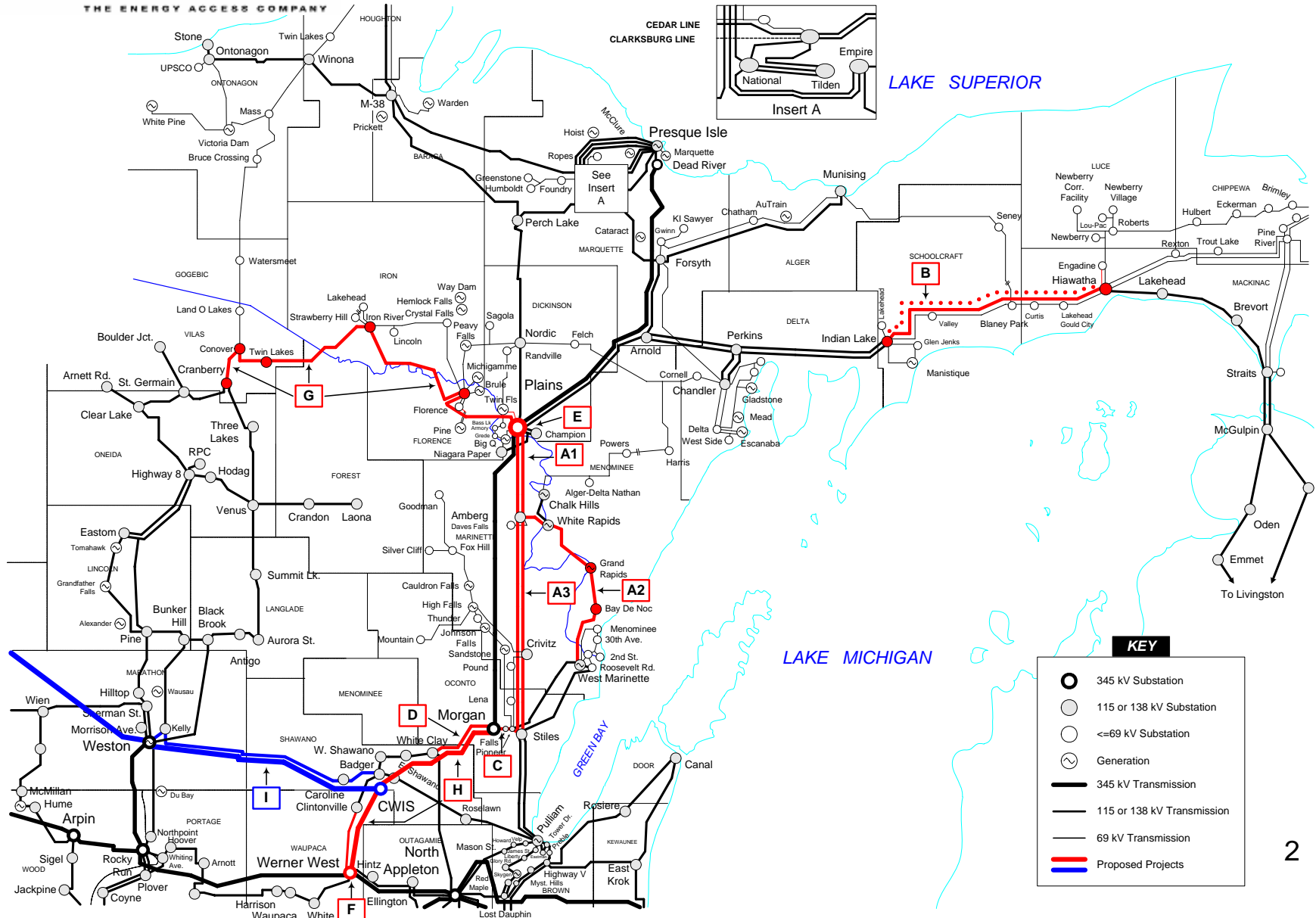




# **Northern Umbrella Plan and U.P. Capital Projects Update**

**2008 Transmission Business Briefing  
October 29, 2008**

# Northern Umbrella Plan





## NUP Projects

### Completed 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 2<sup>nd</sup> Plains Transformer (*cancelled in Feb. 2008*)
- F: New Werner West 345/138 kV Substation

### In-progress Projects:

- G: Cranberry – Conover – Plains Project
- H: Morgan – Werner West 345 kV Line (including Clintonville – Werner West 138 kV)
- I: Gardner Park – Central Wisconsin 345 kV Line (for generator interconnection)



# Project Overview and Status

## G. Cranberry-Conover-Plains

- **Phase 1 -- Schedule/Status**
  - New T-Line (Cranberry - Lakota Rd) placed in service 6/6/08
  - ROW restoration and related activities underway
  
- **Phase 2 -- Schedule/Status**
  - T-Line rebuilt to Twin Lakes Substation (in-service August '08)
  - T-Line reconstruction underway to new Iron Grove Substation
  - NFS Special Use Permit in Nicolet Forest received
  - NFS Special Use Permit pending for Ottawa Forest
  - Targeting February/March '09 for completion of Phase 2
  
- **Phases 3 & 4 -- Schedule/Status**
  - T-Line and substation design/procurement underway
  - Easement procurement will begin Q4 '08
  - Construction planned to start March '09
  - Targeting June '10 for completion of Phases 3 & 4



