

American Transmission Company LLC

Northern Umbrella Plan (NUP) Projects Update

November 11, 2005



Agenda

- **Introductions**
- **Brief Summary of System Needs & Issues**
- **List of NUP Projects**
- **Individual Project Discussion & Update**

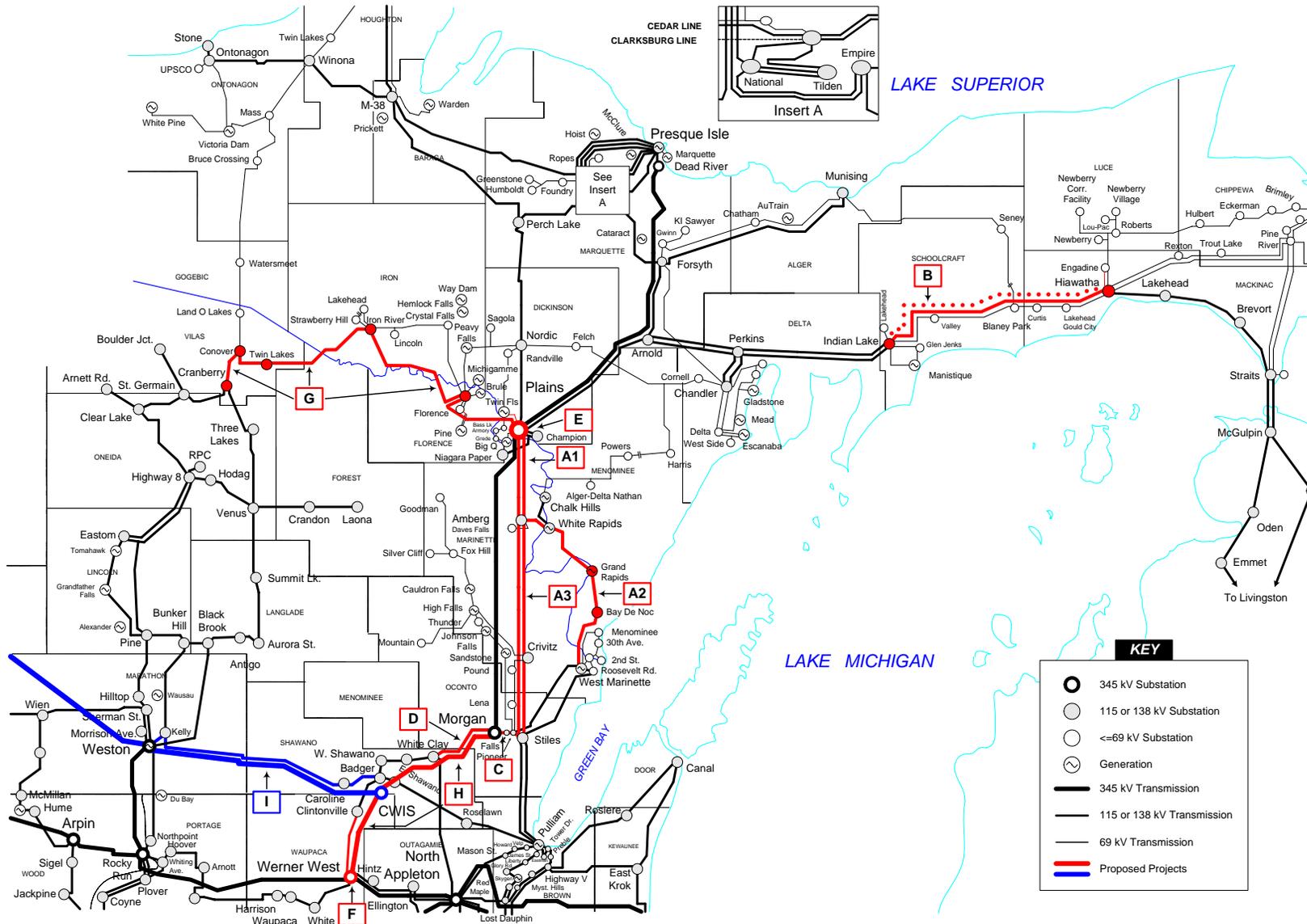
ATC Personnel Presenting & Participating

- **Teresa Mogensen, Director of Engineering & Construction**
- **Jane Petras, North Portfolio General Manager**
- **Patsy Baynard, Central Portfolio General Manager**
- **John McNamara, East Portfolio General Manager**
- **Tony Tewelis, Director of Customer Service**
- **Mike Burow, Customer Service Manager**
- **Dale Landgren, Vice President**

System Needs & Issues

- **Occurrence of Blackouts**
- **Redispatch costs/Binding constraints**
- **Rhineland Loop load serving and voltage issues**
- **Limited transfer capability between WI and MI**
- **Transmission Service Requests**
- **Eastern U.P. reliability and operating flexibility**
- **Low voltages in the western U.P.**
- **Transformer loadings in the Fox Valley area**
- **Impact of proposed Weston generation**
- **Presque Isle stability/U.P. export limitations**
- **Facility age and condition**

NUP Projects



NUP Projects

A: Plains – Stiles 138 kV Rebuild

B: Indian Lake – Hiawatha 69 kV to 138 kV Rebuild

C: Morgan – Stiles 138 kV Rebuild

D: Morgan – White Clay 138 kV Up-rate

E: Add 2nd Plains Transformer

F: New Werner West 345/138 kV Substation

G: Cranberry – Conover – Plains Project

H: Morgan – Werner West 345 kV Line (including
Clintonville – Werner West 138 kV)

