

MICHIGAN PUBLIC SERVICE COMMISSION

REPORT

BLACKOUT OF AUGUST 14, 2003

EXECUTIVE SUMMARY

The August 14, 2003 blackout was a wake-up call concerning reliability of our nation's electric grid. What started out as a typical warm summer day, which looked largely uneventful to most electric reliability coordinators (and others) in the northeastern region of the country took a sharp u-turn at approximately 4:10 p.m., when, in a matter of seconds, 50 million North Americans found themselves without power. North America's largest ever outage stretched from southeastern Michigan through Ontario and northern Ohio, all the way east to New York City. Through this event, North Americans were abruptly reminded how vital electricity is in our everyday lives and how tightly interconnected and vulnerable this country's electric grid has become.

The Public Service Commission did not attempt to determine the root cause of the blackout. However, our investigation did not reveal any evidence that Michigan utilities or transmission operators were responsible for the blackout. All of the transmission line and power plant outages that occurred in the two and one-half hours preceding the power surges that precipitated the blackout involved the facilities of FirstEnergy and American Electric Power in Ohio. These events led to two large power surges as power from southern Ohio attempted to reach load in northern Ohio. The first surge was from southern Ohio, west to Indiana, north to western Michigan, east to the Detroit area, and south to northern Ohio. This surge resulted in the opening of interconnections in central Michigan between the western part of the State and the Detroit area. These interconnection trips occurred as designed to prevent damage to equipment from the power surge. The second power surge involved a giant loop from southern Ohio to Pennsylvania to New York to Ontario to Michigan to northern Ohio. This surge resulted in the blackout around what is generally referred to as the Lake Erie Loop.

Michigan utilities and transmission companies were not notified of the problems being experienced by FirstEnergy and American Electric Power and received no advance warning of the potential blackout. The first indication in Michigan of an impending emergency occurred at 4:09:27 p.m. when an interconnection in central Michigan exceeded its emergency rating as a result of the first power surge coursing through the State. A minute later the power outages began and by 4:15 p.m., the blackout was complete. A total of 2.3 million customers of The Detroit Edison Company, Consumers Energy Company, and the Lansing Board of Water and Light were left without power.

Our investigation leads to the conclusion that electric reliability has been seriously compromised by the fragmented and ineffective regulation of the electric transmission system. The Midwest market is coordinated through two regional transmission organizations (RTO), rather than one. Moreover, the two RTOs are voluntary organizations that do not cover contiguous territories but rather are intermixed in a checkerboard fashion. This “Swiss-cheese” approach to coordination prevents any one entity from comprehending the overall situation. The situation is exacerbated by a lack of enforceable reliability standards. The North American Electric Reliability Council (NERC) is responsible for the development of procedures for reliability coordinators, but lacks the authority to enforce those standards. A NERC investigation of compliance in 2002 found that there were 444 violations of operating measures totaling \$9 million in “simulated sanctions”. In addition, the Federal Energy Regulatory Commission (FERC), the agency responsible for economic regulation of transmission, indicates that it lacks authority to develop or enforce reliability standards.

In our opinion, the simulated enforcement of reliability standards is inadequate to protect Michigan or the nation’s citizens. We recommend that the FERC be authorized to require membership in a single transmission organization for each region and have the jurisdiction to mandate the development of reliability standards and enforce those standards with real rather than simulated sanctions.

With regard to recovery from the blackout, our investigation reveals that Detroit Edison, Consumers Energy, and the Lansing Board of Water and Light performed appropriately. However, we conclude that there were two factors that caused restoration in Michigan to lag behind other States. First, Detroit Edison’s computerized dispatch system was inoperable due to the blackout, which required additional time and effort for the restoration. We recommend that the utility conduct a study of potential modifications to the system and report to the Commission on the results. Second, the failure of rupture disks at four of the Detroit Edison generating plants slowed the pace of restoration. Since rupture disks are a feature designed to protect against more serious damage to the units, this does not necessarily indicate a problem. However, we are recommending that Detroit Edison analyze the operation of the rupture disks on its units, including a comparison with the operation of disks on other utility systems affected by the blackout, to determine whether any changes are warranted.

Finally, with respect to emergency planning and response efforts, we conclude that the operations conducted through the State Emergency Operations Center (SEOC) were effective in implementing the emergency response plans. However, we note two important improvements that can be made to better prepare for future contingencies. First, the Commission Staff members who participated at the SEOC were volunteers. We conclude that Staff for the SEOC should be assigned in advance and receive training in the operations required to implement the emergency plans. Second, we note that the existing emergency electrical procedures were adopted in 1979 and have not been reviewed since. Although those particular procedures were not needed in this instance, we conclude that it is time for them to be reviewed and, if necessary, updated.