

Executive Summary

I. Project Objective

The Liberty Consulting Group (*Liberty*) investigated Commonwealth Edison Company's (*ComEd's*) transmission, distribution, and related management systems to describe and evaluate those systems as they existed during the summer of 1999, compare ComEd's systems to good utility practices, report areas where ComEd's systems fell short of those good utility practices, and specify the actions needed to move ComEd to the higher standard. This is the second of a series of reports on the results of Liberty's investigation. Liberty issued its first report in June 2000. Chapter One of the first report summarized Liberty's investigation methods and provided a list of terms and definitions that may be useful to the reader of this second report.

As a result of the outages that occurred in July and August of 1999, ComEd undertook many initiatives to improve its performance. The changes resulting from these initiatives were occurring during this investigation. It may be that ComEd is in the process of implementing some of the recommendations made in this report. In some cases, Liberty was aware of ComEd's current plans or actions, and mentioned them in this report. However, Liberty did not allow ComEd's current activities and plans to influence the content of this report. It was the intent of Liberty and the Illinois Commerce Commission Staff that this report will serve as the basis for a future investigation of ComEd's systems, after ComEd has had reasonable time to bring them up to the standards of good utility practice.

The Commission stated and Liberty adopted the following goals for the project:

1. evaluate ComEd's planning, procedures, and practices used to mitigate any deficient system performance;
2. evaluate ComEd's planning for and execution of emergency response and system restoration efforts;
3. evaluate ComEd's internal and external communications related to outages and service restoration;
4. evaluate ComEd's inspection, maintenance, replacement, and upgrading of equipment and overall transmission and distribution system;
5. evaluate ComEd's system performance compared to other major metropolitan service territories, detailing significant differences and similarities in system operation, planning, and design; and
6. evaluate ComEd's organizational and management structure and the adequacy of performance measures used to evaluate personnel and system reliability.

II. Scope

Liberty conducted this investigation of ComEd's transmission and distribution systems according to the Illinois Commerce Commission request for proposals and the subsequent contract between Liberty and the Commission. The Commission Staff had developed two lists of questions for Liberty to answer: Energy Division, Engineering Department Questions for ComEd Outage Investigation and Distribution Reliability Review and Energy Division, Engineering Department Questions for ComEd Outage Transmission Reliability Review. The Commission Staff asked that Liberty examine two previous investigation reports and determine if ComEd had implemented the recommendations they contained: Report on the Investigation of the Electric Transmission and Distribution Reliability of the Commonwealth Edison Company, by Resource Management International, dated March 1992 and Investigation of Service Interruptions in the Commonwealth Edison System During the July 12-16, 1995 Heat Wave, by Failure Analysis Associates, dated November 28, 1995. The Commission Staff also asked Liberty to review two October 27, 1998, ComEd management presentations to the ICC, Statement of John W. Rowe and Paul McCoy Presentation to ICC on October 27, 1998, and determine if ComEd has performed the actions detailed therein. Finally, the Commission Staff asked Liberty to review the report on the July-August 1999 outages, when completed by Vantage Consulting, and identify any leads, findings, or recommendations appropriate for inclusion in Liberty's investigation.

III. Summary of Findings

Liberty's first report, which contained Chapters One through Eleven, emphasized that a common theme that ran through the chapters of that report was that ComEd possessed good standards, policies, procedures, and practices, and good people to carry them out, but often failed to meet its own standards or follow its own procedures because it failed to budget enough money for necessary capital improvements and maintenance. In many aspects, ComEd was in a reactive mode of operation, often waiting for parts of its T&D systems to fail before taking any action and only attempting to improve the worst parts of its T&D systems. That theme remains evident in this second report, which begins with Chapter Twelve.

This section is organized by report chapter and consists of short pieces of text taken from the body of this report to give the reader a sense of the content of each chapter. This is not a collection of Liberty's conclusions, which can be found at the end of each chapter, although the content is similar.

Chapter Twelve – T&D Staffing: Liberty found that ComEd's staffing levels were not determined using reasonable plans or studies regarding the work that had to be accomplished. Liberty also found weaknesses in ComEd's succession planning and organizational spans of control.

- In 1991, ComEd's staffing levels were expected to increase for the next five years. Instead, staffing levels dropped throughout the 1990s. These staffing level changes were made without studies to determine whether the required work could be accomplished.
- ComEd initiated, then abandoned a management succession plan. The number of management personnel increased relative to the number of craft, and there were many supervisory positions with either low or high spans of control.

Chapter Thirteen – Vegetation Clearance Management and Practices: Many of the interruptions of electric service experienced by ComEd's customers were caused by trees contacting distribution facilities. Liberty found that ComEd's tree trimming standards, expenditures, and management oversight were insufficient to assure distribution system reliability. Liberty found that ComEd needs to take a more proactive management approach to tree trimming and that additional oversight of ComEd in this area is warranted.

- While trees and ComEd's practices related to tree trimming had a significant effect on distribution system reliability, ComEd's management oversight and the tools it used to track tree trimming progress were inadequate.
- ComEd's funding of tree trimming was inadequate to maintain reasonable reliability.

Chapter Fourteen – Animal Protection Standards and Practices: Liberty found that ComEd's animal protection standards were adequate to provide reliable electrical service. While there were a large number of areas in ComEd's service territory that did not have adequate wildlife protective devices installed, ComEd's approach of installing such devices on new construction, when upgrading older portions of its systems, in areas that were particularly prone to wildlife problems, and during outages was a reasonable approach given the relatively small effect that wildlife had on T&D system reliability.

Chapter Fifteen – Distribution System Construction Standards and Practices: Liberty found that the distribution construction standards, the standards modification processes, the communication of the

standards updates, the implementation of the standards, and the verification of compliance to the standards were consistent with good utility practices. Liberty found that ComEd's distribution construction standards and practices provided for continued improvement of their distribution system reliability. Liberty also determined that the amount of distribution system construction that ComEd performed after 1992 was not consistent with the age and growth of the distribution system.

IV. Summary of Recommendations

At the end of chapters of this report are recommendations relating to the subject matter of the chapter. This section is a collection of those recommendations. Each recommendation is identified with a number that shows both the chapter from which it is taken and the recommendation number within the chapter.

- Twelve-1 ComEd should develop and implement a comprehensive manpower planning program.
- Twelve-2 ComEd should develop a formal management succession plan.
- Twelve-3 ComEd should evaluate the positions within its organization that have high or low spans of control.
- Thirteen-1 ComEd should formalize its tree trimming standards.
- Thirteen-2 ComEd should ensure adequate annual funding of their vegetation management program.
- Thirteen-3 ComEd should take a more aggressive and proactive approach to tree trimming management.
- Thirteen-4 ComEd should make a special report on tree trimming each year to the ICC.
- Fifteen-1 ComEd should increase its distribution construction to a level necessary to keep up with distribution conditions and load growth.
- Fifteen-2 ComEd should make several enhancements to its construction management practices.