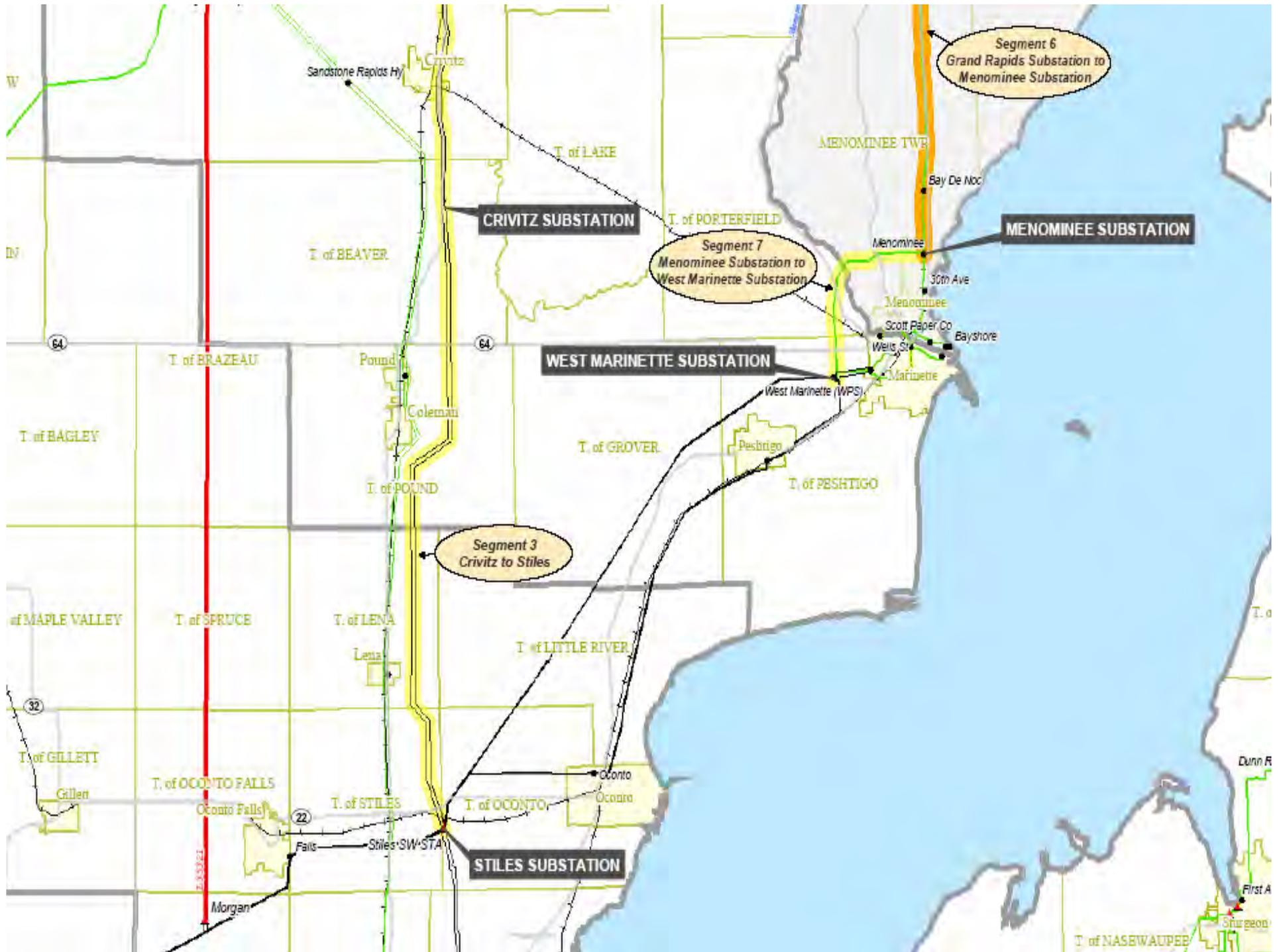
I: New Weston – Central Wisconsin 345 kV Line (for
generator interconnection)

Project Scope: Plains-Stiles 138 kV Line Rebuild

- Rebuild the 65 mile 138 kV Plains to Stiles double circuit lattice tower line, using new steel monopoles with T2-477 Hawk conductor
- Add a new line terminal at Plains substation
- Upgrade line terminals at Plains, Crivitz, and Stiles to a 2000 amp rating
- Rebuild 42 miles of 69 kV transmission line from West Marinette to White Rapids for 138 kV operation
- Reconductor 9 miles of the Amberg to White Rapids 138 kV line
- Rebuild substations at Amberg, White Rapids (Holmes), and Grand Rapids (Ingalls)
-
- Add a 138 kV line terminal at West Marinette substation







Project Costs: Plains-Stiles 138 kV Line Rebuild

- Current Approved = \$100.4 million
- Current Estimate = \$98.5 million
- Project to Date Spending = \$55.1 million

Project Schedule/Status: Plains-Stiles 138kV Rebuild

- Reconductor Amberg to White Rapids complete
- Rebuild White Rapids to West Marinette scheduled for completion December 2nd, 2005
- Rebuild Plains to Stiles
 - Plains-Amberg rebuild complete
 - Transfer of second circuit from temporary structures scheduled for completion by February 2006
 - Amberg–Stiles rebuild scheduled to start in December 2005 with completion scheduled for November 2006



Plains-Amberg
Corridor



Grand Rapids
Clear Span Bridge



Plains-Amberg
Corridor



1/2005

Town of Niagara
Menominee
River Crossing



Temp
Line

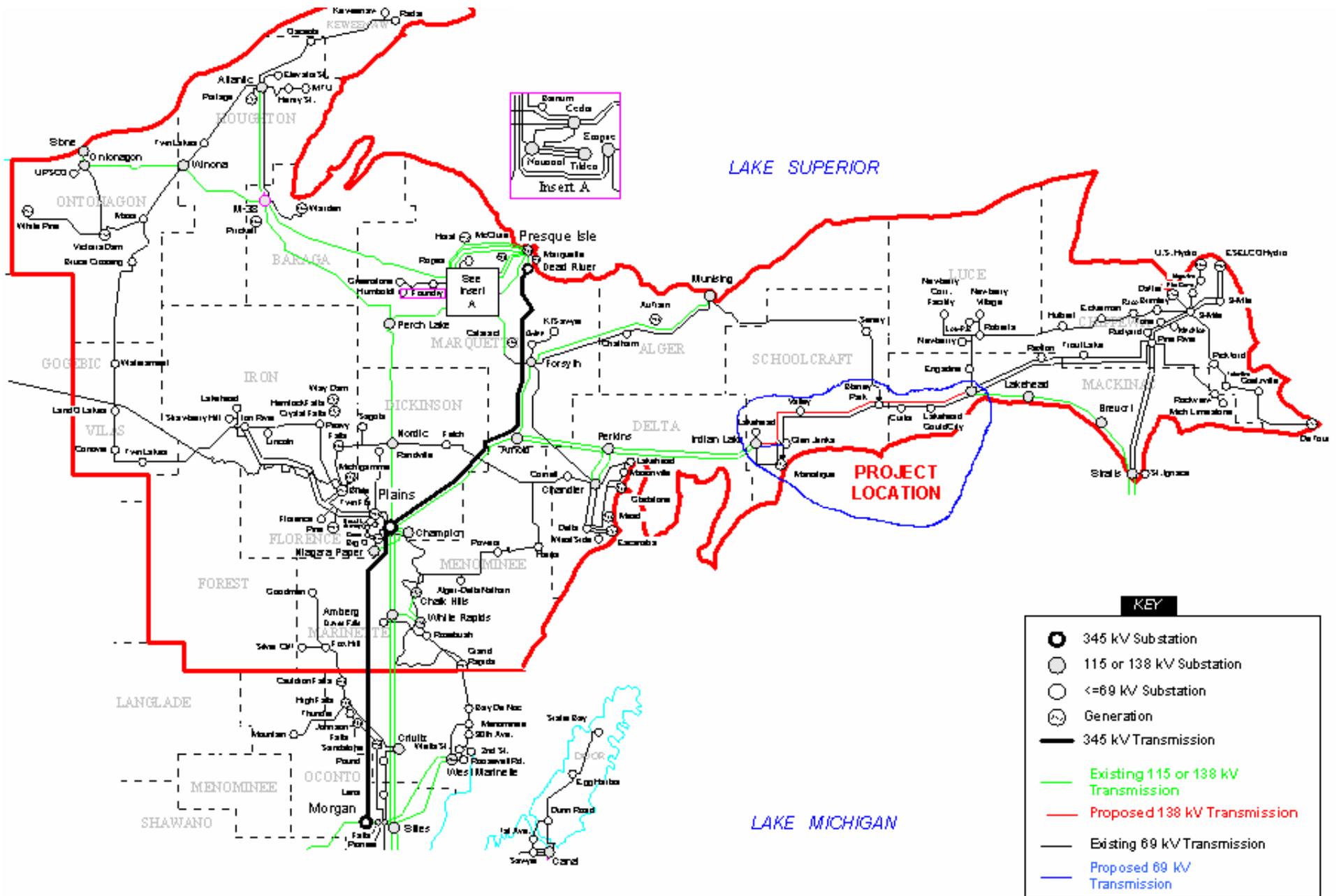
Town of Niagara
Menominee
River Crossing

