

ELECTRIC POWER
RESEARCH INSTITUTE

A silhouette of a city skyline, including the Empire State Building, against a sunset sky with scattered clouds. The foreground is a dark, calm body of water.

BORN
IN A BLACKOUT

It was rush hour in Manhattan on a cold November day in 1965 when the lights went out, elevators stopped, and 800,000 people found themselves trapped inside the subways. New Yorkers were not alone in their frustration. The largely independent power systems of the Northeast, which had progressively been integrated into a grid for purposes of enhanced reliability, had failed massively. What began as a single trip on a 230-kilovolt line near the Canadian border cascaded in radial fashion over 80,000 square miles in a matter of minutes. From New Jersey to Ontario, the Great Northeastern Blackout left 30 million people without electricity. Historic in scale and impact, it starkly demonstrated the nation's growing dependence upon electricity and vulnerability to its loss. It marked a watershed for the industry and triggered the creation of EPRI.

Although power was largely restored within 12 hours, the ripple effects of public and political criticism of the blackout continued for years. Ten reliability councils were established to set standards, share information, and improve coordination among electricity providers, offering some reassurance. But some in the U.S. Congress were troubled by the nation's utter dependence on a fragmented industry for which there was no unified planning. How, they asked, could 3,500 entities—divided by geography, tradition, size, and philosophy of ownership—be physically integrated and relied upon to operate as a unified system?

Impending Federal Intervention

Federal intervention loomed, and by 1972 congressional hearings were under way. After conducting the hearings, Warren Magnuson, chairman of the Senate Commerce Committee, and Ernest Hollings, one of the ranking Senate majority members, became convinced that utility companies were too heterogeneous, and commercial vendors too narrowly focused, to undertake the broad, long-term R&D required for the future. They proposed

THE STORY IN BRIEF

Thanks to a convergence of forces, the right people, and extraordinary leadership following a brief but seminal crisis, EPRI was thrust from concept to reality in less than a year. More than four decades later, EPRI remembers the challenges, personalities, and plans that reframed the institute from a political quick fix to an enduring but adaptable engine of progress and innovation for the electricity industry.

taxing utilities 1% of gross revenue to fund a federally run R&D organization for electric power.

The prospect of federal action galvanized the utilities. Industry leaders at the time, including Shearon Harris, chairman and CEO of Carolina Power & Light and president of the Edison Electric Institute (EEI), and Charles Luce, chairman and CEO of Consolidated Edison, with the support of the National Association of Regulatory Utility Commissioners (NARUC), proposed a one-year stay in order to establish a new electric power research institute. They promised the Senate Commerce Committee that if they couldn't get an industry-wide organization launched, funded, and off the ground within one year, they would return and lend the senators their personal support for creating a federal agency.

What they had in hand was something called the Greenbook, an almost utopian blueprint for a \$30 billion, 30-year R&D plan that had been put together by an industry committee during the 1960s and published a year before the hearings, in 1971. The prescient Joseph Swidler, chairman of the Federal Power Commission, had planted the seed years earlier. Addressing the members of EEI in 1963, he'd said, "The nation's number one industry cannot afford the risk of lost opportunities and delayed progress that is inherent in the present lack of system or direction in research." This admonishment had led to

the establishment of the Electric Research Council, a committee to bring the disparate utilities together to frame the Greenbook's R&D portfolio. Although the council proved only an interim solution, it offered an ambitious overview of advanced technology at a time when electric power demand was still expected to double every 10 years. Trends pointed to a future that was simply unsustainable, given the industry's technology base at the time. Fission, fusion, advanced fossil assets, and renewables, among other resources, would be needed if the industry were to continue to grow as it had for the previous 40 years.

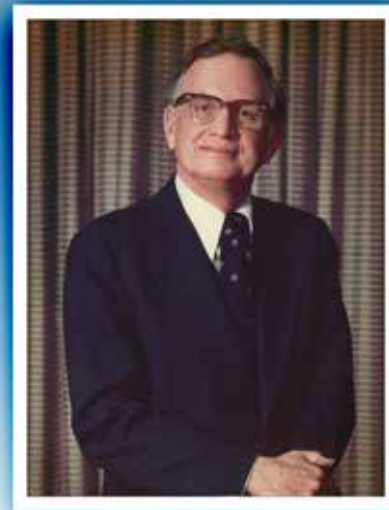
Despite senatorial skepticism, Harris and Luce made their case and in March 1972 set about finding the right person to establish EPRI by year's end. The qualifications they sought were those of "an internationally respected scientist with uncommon administrative ability." For recommendations they turned to, among others, Chauncey Starr, dean of the School of Applied Engineering at UCLA. He was also on their short list. In 1971, Starr had written a seminal paper for *Scientific American* titled "Energy and Power," and Harris had been struck by its "clarity, persuasion, and logical thrust." He talked to Starr about the proposed new entity at a conference shortly after the Senate hearings, and Starr's response was, "The way you describe it, I might be interested in it myself." His proviso was that it be something of "genuine significance."



Joseph Swidler, chairman of the Federal Power Commission, pushed for comprehensive utility industry R&D in the early 1960s.



The Great Northeastern Blackout of 1965 brought the issue of electric power reliability to a head and prompted federal action.



EEI President Shearon Harris negotiated a one-year deferral in Senate action in order to establish a utility-directed research organization.

