American Transmission Company LLC

Northern Umbrella Plan Michigan PSC Update

October 7, 2005





- Issues
- NUP Benefits
- Plan Update & Project Status



Issues

- Occurrence of Blackouts
- > Redispatch costs/Binding constraints
- > Rhinelander Loop load serving
- > Limited import/export capability between WI and MI
- > Transmission Service Requests
- > Eastern U.P. reliability and operating flexibility
- > Low voltages in the western U.P.



Issues (cont'd)

- > Transformer loadings in the Fox Valley area
- > Impact of proposed Weston generation
- > Presque Isle stability/U.P. export limitations
- > Age and condition
- > Additional U.P. load or generation







Constraints Impact on Price





Insufficient Capacity

- Before MISO Day 2 Transmission Loading Relief (TLR) events
 - 268 TLR categories 3A to 5 on Flow South between January 1, 2003 and February 28, 2005
- Under MISO Day 2 (April 1, 2005 through June 14th)
 - Real-time market:
 - 24 instances Flow South is binding constraint.
 - nearly two straight days in mid-May.
 - Over 191 hours during the first 75 days (10.6% of the time).
 - Day-ahead market:
 - 33 instances of Flow South as a binding constraint.
 - Local Generation Deficiency Emergency:
 - At least two instances for the U.P.
 - Required emergency dispatch of generation
 - Events 12 and 20 hours in length.
- \$10.17 LMP Premium ATC to rest of MISO market over 1st 5 Months









Generation Solutions

• Presque Isle Stability

- Existing stability problem at Presque Isle
- New north-central U.P. generation of any appreciable size likely would require substantial transmission system upgrades
- Weak transmission system south of the Iron Mountain area
 - Restricts the addition of new generation in that area.
- Lack of high capacity lines in the eastern and western U.P.
 - Few locations will accommodate significant new generation.
- Summary
 - Adding new generation in the U.P. will likely require new or upgraded transmission.



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 uprate
- 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)



NUP Benefits

Greatly reduce the likelihood of blackouts.

- Provides parallel transmission path around Green Bay area transmission system.
- Capacity limitation removed north of Green Bay.
- > Reduce or eliminate the binding constraints.
 - U.P. import capability increased from existing 220 MW to 525 MW.
- > Serve the Rhinelander Loop.
 - Provides adequate load-serving capability until 2018.
 - Establishes foundation for adding support beyond 2018.
- > Allow ATC to approve Transmission Service Requests in this area.
- Increase reliability in the Eastern U.P. and reduce or eliminate operating guides that split the U.P. system.



NUP Benefits (cont'd)

- > Improve western U.P. voltage profiles.
 - Provide acceptable voltages in the western U.P. 69 kV system until 2016+.
 - Improve the Copper Country voltages.
- Substantially relieve transformer loadings at North Appleton and Kewaunee (over 200 MW).
- Flexible enough to accommodate Weston 4 deliverability and stability issues
- Reduce Presque Isle generation tripping scheme
 - Line outage exposure reduced, 15 lines to 2 lines
 - Reduce amount of generation to be tripped (310 MW to ~140 MW max.)



NUP Benefits (cont'd)

> Replace older transmission facilities on existing R-O-W

- 194 miles of transmission that is 80+ years old.
- 12 miles of transmission that is 55+ years old.
- Create a robust system to more easily accommodate new generation, load growth, or new large loads



Plan Update/Project Status



Plan Update/Project Status

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		\$100.4M	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		October 2005		Rebuild/conversion underway
•A3: Amberg – Stiles		October 2006		Scheduled to start when A1 and A2 are complete.
B : Indian Lake – Hiawatha 69 kV to 138 kV Rebuild	TLR mitigation; voltage support;			Phase I complete; Phase II in progress
•Phase 1 – Rebuild Indian Lake – Glen Jenks	physical condition; local load-serving in Manistique area; required operating guide that splits the U.P. system	August 2004	\$6.1M	Complete
•Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV		June, 2006	\$41.2M	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	\$7.1M	Project approved and under construction