11/2005

Project Scope: Indian Lake to Hiawatha 69 kV to 138 kV Rebuild

- Phase 1 – Rebuild ~ 2 miles of 69 kV line between Indian Lake and Glen Jenks substations to a quad circuit (Completed Fall of 2004)
- Phase 2 – Rebuild ~ 39 miles of 69 kV line between Glen Jenks and Hiawatha substations with triple circuit structures - installing two circuits constructed for 138 kV operation but operating one at 69 kV
- Phase 3 – Convert substations to 138 kV and operate both lines at 138 kV

Hiawatha – Indian Lake Project



Project Costs: Indian Lake to Hiawatha 69 kV to 138 kV Rebuild

- Phase 1: Final = \$6 million
- Phase 2: Current Approved = \$41.2 million
- Phase 2: Current estimate = \$44.8 million
- Phase 2: Project to Date Spending = \$35.5 million
- Phase 3 scope and estimate under development starting mid-2006

Project Schedule/Status: Indian Lake to Hiawatha 69 kV to 138 kV Rebuild (Phase 2)

- Line rebuild was started in November 2004
- Work is approximately 2/3 complete
- Forecasted to be complete and energized between April and June 2006
 - Existing contract requires June '06 in-service
 - However, the contractor is ahead of schedule and is trying to finish in April/May '06 timeframe to eliminate needing to contend with spring breakup and road limits.
 - Weather and working conditions will determine in-service date



Quad Circuit – Glen
Jenks to Indian Lake

08/03/2004



Foundation Drilling

07/11/2004





Construction Mat Roads





Creek Crossing

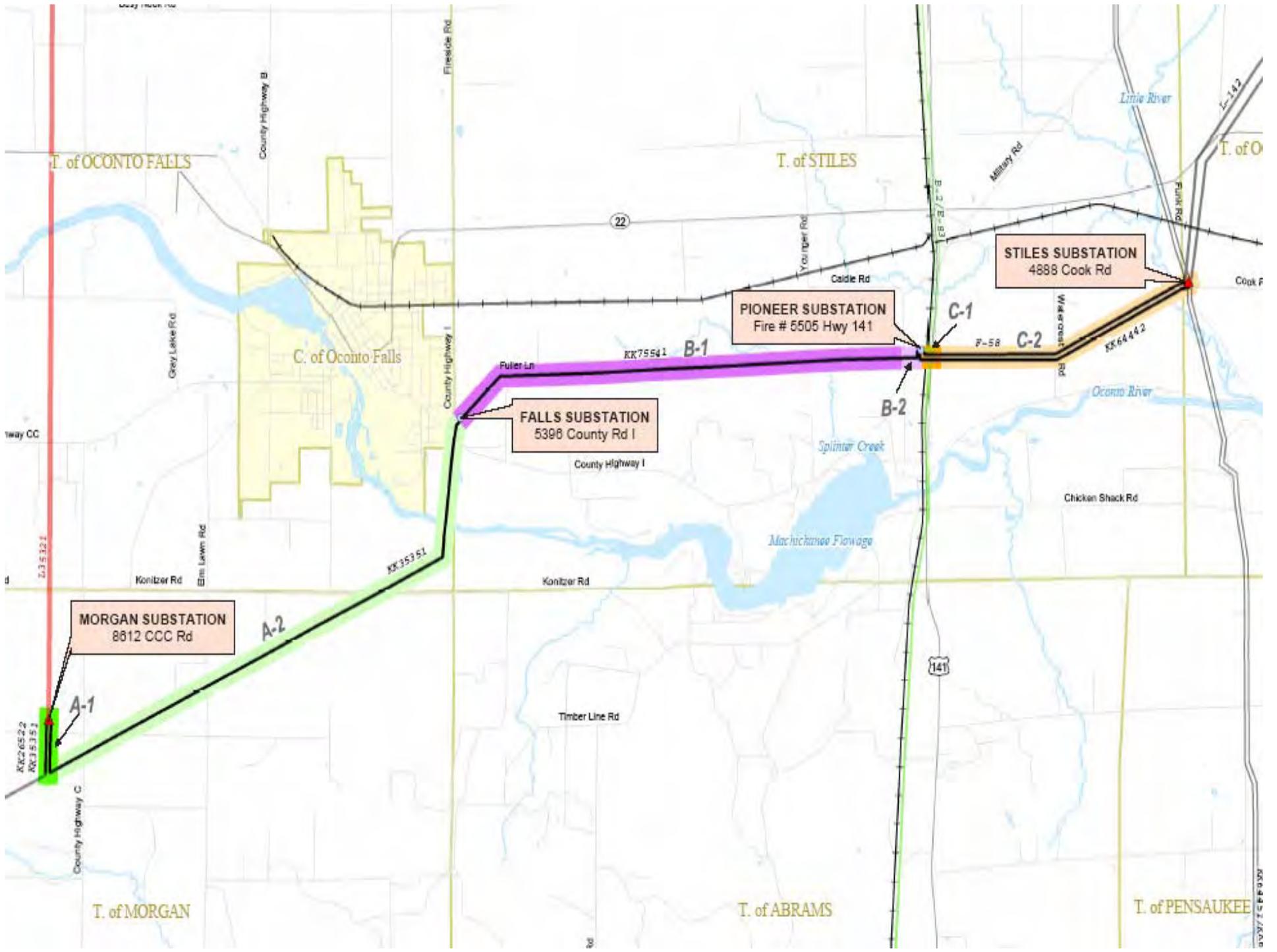


05/03/2005



Project Scope: Morgan to Stiles Rebuild

- Rebuild existing 11 mile H-frame supported, single circuit 4/0 conductor, with double circuit mono-pole steel structures using T2 Hawk conductor
- Modify Morgan, Falls, Pioneer and Stiles to upgrade the substation equipment (e.g. breakers, switches, jumpers, etc.) to match the new line rating



