

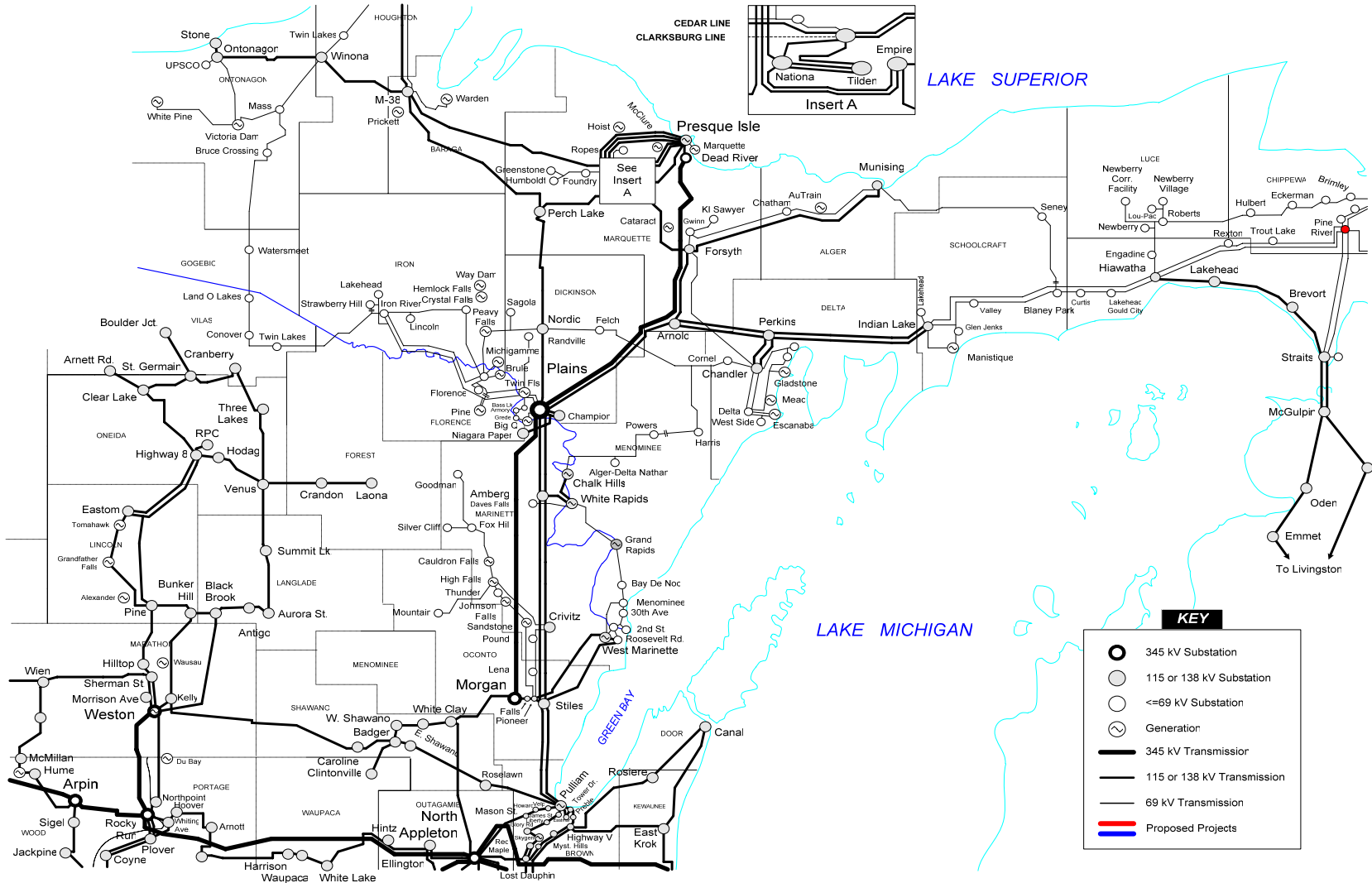


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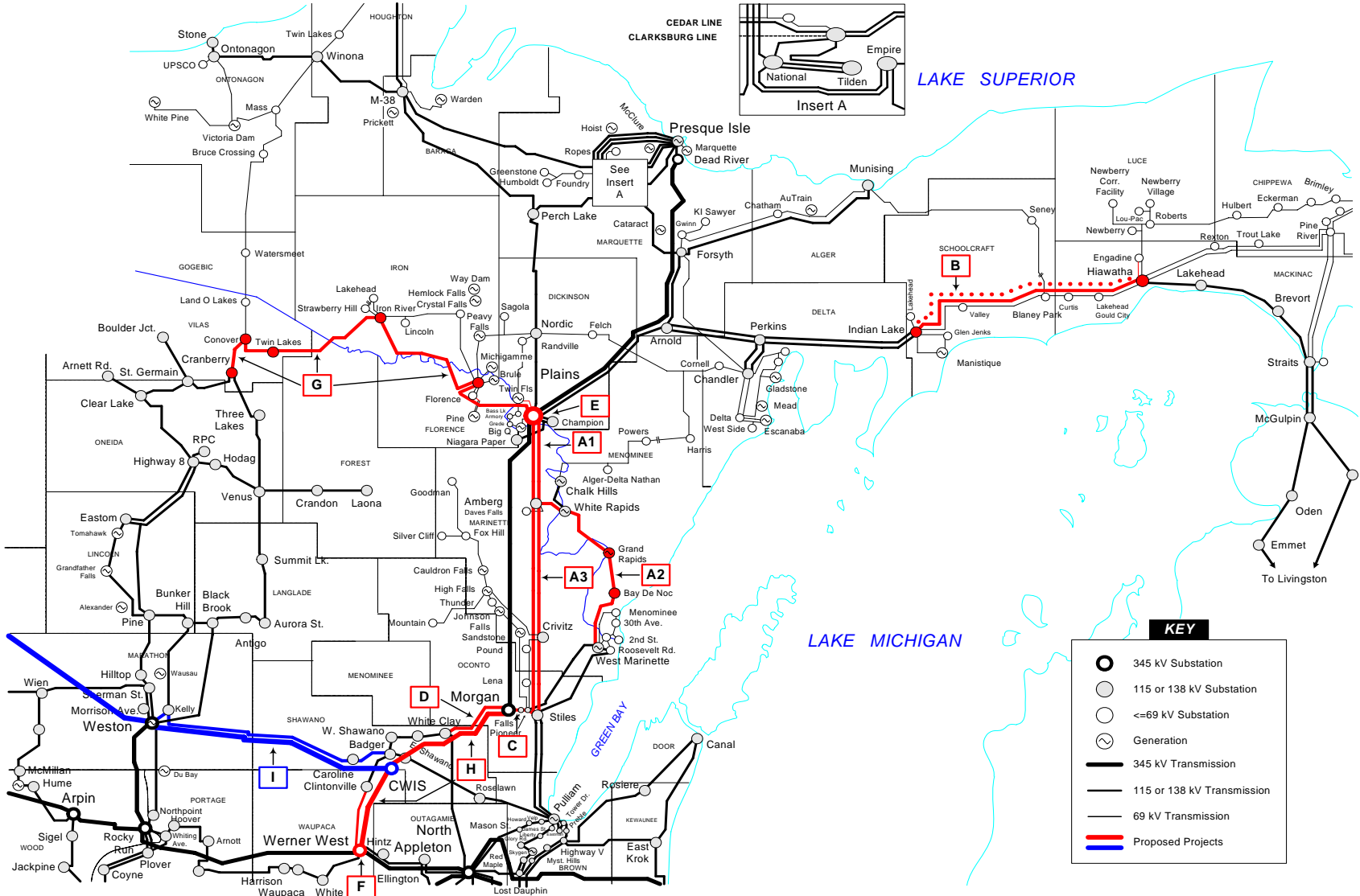
# **Northern Umbrella Plan Update**

**March 24, 2010**

# System Prior to NUP Projects



# Northern Umbrella Plan



## **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 (*Project cancelled in Feb. 2008*)

**F:** New Werner West 345/138 kV Substation

**I:** Gardner Park – Central Wisconsin 345 kV Line (for generator interconnection)

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

## **In-progress projects:**

**G:** Cranberry – Conover – Plains Project

## G. Cranberry-Conover-Plains

- Scope
  - Phase 1: New 15 miles of 115kV line (overhead and underground) from Cranberry to new Lakota Road Substation with modifications at various substations including Conover SS
  - Phase 2: Rebuild 69kV line from Conover SS to Iron River SS to 138kV including new Iron Grove SS
  - Phases 3 and 4: Rebuild 69kV line from Iron River SS to Plains SS to 138kV (single, double and triple circuit configurations) with modifications at various substations including Aspen SS



# Project Overview and Status

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## **G.Cranberry-Conover-Plains (cont'd)**

- Phase 1: New line between Cranberry and Lakota Rd Substation placed in service 6/6/08 and all Work Orders closed 12/31/08
- Phase 2: Line rebuild to Iron Grove SS placed in service 2/20/09 and all Work orders closed 12/31/09
- Phase 3: Line rebuild from Iron Grove SS to Aspen SS placed in service 8/24/09
- Phase 4: Line rebuild from Aspen SS to Plains planned in service date is 3/23/10



# Project Status Summary

Project Name	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
<b>A: Plains – Stiles 138 kV Rebuild</b>	Physical condition; transfer capability; solution also results in a more robust parallel path for 2/3 of P-S corridor		\$92.8M	Complete
