



## **Zone 5 – 2012 study results**

Refer to [Table ZS-1](#) and [Figure ZS-17](#)

### *Summary of key findings*

- Some of the line loading and low voltage issues in Zone 5 occur as a result of opening substation bus tie breakers; the remedy is to adjust local generation within applicable timeframes.
- Outages of one of the Arcadian – Waukesha 138-kV lines can cause high flows on the other line.

Circuit breaker outages at Pleasant Prairie and Oak Creek can cause transformers at Bain and Oak Creek to exceed their summer emergency ratings. Loading relief can be achieved by backing down local area generation, keeping facilities within applicable ratings.

An outage of either one of the Arcadian–Waukesha 138-kV lines (KK9962 and KK9942) results in the other Arcadian–Waukesha 138-kV line approaching their summer emergency ratings. Re-dispatching local area generation will provide interim relief.

Two 138-kV buses in southeastern Wisconsin indicate marginal bus voltage under single contingency conditions during the summer peak period. The 138-kV buses experiencing marginal bus voltages are Maple and Germantown Substations. Neither bus drops below 90 percent under contingency. ATC [Planning Criteria](#) calls for maintaining bus voltages at 90 percent or higher under intact system conditions.

No performance limits were exceeded for Category A conditions for all 2012 analysis except the high voltage on the 138-kV buses found in the Racine, Kenosha and Oak Creek area in the 2012 minimum load model. This issue can be addressed by re-dispatching area generation.