Project Costs: Morgan to Stiles Rebuild

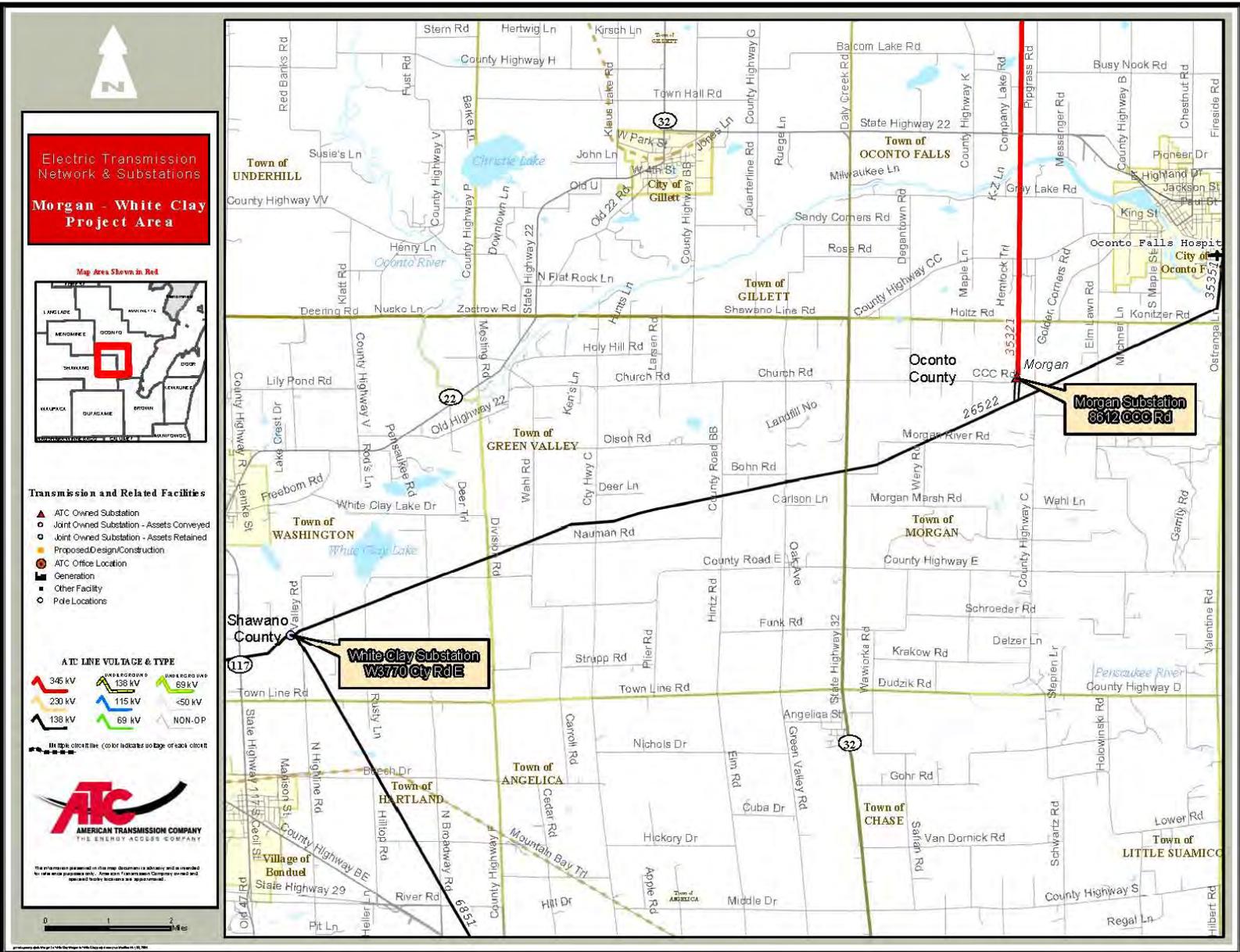
- Current approved = \$6.8 million
- Current Estimate = \$7.0 million
- Project to Date Spending = \$6.1 million

Project Schedule/Status: Morgan to Stiles Rebuild

- The rebuild of the existing 11 mile H-frame supported, single circuit 4/0 conductor, with double circuit mono-pole steel structures using T2 Hawk conductor is complete
- Modifications (e.g. breakers, switches, jumpers, etc.) required at Morgan, Falls, and Pioneer to upgrade the substation equipment to match the new line rating are also complete
- Modifications at Stiles substation to upgrade equipment to match the new line rating will be completed in Spring 2006

Project: Morgan to White Clay 138 kv Uprate

- Scope – Re-rate 12 miles of 138 kV line to increase the emergency rating
 - Address 24 spans with ground clearance violations using “phase raisers”
 - Replace a wave trap at White Clay SS
- Cost – \$ 447K
- Schedule/Status – Completed March ‘05



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U.S. PATENT NOS. 6,115,988 6,151,800 CANADIAN PATENT NOS. 2,252,115 2,297,318

STRUCTURE LIFTING SYSTEM



- Increase conductor clearance without taking the line out of service
- Add an additional circuit or underbuild
- Increase system capacity
- Increase revenues
- Raise single pole & H-Frame structures through 345kV an additional 3 to 20 feet
- Delay or eliminate the need for new lines or expensive structure changeouts

(15' Lift Shown)



Laminated Wood Systems, Inc.

800-949-3526 www.lwsinc.com

Safely raise single pole & H-frame structures through 345kV an additional 3 to 20 feet.

Available in galvanized, weathering or painted steel for maximum aesthetic appeal.