• A1: Plains – Amberg		October 2005	-	Complete
• A2: Amberg – West Marinette		November 2005	-	Complete
• A3: Amberg – Stiles		October 2006	-	Complete
<b>B: Indian Lake – Hiawatha 69 kV to 138 kV Rebuild</b>	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	\$6.2M	Complete
• Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV		March 2006	\$47.6M	Complete
• Phase 3 – Convert to 138 kV operation		N/A	N/A	Not part of the Northern Umbrella Plan
<b>C: Morgan – Stiles 138 kV Rebuild as double circuit</b>	Transfer capability	May 2006	\$7.9M	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	\$14.1M	Project Complete
<b>G:</b> Cranberry – Conover – Plains Project	Transfer capability, Transmission service, Reliability, physical condition	See below	\$104.3M	
– Phase 1: New 115 kV Cranberry – Conover		June 2008	-	In-service. Energized 6/6/08
– Phase 2, 3 & 4: Rebuild 69 kV Conover – Plains to 138 kV		March 2010	-	Construction started July '08. Line rebuilt & energized from Lakota Rd. SS to Aspen SS
<b>H:</b> New Morgan – Werner West 345 kV line & Clintonville – Werner West 138 kV line	Transfer capability, reliability, and network service	2009	\$150.1M	Project Complete
<b>I:</b> New Gardner Park – Central Wisconsin 345 kV line & Central Wisconsin 345 kV switching station	Required for new Weston 4 generation	2009	\$127.5M	Project Complete





## Northern Umbrella Plan Summary

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- Current estimated cost for all projects is \$550.9 million (compared to December 2005 estimate of \$559.5 million)
- Total project spending to date is approximately \$548.4 million through February 2010
- Of the 9 projects,
  - 7 are complete and in-service
  - 1 is in construction (in-service 3/23/10)
  - 1 has been cancelled