## New Morgan-Werner West 345kV Line (52.8 Mi)

ATC Executive approval	2/05
ATC Board approval	2/05
File CPCN application	3/05
CPCN issued	6/06
Morgan – White Clay, 13.2 Mi Werner West – Clintonville, 17.5 Mi Clintonville – Highway 22, 7.7 Mi Highway 22 – White Clay, 15.4 Mi Werner West SS, 345/138 kV	Complete 10/7/07 70% Complete Construction 12/08 - 4/09 Construction 4/09 - 10/09 Complete 12/06
Construction period, ~58% Complete	1/07-12/09
Project in-service	12/09



## New Gardner Park-Central WI 345kV line (51 Mi)

ATC Executive approval	2/05
ATC Board approval	2/05
File CPCN application	3/05
CPCN issued	6/06
Belle Plain Tap – Highway 22, 1.1 Mi Caroline – Belle Plain Tap, 6.9 Mi Structure 773 – Whitcomb, 20.33 Mi Gardner Park – Structure 773, 6.53 Mi Whitcomb – Caroline, 16.1 Mi Highway 22 Substation	Complete 6/07 Complete 7/07 Complete 4/08 98% Complete 10% Complete 73% Complete
Construction period; ~ 78% Complete	1/07 – 12/09
Project in-service	December 2009



# Project Status Summary

Project Name	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
<b>A:</b> 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		\$94.3M	Complete
•A1: Plains – Amberg		October 2005	-	Complete
•A2: Amberg – West Marinette		November 2005	-	Complete
•A3: Amberg – Stiles		October 2006	-	Complete
<b>B:</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			Complete
•Phase 1 – Rebuild Indian Lake – Glen Jenks		August 2004	\$6.1M	Complete
•Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV		March 2006	\$46.2M	Complete
•Phase 3 – Convert to 138 kV operation		N/A	N/A	Not part of the Northern Umbrella Plan
<b>C:</b> Morgan – Stiles 138 kV Rebuild as double circuit	Transfer capability	May 2006	\$8.0M	Complete



# Project Status Summary

Project Name	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
<b>D:</b> Morgan – White Clay 138 kV uprate (eventual rebuild as part of Element H)	Transfer capability	March 2005	\$0.4M	Project Complete.
<b>E:</b> Add 2 <sup>nd</sup> Plains transformer (250 MVA 345/138 kV)	Transfer capability	Cancelled		Cancelled
<b>F:</b> New Werner West Substation with 345/138 kV transformer	TLR mitigation, system security	December 2006	\$14.2M	Project Complete.
<b>G:</b> Cranberry – Conover – Plains Project	Transfer capability; Transmission service; Reliability, physical condition	See below	\$127.6M	
• Phase 1: New 115 kV Cranberry – Conover		June 2008	-	In-service. Energized first week of June '08.
• Phase 2, 3 & 4: Rebuild 69 kV Conover – Plains to 138 kV		June 2010	-	Design/procurement activities started. Will design/construct from west to east.
<b>H:</b> New Morgan – Werner West 345 kV line & Clintonville – Werner West 138 kV line	Transfer capability, reliability, and network service.	2009	\$139.0M	See Page 8 for detailed status. Project under construction and on schedule.
<b>I:</b> New Gardner Park – Central Wisconsin 345 kV line & Central Wisconsin 345 kV switching station	Required for new Weston 4 generation	2009	\$124.3M	See Page 9 for detailed status. Project under construction and on schedule.





## Northern Umbrella Plan Summary

- Costs estimated at \$560.1 million for all NUP projects
- \$430 million spent on NUP as of September 2008
- Of the 9 projects –
  - 5 are complete and in-service
  - 3 are under construction
  - 1 has been cancelled
- Targeting 2010 for completion of all NUP projects



## Other Capital Projects

### Eastern U.P. Emergency Upgrades

- Completed to mitigate risks associated with low Lake Superior water levels
- Transformer at Hiawatha Substation
- Transformer at Straits Substation
- Capacitor Bank at Nine Mile Substation
- Completed in ~3 months
- Cost to construct \$6.4 Million



## Other Capital Projects

### Rebuild of Laurium No. 1 Line

- Located between Houghton and Calumet
- Driven by age/condition/reliability and capacity concerns
- Started construction in September 2007
- Placed in service in May 2008
- Cost to construct \$8.1 million



## Other Capital Projects

### North Lake Substation

- Located near Ishpeming
- Greenfield construction
- Driven by age/condition/reliability concerns at Cedar Substation
- Began construction in Fall 2007
- Anticipated completion May 2009
- Anticipated cost is ~\$12 Million



## Other Capital Projects

### Pine River Substation

- Located near Rudyard
- Brownfield construction
- Driven by age/condition/reliability concerns at existing Pine River Substation
- Began construction in Fall 2008
- Anticipated completion Fall 2009
- Anticipated cost is ~\$9 Million



## Other Capital Projects

- New Alger-Delta T-D Interconnection
  - Located in Marquette County
  - Anticipated completion December 2008
  - Anticipated cost is ~\$900K
- New UPPCO T-D Interconnection
  - Located in Keweenaw County
  - Anticipated completion April 2009
  - Anticipated cost is \$250K
- New City of Norway T-D Interconnection
  - Located in Dickinson County
  - Anticipated completion April 2009
  - Anticipated cost is ~\$230K



## Other Capital Projects

- Asset Renewal (reliability)
  - Breaker/switch/relay replacements
  - Transmission Line Rating Studies
  - Pole replacements (>100 poles at ~ \$3M total)
- New Capacitor Banks (voltage support)
  - Munising (in-service 2008)
  - Ontonagon (in-service 2008)
  - Hiawatha (September 2009)
  - L'Anse (September 2009)
  - M-38 (September 2009)
  - Perkins (October 2009)
  - Indian Lake (June 2010)