115kV Single Pole Structure Raised 10 feet



Before Lift



After Lift

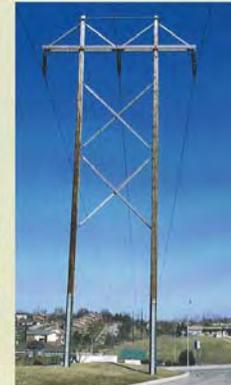
345kV H-Frame Structure Raised 15 feet



Painted PhaseRaiser® Units



115kV Four-pole H-Frame Structure Raised 12 feet



161kV H-Frame Structure Raised 5 feet



230kV H-Frame Structure Raised 20 feet





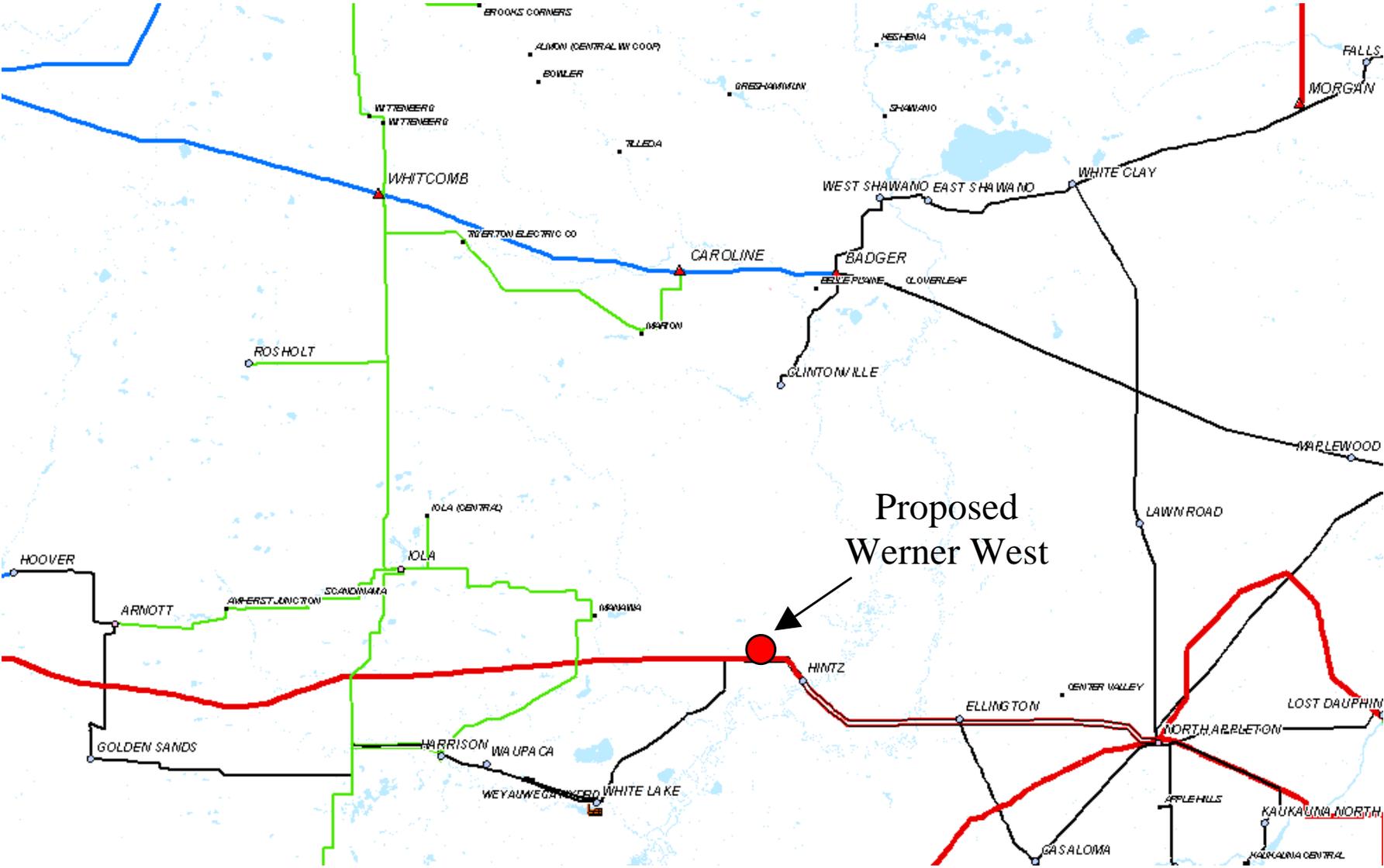
Project: Add 2nd Plains SS Transformer

- Scope – Add a 2nd 345/138 kV, 250MVA transformer
- Cost – Current Estimate is \$5.4 million
- Schedule/Status –
 - Will refine/finalize estimate and obtain authorization in early 2007
 - Start design late 2007
 - Install in 2008

Project Scope: New Werner West Substation

- Construct a 345/138 kV substation near New London
 - 5 position (2 future) 345 kV ring bus
 - 6 position (3 future) 138 kV ring bus
 - Site required ~ 12 acres
- Loop the Rocky Run-North Appleton 345 kV line into the new substation ~1/4 mile
- Loop the Werner-White Lake 138 kV line into the new substation ~1/4 mile
- Install a 345/138 kV, 500 MVA transformer

Project Area Map



Project Costs: New Werner West Substation

- Current Approved = \$15.3 million
- Current Estimate = \$15.3 million
- Project to Date Spending = \$1.3 million

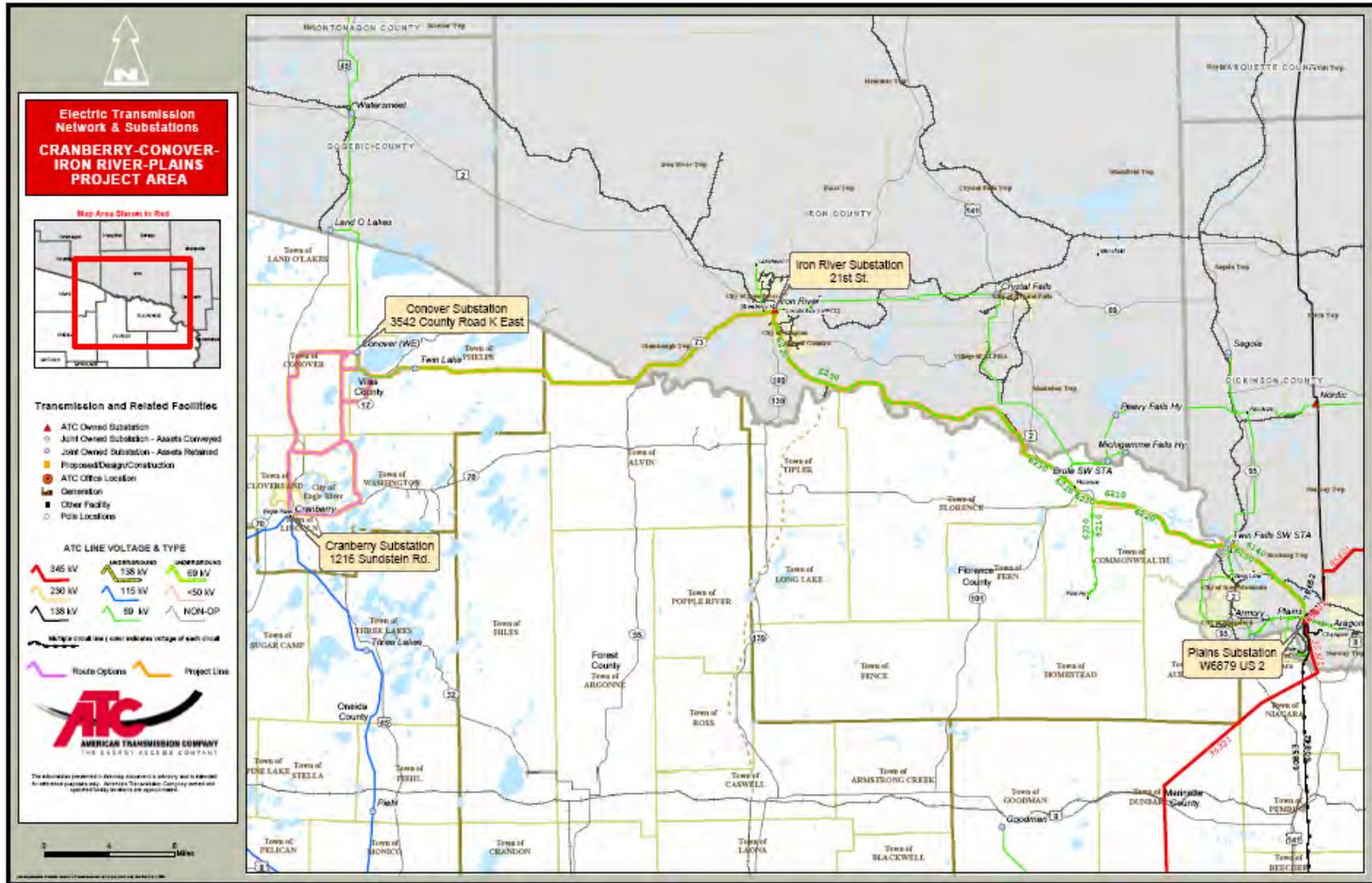
Project Schedule/Status: New Werner West Substation

