



Zone 1 - 2014 study results

Refer to [Table ZS-2](#) and [Figure ZS-2](#)

Summary of key findings

- Potential voltage and loading issues on the transmission facilities in the Stevens Point and Wisconsin Rapids areas are beginning to appear under certain contingencies. Further analysis and study work is required to define the need and identify potential reinforcements.
- Low voltages and overloads for critical outages in the Castle Rock Lakes area may be adequately addressed in the short term with generation redispatch. However, transmission reinforcements such as the expansion of existing capacitor banks and the rebuilding of existing 69-kV transmission lines will eventually need to be implemented.
- Low voltages and overloaded 69-kV facilities around the Berlin\Ripon area will necessitate that a combination of reinforcement projects be implemented.

Marginal voltages were observed in the Wisconsin Rapids area on the 138-kV system between the Sigel and Saratoga Substations for most critical contingencies. Also, at the Rocky Run Substation one of the three bulk power transformers is becoming heavily loaded under contingency. Although further study is still needed to better understand the system issues behind these new findings, they appear to be associated with local load-serving issues.

Low voltages and overloads in the Castle Rock Lakes area will necessitate a combination of reinforcement projects be implemented. The proposed reinforcements include the expansion of the existing McKenna capacitor bank, the rebuild of the Castle Rock–McKenna 69-kV circuit and the load shift associated with an ACEC Badger West T-D interconnection. Also, to help with the low voltage issues in the Castle Rock area, the Necedah distribution substation will be converted from 69-kV to 138-kV operation. Additionally, redispatch of local generation may help alleviate these issues.

To address low voltages and overloads elsewhere within Zone 1 and 3, additional capacitor banks will be needed at the Ripon Substation, and an additional transformer will be installed at the Wautoma Substation. Additionally, as noted in the [2010 study results](#), the Metomen 138/69-kV transformer will be replaced with a 100 MVA transformer in the year 2017.

In response to a customer request for a new distribution interconnection, a new 69-kV transmission line will be placed in-service in 2014 from the Ripon Substation to the Metomen Substation to connect the new Southwest Ripon Substation.

Projects whose “Need date” precedes the “In-service date”

- None

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- None