

CLARIFICATION PAPER
FROM THE EVANSTON UTILITY COMMISSION

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ELECTRIC RELIABILITY IN EVANSTON AND ComEd's RESPONSE TO STORMS

Configuration of the System for Reliability

Over the past 20 years, ComEd has invested in several ways in the configuration of its electric distribution system in Evanston.

- The switchgear at TSS 47, the hub of the Evanston distribution system, located south of Emerson and east of Dewey, was replaced with state-of-the-art gear over the past five years. This switchgear is highly automated and is controlled entirely remotely from the ComEd Joliet load dispatch office.
- The supervisory control and data acquisition (SCADA) system that is used to control the entire ComEd distribution system was replaced about five years ago with one of the world's most advanced SCADA systems. This system allows operators at consoles in the load dispatch office to have coordinated central control of all load switching. Maintenance planning is streamlined and response to incidents small and large is based on a great deal of information, delivered to the dispatcher instantly. The SCADA system contains complete information on each circuit, the devices on the circuit and the customers on the circuit. It includes an automatic diagnostic system that identifies commonality between out-of-service callers to rapidly focus on the likely failed device. This means the repair crew knows the likely culprit before they arrive at the scene. Computerized maps and circuit diagrams in the ComEd line trucks lead the crew directly to the location of the failed device.
- Long circuits serving many customers have capability to be back-fed from another circuit at the opposite end. They also have mid-circuit circuit breakers and fuses to provide options to bring customers on part of the circuit back in service, even when some customers cannot be restored. Over the past 10 years, ComEd has automated more and more of these mid-circuit devices, providing remote control and/or automatic reclosure. This changes outages of a half hour or more into outages of 5 seconds (remote control) or a flicker (automatic reclosure). The latest is an automatic reclosure breaker on Isabella Street that will be appreciated in the neighborhood north of Evanston Hospital.

System Maintenance

The deferred maintenance period of the 1970s and '80s is history. With prodding and planning from Evanston's Energy Commission (now expanded to the Utility Commission) ComEd has invested in a great deal of equipment upgrade in Evanston.

- Of the four main transformers at TSS 47, three have been replaced over the last ten years, and doubled in capacity, from 20 MVA to 40 MVA. The fourth is scheduled to be replaced in the near future. These transformers cost on the order of \$250,000 each, plus installation.
- The TSS 47 switchgear replacement, which included a new building, all-new cabling, and a state-of-the-art fire protection system also counts as a major maintenance item.
- ComEd regularly monitors the loading of each circuit, both the average daily load and the predicted maximum load on hot days. Circuits are re-configured to prevent loads that could damage cable and devices in the hot weather. During periods of high growth in Evanston, the City has contributed to this effort by providing ComEd advance notice of expected new building developments that will require system re-configuration.
- The overhead distribution system has benefited from a substantial program of replacing unreliable cable and in-line control and switching devices.
- Extensive replacement of superannuated utility poles has improved overhead reliability.
- The Utility Commission monitors ComEd's tree trimming program to assure that the frequency of trimming is adequate, while avoiding excessively severe trimming experienced on one occasion in the past.
- ComEd has historically treated the underground system somewhat differently from the overhead system. Once the overhead system reached a very high degree of reliability, the Utility Commission urged ComEd to begin to focus on the underground. Progress has been slow as ComEd has had to come to terms with new ways of viewing the underground system. However, in 2010, without fanfare, ComEd replaced a number of cables that run under Emerson Street from TSS 47 to Green Bay Road. This activity will prevent a half dozen major outages that would otherwise have occurred over the next five years.

Incident Response

ComEd's response to daily incidents is generally quite good. ComEd has adequate trucks and crews. Central dispatch of repair crews helps utilize the crews more efficiently. Computers in trucks, communicating with central dispatch, assure that the crews know what to do when they get to the source of the trouble.

The Utility Commission has had one complaint with dispatching of maintenance/repair crews. The Evanston Fire Department, as every fire department, cannot fight an electrical fire until the building is disconnected from the power distribution system. The disconnect can only be performed by a ComEd crew. Such incidents are rare, but important. However, ComEd refuses to make this function a factor in making crew and truck dispatch assignments. Because Evanston is in a corner of the Skokie maintenance/repair zone, it is possible that no truck will be close to Evanston when an electrical fire occurs in Evanston. An incident in 2009 occurred when all the trucks were in Wheeling and an electrical fire broke out in Evanston at evening rush hour. Firefighters were delayed in beginning to fight the fire for one hour.

Major Storm Response

The configuration and the maintenance described above have led to excellent response to the many major storms that have hit Evanston, the North Shore and the entire Northern Illinois ComEd territory over the past five years. The Summer of 2011 has been a very special exception to the satisfactory results that had been enjoyed up to that time. What was different? Not the system. Not the trucks and crews. The weather is what was different. Both the severity and the number of storms in 2011 were extraordinary. This was definitely an “Act of God.”

Storms in the Summer of 2011 were stronger than in past years. The winds were more powerful than typical. The winds were sustained for greater duration than typical. The winds were over a much larger area than is typical. Service was barely restored following one storm before the next one hit. The total amount of ComEd’s distribution system that was destroyed exceeded all previous years. The total amount of crew labor that had to be committed to repair/replacement exceeded all previous years. With the resources of ComEd, the repairs following the July storm would have required weeks; however, Exelon called in ComEd’s sister company, Philadelphia Electric, which brought in many crews with their trucks. Other, unrelated companies sent trucks and crews – Alabama Power responded with 35 crews and trucks.

The logistics were incredible, yet every customer was restored in only five days. Of course, with such a diverse group of repair personnel, communication was difficult. Customers were frustrated by the difficult –to-impossible task of predicting exactly when each customer would regain service.

It is important to bear in mind that the biggest victim of this Act of God was ComEd. They suffered enormous property losses, huge repair bills and difficult impacts on employee morale from the repeated storms.

Despite the widespread damage and losses, some areas of Evanston were spared and suffered no loss of electrical service. However, for those damaged areas and the lengthy restoration in certain areas, customer dissatisfaction and the frustration of City officials is understandable. Rather than to continue to criticize ComEd for their response in service restoration for these unusual 2011 storms, we must resolve to work together to improve collective efforts when future storms ravage Evanston.