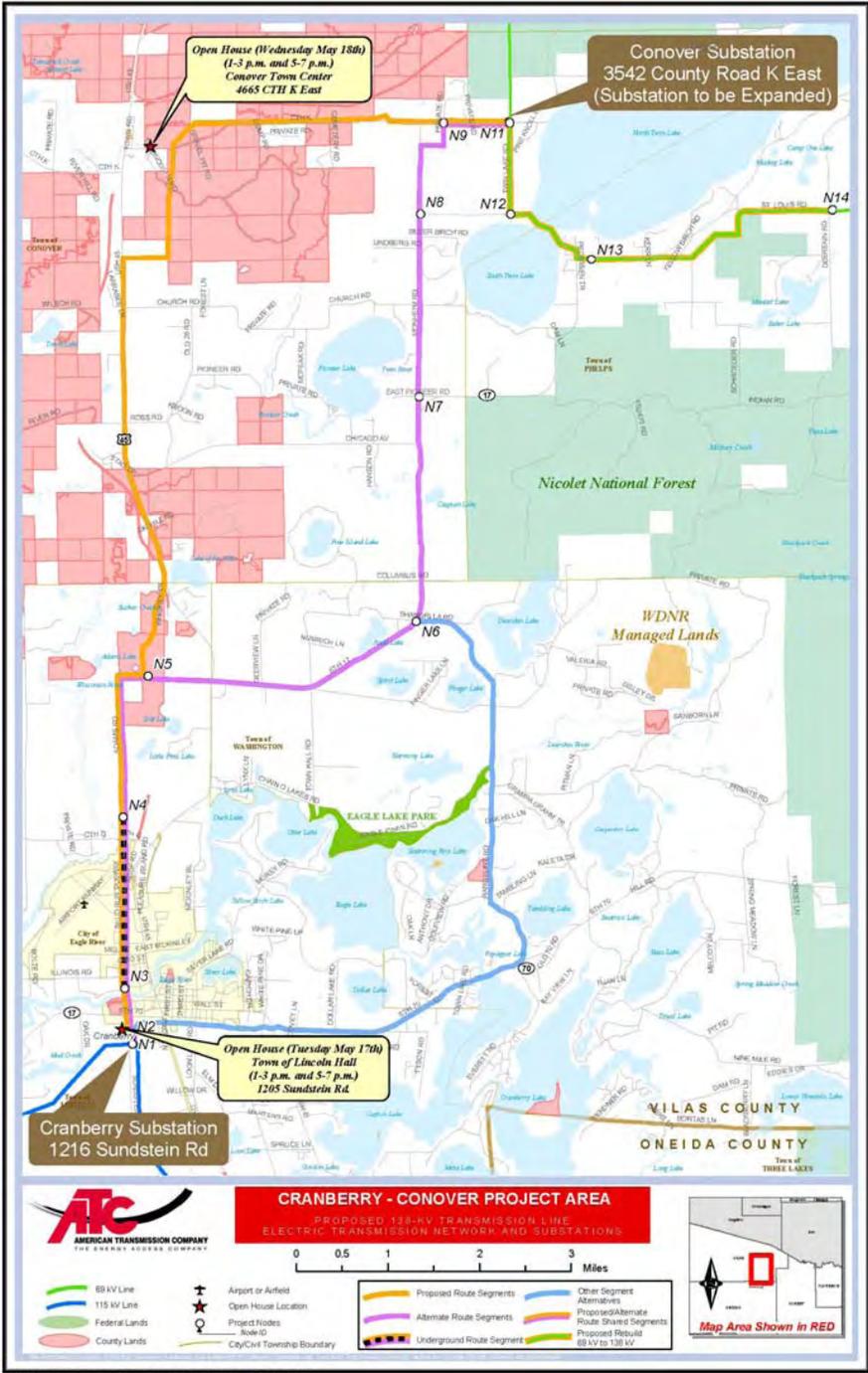
- Received Certificate of Authority from PSC in June 2005
- Slated for construction start in fall 2005 and project completion June 2006
 - Construction delayed due to delays in real estate acquisition
 - Commence construction spring 2006 and completion in December 2006
- Delayed inservice date has resulted in the need to uprate the Ellington – North Appleton 138 kV line in spring 2006
 - Need to address overloads expected in the summer of 2006
 - Constructability review and project scoping are underway to support this need
- Ordered all long lead equipment
- Engineering in final phase

Project Scope: Cranberry-Conover-Plains

- New Cranberry-Conover 115 kV line
 - Construct a new 115 kV line, approximately 14 miles
 - Preferred route is described as the “Western” alternative which includes approximately 2 miles of underground cable
- Rebuild Conover-Plains 69 kV Line to 138 kV
 - Approximately 75 miles
 - Construct new substations at Conover and Iron River, expand substations at Cranberry, Bobcat

Cranberry – Conover – Plains Project





Project Costs: Cranberry-Conover-Plains

- Current Approved = \$118.2 million
- Current Estimate = \$118.2 million
- Project to Date Spending = \$1.7 million

Project Schedule/Status: Cranberry-Conover-Plains

Pre-certification activities	June 2004 – Sept 2006
ATC Executive approval	July 2005
ATC Board approval	July 2005
File CPCN application	November 2005
CPCN Order issued	September 2006
Construction activities	April 2007-Dec 2009
Project completion and in-service	Dec 2009