Plan Update/Project Status

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, but need/timing is being reviewed.	
F : New Werner West Substation with 345/138 kV transformer	TLR mitigation, system security	June, 2006	\$15.0M	CA approved by the PSCW in June 2005, awaiting real estate transactions which may result in a 6 month delay. Not yet resolved.	
G: Cranberry - Conover – Plains Project	Transfer capability; Transmission service; Reliability, physical condition		\$118.2M	CPCN to be submitted to PSCW in August 2005	
•Rebuild 69 kV Conover - Plains to 138 kV		Transmission service; Reliability	2009		Work scheduled to begin in <i>early</i> 2008
•New 115 kV Cranberry - Conover		2007		Work scheduled to begin in 2007	
H: New Morgan – Werner West 345 kV line (includes Clintonville – Werner West 138 kV)	Transfer capability, reliability	2009	\$132.3M	CPCN submitted to PSCW in March 2005	
I: New Gardner Park – Central Wisconsin 345 kV line (includes Central Wisconsin 345 kV switching station)	Required for new Weston 4 generation	2009	\$131.5M	CPCN submitted to PSCW in March 2005	



Project Cost Estimate Increases

Project	Original Estimated Project Cost	Revised Estimated Project Cost
A: Plains – Stiles 138 kV Rebuild	\$59.7M	\$100.4M
•A1: Plains – Amberg		
•A2: Amberg – West Marinette		
•A3: Amberg – Stiles		
B : Indian Lake – Hiawatha 69 kV to 138 kV Rebuild		
•Phase 1 – Rebuild Indian Lake – Glen Jenks	\$5.0M	\$6.1M
•Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV	\$24.4M	\$41.2M
•Phase 3 – Convert to 138 kV operation	\$8.0M	Under review
C: Morgan – Stiles 138 kV Rebuild as double circuit	\$6.9M	\$7.1M



Project Cost Estimate Increases

Project	Original Estimated Project Cost	Revised Estimated Project Cost
D : Morgan – White Clay 138 kV uprate (eventual rebuild as part of Element H)	\$0.5M	\$0.4M
E: Add 2 nd Plains transformer (250 MVA 345/138 kV)	\$4.6M	\$5.4M
F: New Werner West Substation with 345/138 kV transformer	\$9.6M	\$15.0M
G: Cranberry – Conover – Plains Project	\$36.9M	\$118.2M
•Rebuild 69 kV Conover – Plains 138 kV		
•New 138 kV Cranberry – Conover		
H: New Morgan – Werner West 345 kV line (includes Clintonville – Werner West 138 kV)	\$68.1M	\$132.3M
I: New Gardner Park – Central Wisconsin 345 kV line (includes new Central Wisconsin 345 kV switching station)	\$100.0M	\$131.5M
Estimated Project Cost Totals:	\$323.7M	* \$557.6M

* Revised estimate includes precertification costs



Cost Increase Drivers:

- **Project Complexity and Constructability**
 - Wetlands (increased use of construction matting)
 - Foundations (increased cost when rock is encountered.)
 - Facility accessibility

• Regulatory/Environmental Requirements

- Beyond those previously seen for other ATC projects
- Increased costs for mitigation plans (invasive species, lead paint)
- To change construction methods

• Changing Construction Market Conditions

- Between cost estimate time and procurement time
- Construction services
- Equipment/Materials







Cost Control Initiatives, Including

- Standardize Processes
- Process Control
- Define Performance Indicators
- Improve Estimating and Forecasting
- Continuous Improvement, including
 - Reorganize
 - Strategic sourcing
 - Strategic alliances
 - Long term demand planning
- Prioritization
- Managing to Budget
- Risk management



Plan Reconfirmation

- Major Project Review
 - Plains-Stiles
 - Indian Lake-Hiawatha
 - Plains-Conover-Cranberry
- Confirmed Needs
- Considered Practical Alternatives, including generation
- Concluded Projects are still appropriate, except those noted as under review.



Conclusions

- Reliable and Economic Transmission Service is critical to Michigan's Upper Peninsula and Wisconsin.
- The northern ATC system is severely constrained and must be upgraded.
- ATC has developed plans to improve reliability and increase capacity. ATC will invest approximately 500 Million dollars over ten years improving service to the U.P.
- ATC has reconfirmed these investments are critical if the needs of our region are to be met.
- ATC process improvements will be addressing project cost issues.





QUESTIONS & FEEDBACK

