



## Zone 4 - 2014 study results

Refer to [Table ZS-2](#) and [Figure ZS-14](#)

### Summary of key findings

- ❑ Additional reinforcements could be required in Northern Door County to facilitate maintenance outages and improve system intact as well as voltages under contingency conditions.
- ❑ Additional reinforcements are being considered at the Kewaunee Substation to improve offsite power reliability of the nuclear plant, provide operations and maintenance flexibility and provide more economical base generation to the network and marketplace under certain transmission outage conditions.

Two Northern Door County projects are being considered to address potential low voltages under normal and single contingency conditions and potential thermal overloads under single contingency conditions. The two projects consist of:

- ❑ Construct a Canal-Dunn Road 138-kV line (roughly 7.7 miles) and install a new 138/69-kV transformer at Dunn Road Substation by June 2012.
- ❑ Construct a second Dunn Road-Egg Harbor 69-kV line (roughly 15 miles) by June 2016.

The rebuild of the Canal-Dunn Road 69-kV line as a 138/69-kV double-circuit line will provide an additional link to northern Door County. The placement of a third 138/69-kV transformer in Door County at a different substation from the other two will provide geographic diversity for the transformation.

The proposed long-term solution in Door County includes implementing reinforcements in two phases. The first phase includes the Canal-Dunn Road 138-kV line (2012) described above, and the second phase includes a new provisional 69-kV circuit between the Dunn Road and Egg Harbor 69-kV substations (2016). The in-service dates for both phases were able to be deferred to their current in-service dates as a result of installing the distribution capacitor banks at Sister Bay in 2008 (See [Zone 4 – 2010 study results](#)).

This long-term solution will address not only the potential low voltages in the area under normal and single-contingency conditions but also the potential overloads of the 138/69-kV transformers at Canal and various 69-kV lines in the area under single-contingency conditions. The second 69-kV line between Dunn Road and Egg Harbor substations will provide a second source to the area and facilitate maintenance outages of the existing Dunn Road-Egg Harbor 69-kV line. The projects will provide more capacity and improve voltages to northern Door County. The Dunn Road-Egg Harbor 69-kV line is a provisional project pending Best Value Planning to determine how best to support maintenance outages, voltage and radial load served by the Egg Harbor and Sister Bay Substations.

The reconfiguration of the Kewaunee switchyard along with the addition of a second 345/138-kV transformer is being proposed in order to increase offsite power reliability for the nuclear plant, facilitate switchyard maintenance, provide more generation to the ATC footprint under certain transmission outages and to bring more economical base load generation to the marketplace. This



# 10-Year Assessment

An annual report summarizing proposed additions and expansions to the transmission system to ensure electric system reliability.

2009

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project is being considered as a joint effort with Dominion Energy with a tentative in-service date of 2011.

A provisional project for replacing the two existing Glenview 138/69-kV transformers has been delayed from 2014 and is now scheduled for 2016. It would address the potential overload of the transformers under single contingency conditions. The transformer overloads are primarily due to the potential for higher load demand at Brillion Iron Works (BIW). This project may be able to be deferred several years by transferring load from the Glenview 69-kV bus to the 138-kV buses, depending upon the foundry's load cycle.

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

None

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

None