The Pillars of EPRI

Starr laid out his vision and conceptual framework for a voluntary, industrywide R&D organization in a three-page letter to Harris, who found it compelling but quite a bit larger in scope and purpose than he and other industry leaders had envisioned. With his broad background in public service, industry, and academia, Starr saw technology as integral to the public good and believed that electricity in particular was preeminent in shaping modern society. This view became one of the pillars of EPRI. “For decades, I had believed that one cannot separate hardware from its use and its impact on society as a whole. One of my values is that a scientist, an engineer, a toolmaker must not simply develop a piece of hardware, drop it into the middle of a social situation, and walk away. He has to have a continuity of concern.”

In his letter, Starr wrote, “I believe that it would be important to involve in EPRI’s studies not only technical specialists but also those deeply concerned with environmental and social impacts. EPRI could thus provide a device for making such opinion leaders a party to national problem solving.”

He made it clear that he was not inter-

ested in running a technical fix-it shop, and Harris gave him running room to elaborate his vision. Recalling this gestation period some years later, Starr said, “Especially intriguing was unbounded R&D scope, ranging from applied science to end use and across all energy forms. It was an opportunity to push my vision of electrification as a basic shaper of society.”

Public trust became another guiding principle—which Starr referred to later as key to “the soul of EPRI.” He laid out the rationale for this in his letter to Harris: “EPRI will be a quasi-public corporation with particularly sensitive ethical responsibility as a trustee of public funds. Because it will undoubtedly be subject to public scrutiny, it should be prepared to publicly justify its activities.” To build and sustain public trust, EPRI’s research would have to be done with “complete objectivity, thoroughness, and intellectual integrity.”

A third pillar of Starr’s vision was to forge teamwork among top-notch scientists and engineers to “turn visionary accomplishments into practical use.” Starr told Harris he knew where the people were and by offering them the combined package of “creativity and idealism,” he could draw the best into the enterprise. Some he

would hire as full-time research managers at EPRI; others he could pull together in virtual space, in what we would today describe as a network. He told Harris, “I do not conceive of EPRI having its own hardware laboratories. I believe there are ample facilities in industry, universities, government institutes, and non-profits for almost any type of R&D program. I would expect that with very little encouragement, these institutions would be pleased to increase their facilities if research support could be counted on.”

Harris seized upon one particular advantage offered by this model: the organization wouldn’t have to grow lab by lab, building by building, but could, at least in theory, come into being nearly fully formed. It had a second advantage that Harris likely did not appreciate at the time. An EPRI professional manager could create a team for any given project, uniquely combining expertise to fit the task. Someone from Stanford, for example, could be teamed with someone at GE, along with a third team member from Pacific Northwest Labs. Starr recounted later, “When significant results started to flow early, all those doubts about virtual R&D faded.”



The Greenbook, produced by the newly established Electric Research Council, outlined an ambitious 30-year blueprint for R&D.



Founding President Chauncey Starr refined the Greenbook's technical and organizational vision in helping create the ultimate blueprint for EPRI.

Getting Started

The opportunity to build such an R&D institution was simply too great for Starr to turn down. He was 60, comfortably settled at UCLA and about to take a sabbatical, but the job would culminate a lifetime of prodigious achievement.

He accepted the offer, convinced the Senate committee, started up operations in two rooms in Los Angeles in January 1973, held a press conference, and went to work on the single most important task—hiring staff. His method was to hire good people, provide minimal coaching, and let them get things going with maximum freedom. He resisted building by the “org chart,” choosing instead to build the organization around the strengths and interests of the key individuals he hired. With the able administrative assistance of David Saxe and Ric Rudman, he recruited vigorously and used McKinsey and Company to find the number one spot in the country desired by professionals. Their survey pointed to the San Francisco Bay Area, and Starr set up EPRI headquarters in Palo Alto. By September of that first year, he had 20 people on board, and by the end of the year, 100. Later asked to name his greatest achievement, he said it was the

people he hired in that first year, because they in turn found the rest of the staff—the best in their respective fields.

Before accepting the job, Starr issued a bold caveat to the industry leaders—a no-strings, hands-off approach from the EPRI board of directors for the first five years. His staunch independence required extraordinary trust, which Harris and the other CEOs gave him. The CEOs would concentrate on selling the voluntary organization to utilities, and he would concentrate on making their investment pay off. “I had no doubts, no quivering at the knees about being able to work at this task. It was something that professionally I knew how to do.”

Building in a Feedback System

As a counterbalance to Starr's independence, the EPRI board worked to make sure that the new institute remained tethered to the real world. They created an industry advisory structure of technically focused committees. It served as a form of adaptive intelligence to bring the industry's priorities to bear in directing the institute and, in response, infusing new ideas, technology, and opportunities into the indus-

try. Moreover, the industry would serve as the primary test bed for technology that it would ultimately use.

Gathering committee members from different utilities to address common problems created informal, highly valuable networks that would help knit the industry together technically. Many consider the industry committee structure one of the most ingenious and important organizational elements of EPRI's formative years. In time, it broadened the institute's original long-term focus to include solving critical near-term and mid-term problems.

Meanwhile, NARUC pushed to supplement the industry advisory committees with an independent advisory council that would give EPRI guidance on how its research could best promote the public interest. The EPRI Advisory Council was composed of nontechnical people whose backgrounds ranged from business and education to regulation and labor. It became known as the “conscience of EPRI” and was instrumental during the early years in stressing the growing importance of environmental and conservation considerations in research and development.

A Sustainable Model

Shearon Harrishad inherited an audacious plan for a national R&D organization and parleyed with a skeptical Senate, betting that he could bring the new entity to life if he could find the right person to lead the effort. Chauncey Starr brought to the table an even bolder vision, the talent and leadership to make it thrive, and the persuasive powers to convince an industry to take its technical destiny into its own hands. On the combined vision and strengths of these two men, EPRI has stood the test for more than 40 years, and just as its founders did in 1972, it continues to look far down the road.