Twin Lakes Crossing



Twin Lakes Crossing



Twin Lakes Crossing



Twin Lakes Crossing



Railroad Lake Area



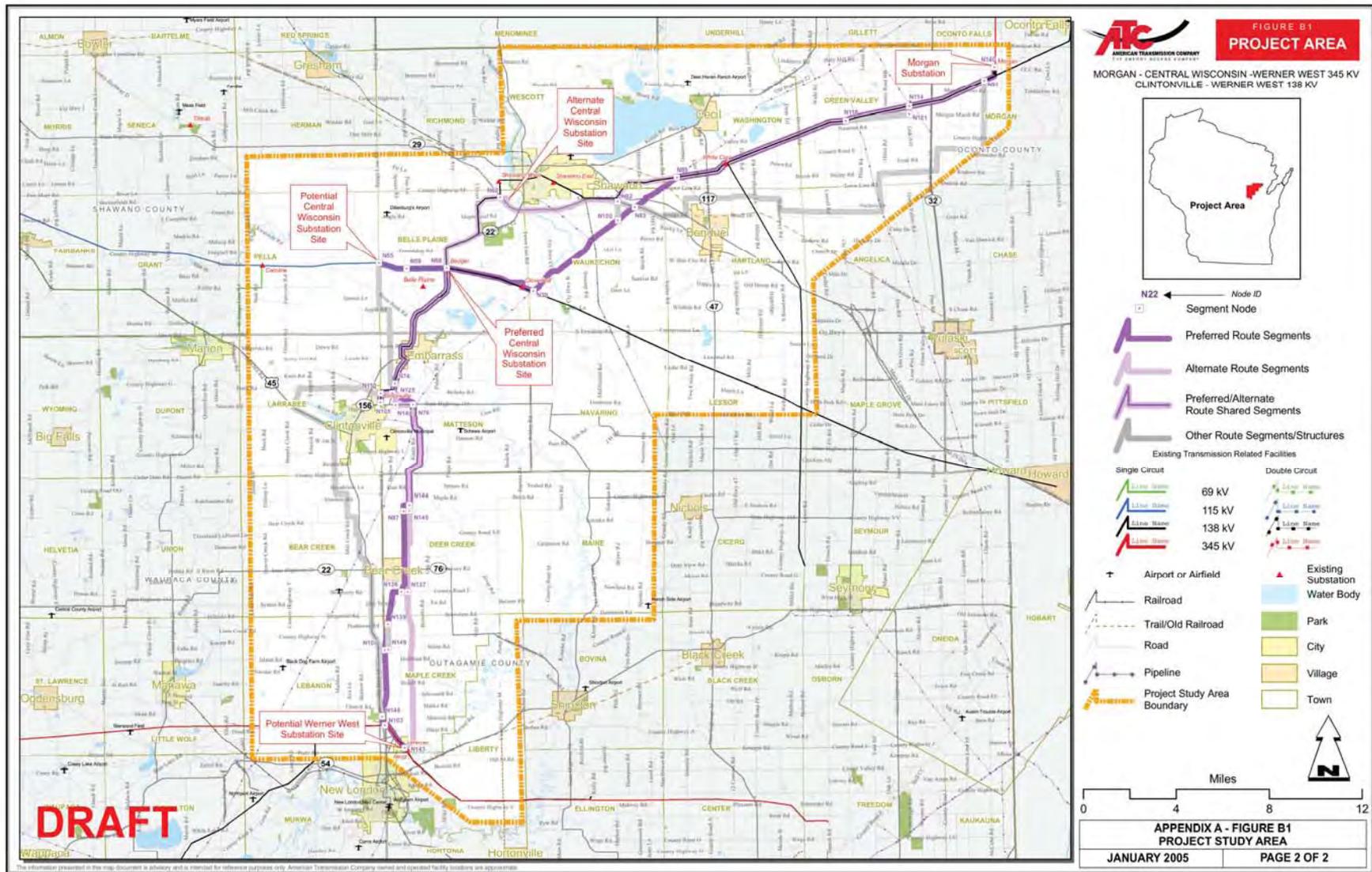


Railroad Lake Area



Project Scope: New Morgan-Werner West 345kV Line (including Clintonville-Werner 138kV)

- New Morgan – Werner West 345 kV line
 - Construct a new 345 kV line approximately 51 miles
 - Preferred route follows existing transmission, gas, highway and abandoned rail corridors while minimizing use of new right-of-way
 - Alternate route utilizes more new right-of-way
 - Co-locate a new 138 kV circuit from the proposed Werner West SS to Clintonville on double circuit structures (18.6 miles)
- Morgan substation
 - Complete the 345 kV ring bus at Morgan SS to accommodate the new 345 kV line
- Werner West substation
 - Connect the new 345 kV line to the 345 kV ring bus
 - Connect the new 138 kV line to the 138 kV ring bus
- Clintonville substation
 - Construct a 138 kV bus



**Project Costs: New Morgan-Werner West 345kV Line
(including Clintonville-Werner 138kV)**

- Current Approved = \$132.3 million
- Current Estimate = \$132.3 million
- Project to Date Spending = \$0.617 million

**Project Schedule/Status: New Morgan-Werner West
345kV Line (including Clintonville-Werner 138kV)**

ATC Executive approval	2/2005
ATC Board approval	2/2005
File CPCN application	3/2005
CPCN anticipated issue	6/2006
Pre-construction activities	1/2006-6/2007
<i>(Surveying, engineering, real estate, material procurement)</i>	
Construction period	10/2006-12/2009
Project in-service	12/2009

