Zone 2 - 2012 study results

Refer to Table ZS-1 and Figure ZS-5

Summary of key findings

- Low voltages throughout the Newberry area under contingency necessitate a project to transfer load off of the Hiawatha-Roberts 69 kV line 6911 around 2012,
- Maintaining reliability of service to load in and around the greater Escanaba area requires that system reinforcements be implemented in the near term, and
- Power flows particularly through the eastern U.P. necessitate the need for system reinforcements in the near term.

There were facility overloads and several facilities near their emergency ratings in Zone 2 based on the 2012 analysis. Many projects are either planned or proposed to address these near-term thermal issues by 2014. Details regarding these projects are described in this section and in the Zone 2 – 2016 study results section.

Eastern U.P.

High voltages have been experienced on an intact system in real time in the eastern U.P. The high voltages usually occur at lighter load levels. The primary sources are the Straits-McGulpin 138-kV submarine cables, which are significant reactive power sources (13 MVAR each) and act like capacitor banks which raise system voltages.

To mitigate this operating limitation in the near term, two 13.8-kV reactors (total 25 MVAR) were installed at the Straits Substation in 2010.

Escanaba area
As part of the ATC Energy Collaborative – Michigan, several projects were identified to address system issues in the Escanaba area by 2012.

- Install a second Chandler 138/69-kV transformer (2012),
- Install Delta 69-kV bus tie breaker (2012), and
- Replace five 69-kV breakers at Delta Substation (2012).

These Escanaba area projects were identified as a result of the analyses of several potential futures, which indicated low voltages and overloaded facilities throughout the 69-kV system in central Delta County. These projects also address many System Operations and Asset Renewal limitations. There are numerous System Operations needs associated with the Escanaba area driven by outage coordination issues that make maintenance work very difficult and/or expensive to perform. In addition, there are local issues associated with

the lack of generation availability and/or possible network transmission service additions. Additional projects to be installed by 2016 are identified in the 2016 Results section.

Munising/Newberry area
To address Munising area limitations, the following project has been proposed in the 2012 timeframe:

- Engadine load move project
  - A facility outage of the Hiawatha-Engadine 69-kV line situates the Engadine load at the end of a long radial feed and causes the voltage criteria on the Newberry area 69-kV buses to be exceeded, and
  - This project will address these low voltages under low generation and single contingency conditions.

Western area
No western area reinforcements are needed through 2012.

Projects whose "Need date" precedes the "In-service date"

- Large power flows through the eastern U.P. of Michigan result in inadequate loading performances and voltage, increased system losses, and high Locational Marginal Prices (LMPs) for local power purchases. Current measures taken to address the high flows include splitting the U.P. system almost all of the time to eliminate the flows through the U.P. and expensive generation redispatch to try to accommodate urgent maintenance outages in both the U.P. and northern lower peninsula. Please refer to the Zone 2 - 2016 Study results for further information and the solution to these issues

Projects whose "In-service date" precedes the "Need date"

- None