation	2010	3	Was second 16.33 MVAR bank
Construct new Mackinac 138/69-kV Substation	TBD	2	Was Proposed in 2011, now Provisional and TBD
Rebuild Hiawatha-Pine River 69-kV line ESE_6908	TBD	2	Was Proposed in 2009; now Provisional and TBD
Construct West Middleton-North Madison 345-kV line	TBD	3	Was proposed in 2016; now Provisional and TBD

Table PR-22 (continued)**Summary of Cancellations, Deferrals, Changes, Possible Changes and New Projects for the 2007 10-Year Assessment**

NEW PROJECTS	In-Service Date	Planning Zone	Reason for Project
Relocate Mishicot 138-kV Substation	2007	4	new generation
Upgrade St. Martins 138-kV bus to 2000A	2007	5	reliability
Upgrade St. Lawrence 138-kV bus	2007	5	reliability
Construct ring bus at the Pine River 69-kV Substation and replace 1-5.4 MVAR capacitor bank with 2-4.08 MVAR banks	2008	2	reliability
Uprate Empire-Forsyth 138-kV line to 302 MVA	2008	2	reliability
Uprate Portage 138/69-kV transformer to 143 MVA	2008	3	reliability
Uprate X-17 Eden-Spring Green 138-kV line to 167 degrees F	2008	3	reliability
Install temporary 24.5 MVAR capacitor bank at Boxelder 138-kV Substation	2008	3	reliability; Jefferson-Stony Brook project delay
Construct a 138-kV substation at new Cedar Ridge; loop existing Ohmstead-Kettle Moraine 138-kV line into new Cedar Ridge Substation	2008	4	accommodate new generation
Install 2-16.32 MVAR capacitor bank at Perkins 138-kV Substation	2009	2	reliability
Install 1-16.33 MVAR capacitor bank at Hiawatha 138-kV Substation	2009	2	reliability
Install 12.45 MVAR 69-kV mobile capacitor bank at Brick Church Substation	2009	3	reliability
Install 2-32 Mvar capacitor banks at Mukwonago 138-kV Substation	2009	5	reliability
Install 2-4.08 MVAR capacitor banks at the 9 Mile 69-kV Substation	2010	2	reliability
Install 1-16.33 MVAR capacitor bank at Indian Lake 138-kV Substation	2010	2	reliability
Replace two overhead Blount-Ruskin 69-kV lines with one underground 69-kV line	TBD	3	negotiated agreement with Madison
Install 2-32 MVAR capacitor banks at Summit 138-kV Substation	2010	5	reliability
Uprate Arcadian-Waukesha 138-kV lines KK9942/KK9962	2010	5	reliability



Transmission Planning Additions (May be Planned, Proposed or Provisional)

PLANNING ZONE 3

SS New Substation	C Capacitor Bank	●●●● 345 kV Transmission Line	——— 69 kV Transmission Line
SM Substation Modifications	T-D New T-D Interconnection	——— 115 or 138 kV Transmission Line	●●●● 69 kV Transmission Line Rebuild
T Transformer	PS Phase Shifter	▤▤▤▤ 115 or 138 kV Transmission Line Rebuild	——— Transmission Line Voltage Conversion

Transmission Related Facilities

▲ Substation, Switchyard or Terminal	● ATC Office Location
■ Proposed/Design/Construction	■ Generation
	■ Other Facility