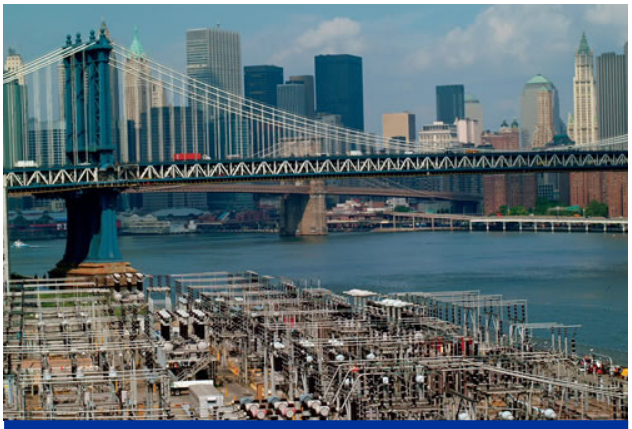
EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Consolidated Edison Captures Expertise of Retiring Chief District Operator to Preserve Safety and Reliability

Success Story



"With complex systems such as ours, there's a great need to capture the unwritten information and thought processes of key individuals when they leave. Someday I'll be turning over this position to someone else, and knowledge capture will help me pass along the critical knowledge and decision-making skills that this position demands."

—Patrick McHugh, Chief District Operator, ConEd

"Staff turnover will continue to accelerate, not only at the Chief's level, but at all levels—and across the country. So we're strong proponents of knowledge capture."

—Bob Blick, Chief District Operator, ConEd (Retired)

EPRI's unique methodology helps preserve the mission-critical knowledge of departing experts so their successors can sustain operational excellence.

The Challenge

Consolidated Edison Company of New York operates the most complex distribution system in the world, yet provides the most reliable electric service in the country—seven times above the national average. Although many employees contribute to this high level of performance, a significant share of the credit, and responsibility, lies with the Chief District Operator.

Part air-traffic controller, police officer, and judge, the Chief District Operator is responsible for administering the rules for all switching, protection, and permitting on the power system. From the District Operator Control Room, the Chief directs the operation of the transmission and distribution systems for the five boroughs of New York City and Westchester County, applying a detailed set of rules, procedures, and protocols to match a range of shifting situations in support of maintenance, construction and emergency repair work.

When Bob Blick, Con Edison's Chief District Operator, approached retirement, the company sought to preserve his mission-critical expertise to make it available to his successor and other personnel. Capturing and transferring expert knowledge is an inherently difficult process, but this case presented ConEd with an especially daunting challenge. Bob Blick possesses not only an encyclopedic knowledge of the rules and procedures that govern operation of the power delivery system, but he also had developed a uniquely effective approach to solving power system switching and protection problems to help preserve the reliability of Con Ed's service and the safety of its operations.

To help sustain its record of operational excellence, Con Edison needed an effective way to preserve and pass on Blick's knowledge, judgment, and problem-solving ability.

The Solution

EPRI's Human Performance Technology Program has developed tools and a streamlined process for capturing expert knowledge that are unique in the industry. The process involves three stages: identifying the valuable knowledge to be captured, planning which tools would be most effective at capturing the identified expertise, and implementing the plan, resulting in knowledge modules that can be easily transferred to others.

Documenting Blick's expertise—both his vast knowledge and his unique thought processes—required a powerful approach. EPRI's David Ziebell used a mental model called recognition-primed decision-making that represents how experts quickly interpret and respond to complex situations. The model includes four key elements the expert uses, often subconsciously, to size up a situation and immediately and correctly respond to it. The four elements are *cues* that enable the expert to recognize the situation from experience, *goals* related to the expert's mission that serve as criteria for practical success across any situation, *expectancies* used to test the initial diagnosis against the existing conditions in the situation, and an *action repertoire* of possible responses to the situation.

The Project

As the knowledge capture process progressed, Ziebell described the model to Blick and his successor, Patrick McHugh. Ziebell explained how the model could not only help accelerate McHugh's acquisition of Blick's knowledge, but also help him understand Blick's unique approach to diagnosing and solving problems.

In a series of detailed interviews with Blick, Ziebell elicited information that allowed him to identify and list the cues, goals, expectancies, and actions that the Chief used in his position. Ziebell then mapped these elements into the mental model to provide a visual representation of Blick's thought processes for dealing with a variety of specific situations. The result was a detailed roadmap to guide the incoming Chief and help him acquire a huge array of knowledge, skills and judgment in a greatly compressed time period.

The EPRI project team also worked with the Chiefs to identify rare but problematic situations that might challenge less-seasoned staff. Developing and documenting procedures to address these situations equips the staff to handle them on the first encounter, so reliability and safety are maintained.

In addition to the mental model, the EPRI project team presented project results in an editable report format, which is being used to maintain and update the ever-evolving knowledge used by the District Operator staff.

Further Work

EPRI continued to work with ConEd to capture the Chief District Operator's knowledge and make it available to operations staff now and in the future. In particular, EPRI worked with Bick and McHugh to identify and document solutions to particularly problematic or recurring situations. These solutions can be made available to District Operator staff as Frequently Asked Questions.

Benefits

Capturing and transfering the expertise of the Chief District Operator helps ConEd

- Maintain high levels of system reliability and personnel safety
- Preserve unique mission-critical expertise into the future despite staff turnover
- Accelerate the successor's time to competency

Contact Information

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