

Northern Zones Planning Discussion

May 12, 2003

Introduction

1. Recap of March 4 meeting
2. Actions taken by ATC since last meeting
 - Evaluated all short term, intermediate term and long term options
 - Opened 6912
 - Developed U.P. Operating Guide
 - ⇒ Capacitor operation
 - ⇒ Voltage monitoring
 - ⇒ Switch Plains-Morgan reactors (in progress)
3. Results of Actions
 - Higher Flow South limit
 - Significantly fewer TLRs
 - Significantly lower redispatch costs
 - Significantly fewer ESE system separations

Review of Northern Zones Needs

1. Increase "Flow South" limit/reduce # of TLRs/reduce redispatch
2. Address Hiawatha-Indian Lake system separations/reduce # of TLRs
3. Address physical system condition issues
4. Improve reliability of service to Rhinelander area, western U.P. and Manistique areas
5. Address Fox Valley 345/138 kV transformer loadings (service limitations)
6. Address Plains 138/69 kV transformer loading
7. Interconnect new load and generation
8. Network loads served radially
9. Voltage support west of Fox Valley

Options under consideration

1. Intermediate term options
 - Additional capacitor banks
 - ⇒ Not effective for increasing Flow South limit
 - ⇒ Supplemental benefit in Rhinelander Loop and western U.P.
 - D-SMES
 - ⇒ Not effective for increasing Flow South limit
 - ⇒ Supplemental benefit in Rhinelander Loop
 - Phase shifting transformers
 - ⇒ Not effective for increasing Flow South limit
 - ⇒ Not effective for addressing ESE system separations

2. Long term planning options

Phase 1 – Preliminary Preferred Options

Hiawatha-Indian Lake 69 kV
Werner West 345/138 kV substation
Plains-Conover-Cranberry 138 kV
West Marinette-Amberg 138 kV
Plains-Amberg or Amberg-Chandler 138 kV
Plains 345/138 kV transformer
Morgan-Werner West 345 kV
Weston-Central Wisconsin 345 kV

Phase 2 – Preliminary Preferred Options

Dead River-Plains 345 kV
Presque Isle-Forsyth 138 kV
Presque Isle-Perch Lake-Nordic-Plains 138 kV
Munising-Blaney Park 138 kV
Hiawatha-Indian Lake 138 kV
Hiawatha-Pine River-Straits 138 kV
Weston-Venus-Plains 345 kV
[Venus-Crandon-] Laona-Goodman-Amberg 138 kV
Conover-Land O Lakes-Bruce Crossing-Mass 138 kV

3. Other Options Considered

Future Activities

Resolve outstanding planning issues

- ⇒ Impact of U.P. generation/load increase/decrease scenarios
- ⇒ Morgan-White Clay
- ⇒ Plains-Amberg or Amberg-Chandler

Investigate constructability/construction planning