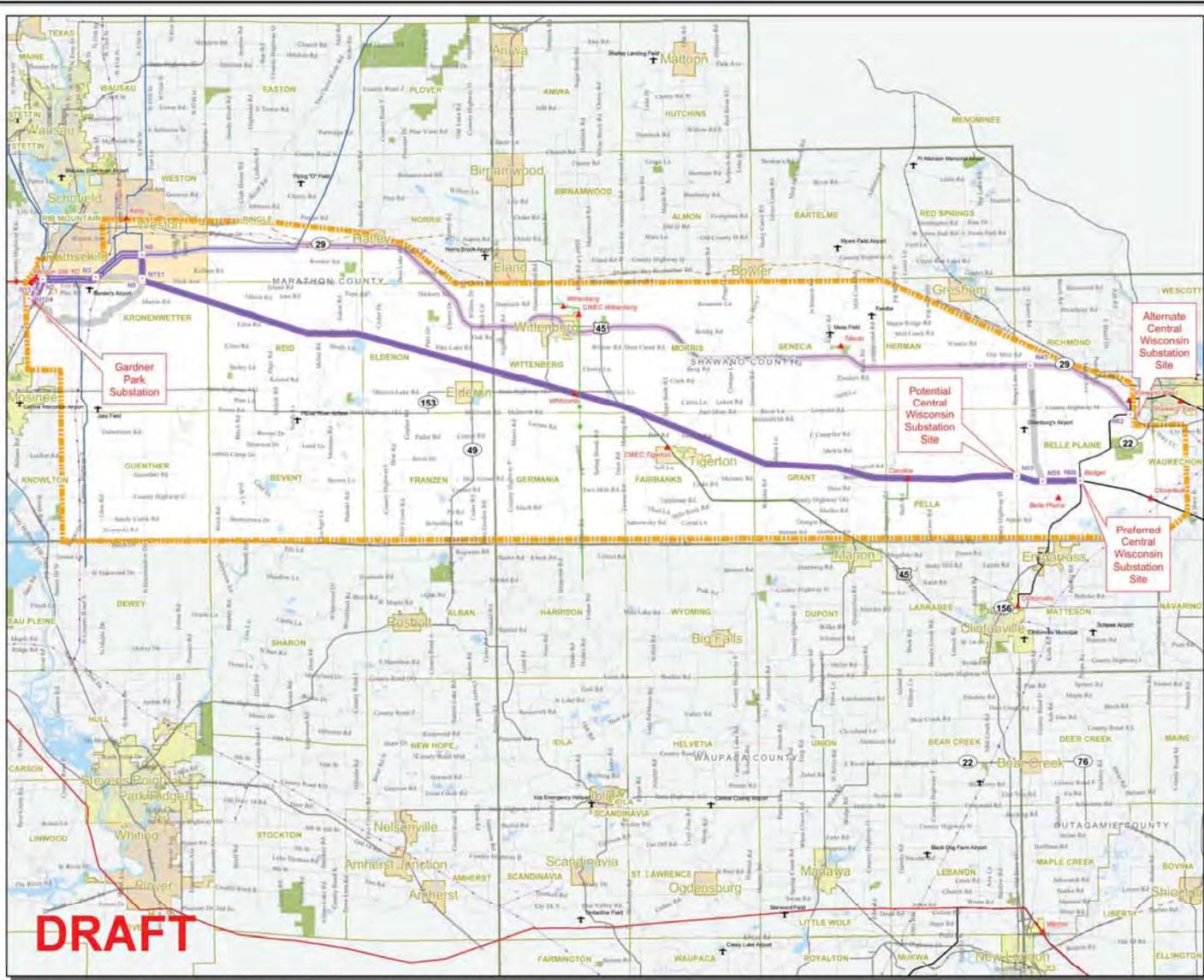
Project Scope: New Gardner Park-Central WI 345kV line (includes Central WI Switching Station)

- New Gardner Park – Central Wisconsin 345 kV line
 - Construct a new 345 kV line
 - Preferred route (D/C 345/115 kV) is on an existing ATC transmission corridor
 - Alternate route (S/C 345 kV) is on new right-of-way adjacent to State Hwy 29
 - Approximately 50 miles
- New Central Wisconsin 345 kV switching station
 - New 345 kV switchyard near the Shawano/Belle Plaine area
 - 3 position 345 kV ring bus, 1 additional future 345 kV bus position
 - Site requires ~ 15 to 20 acres
- Gardner Park substation
 - Expand the 345 kV 4 position ring bus to a 6 position breaker and a half to accommodate Weston G4 and the new 345 kV line



FIGURE B1 PROJECT AREA

GARDNER PARK - CENTRAL WISCONSIN 345 KV



DRAFT

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.

Node ID: N22

Segment Node

- Preferred Route Segments
- Alternate Route Segments
- Preferred/Alternate Route Shared Segments
- Other Route Segments/Structures

Existing Transmission Related Facilities

Single Circuit	Double Circuit
69 kV	69 kV
115 kV	115 kV
138 kV	138 kV
345 kV	345 kV

- Airport or Airfield
- Railroad
- Trail/Old Railroad
- Road
- Pipeline
- Project Study Area Boundary
- Existing Substation
- Water Body
- Park
- City
- Village
- Town

Miles

0 5 10 15

APPENDIX A - FIGURE B1 PROJECT STUDY AREA JANUARY 2005 PAGE 1 OF 2

Project Costs: New Gardner Park-Central WI 345 kV line (includes Central WI Switching Station)

- Current Approved = \$131.5 million
- Current Estimate = \$131.5 million
- Project to Date Spending = \$0.673 million

**Project Schedule/Status: New Gardner Park-Central WI
345kV line (includes Central WI Switching Station)**

ATC Executive approval	2/2005
ATC Board approval	2/2005
File CPCN application	3/2005
CPCN anticipated issue	6/2006
Pre-construction activities (Surveying, engineering, real estate, material, procurement)	1/2006-6/2007
Construction period	10/2006-12/2009
Project in-service	12/2009

Project Status Summary

Project	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
A: Plains – Stiles 138 kV Rebuild	Physical condition; transfer capability; solution also results in a more robust parallel path for 2/3 of P-S corridor		\$98.5M	Project approved and under construction
•A1: Plains – Amberg		October 2005		Temporary line in service; reconstruction of permanent double-circuit line underway
•A2: Amberg – West Marinette		December 2005		Rebuild/conversion underway
•A3: Amberg – Stiles		November 2006		Scheduled to start when A1 and A2 are complete.
B: Indian Lake – Hiawatha 69 kV to 138 kV Rebuild	TLR mitigation; voltage support; physical condition; local load-serving in Manistique area; required operating guide that splits the U.P. system			Phase I complete; Phase II in progress
•Phase 1 – Rebuild Indian Lake – Glen Jenks		August 2004	\$6.1M	Complete
•Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV		June 2006	\$44.8M	Construction underway
•Phase 3 – Convert to 138 kV operation		2009	Under review	Scheduled for 2009, but need and scope is being reviewed
C: Morgan – Stiles 138 kV Rebuild as double circuit	Transfer capability	August 2005	\$7.0M	Project approved and under construction

Project Status Summary

Project	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
D: Morgan – White Clay 138 kV uprate (eventual rebuild as part of Element H)	Transfer capability	March, 2005	\$0.4M	No PSCW approval required. Project Complete.
E: Add 2 nd Plains transformer (250 MVA 345/138 kV)	Transfer capability	2008	\$5.4M	No PSCW approval required. Scheduled for 2008.
F: New Werner West Substation with 345/138 kV transformer	TLR mitigation, system security	December, 2006	\$15.3M	CA approved by the PSC in June 2005, awaiting real estate transactions resulting in a 6 month delay.
G: Cranberry - Conover – Plains Project	Transfer capability; Transmission service; Reliability, physical condition	December 2009	\$118.2M	CPCN to be submitted to PSCW in Nov 2005
•Rebuild 69 kV Conover - Plains to 138 kV		2009		Work scheduled to begin in 2008
•New 115 kV Cranberry - Conover		2007		Work scheduled to begin in 2007
H: New Morgan – Werner West 345 kV line & Clintonville – Werner West 138 kV line	Transfer capability, reliability	2009	\$132.3M	CPCN submitted to PSCW in March 2005
I: New Gardner Park – Central Wisconsin 345 kV line & Central Wisconsin 345 kV switching station	Required for new Weston 4 generation	2009	\$131.5M	CPCN submitted to PSCW in March 2005

Wrap Up

QUESTIONS & FEEDBACK