



Chauncey Starr

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1912–2007

Elected in 1965

“Pioneer in development of atomic power.”

BY CHRIS WHIPPLE

CHAUNCEY STARR, a physicist and nuclear energy expert, died on April 17, 2007, three days after his 95th birthday and a day after a celebration in his honor at the Electric Power Research Institute, where he was president emeritus. At the time of his death, he still went to his office at EPRI five days a week.

Chauncey Starr was born on April 14, 1912, in Newark, New Jersey. He attended the Rensselaer Polytechnic Institute, receiving an electrical engineering degree in 1932 and a Ph.D. in physics in 1935. He became a research fellow in physics at Harvard University, working with Nobelist P. W. Bridgman in the field of high pressures; then he worked as a research associate in cryogenics at the Massachusetts Institute of Technology. His work involved characterization of the magnetic properties of metals at very low temperatures and included a 1941 publication on the design of hydrogen liquefiers.

During World War II, Chauncey worked with E. O. Lawrence on the Manhattan project at the Berkeley Radiation Laboratory. He was sent by Lawrence to Oak Ridge, where he was the first operations manager of Building 9731, the first building to operate at the Y-12 plant and the first to have operating calutrons—large electromagnetic devices used to enrich uranium.

Following the end of the war, Chauncey stayed at Oak Ridge and worked at Clinton Laboratories (now Oak Ridge National Laboratory), where he became interested in the application of nuclear energy for electricity generation. This is where he was first involved with water-cooled reactors. He joined North American Aviation and became president of the Atomic International Division, which worked on the development of nuclear power for the Atomic Energy Commission. During this time, Chauncey was responsible for development of the sodium-moderated reactor, organically moderated reactor, and systems for nuclear auxiliary power (SNAP), small reactors to provide power for spaceflights. The SNAP-10A was the first U.S. nuclear reactor to be launched into space.

In 1966, Chauncey Starr became dean of engineering and applied science at the University of California at Los Angeles. While at UCLA, Chauncey wrote "Social Benefits Versus Technological Risk," published in *Science* in 1969. In this highly cited paper, Starr anticipated the development of risk analysis for technological systems and explored the question of "How safe is safe enough?" by evaluating risks and benefits from widely accepted technologies. Through his review of patterns of risk taking, Starr observed that much larger risks are accepted when they are taken voluntarily, in contrast to those that are involuntary. As Starr put it, "We are loath to let others do unto us what we happily do to ourselves."

Chauncey believed that the role of energy, particularly in the form of electricity, was a catalyst to societal development, and in September 1972 he wrote an article titled "Energy, Power and Society," which appeared in *Scientific American*.

In 1973, Starr became the founding president of EPRI, a nonprofit research institute funded by the electric utility industry. Prior to the creation of EPRI, most electric power utilities, with a few exceptions, did little research and development (R&D) but instead relied on equipment vendors for R&D. For several reasons, including the 1965 blackout in the northeastern United States and rapid growth rates in the demand for electricity, some members of Congress saw the low investments in R&D as a problem that could be fixed by

creating a new government organization. The electric utility industry asked for a chance to form such an organization, and EPRI was the result. Under Chauncey's original design, EPRI had four operating divisions: nuclear power; advanced coal and all other generation technologies, including renewable; electrical systems, covering transmission and distribution; and environment and economics. In 1978, Chauncey became vice chairman of EPRI and in 1987 was named as the institute's only president emeritus. Following the 1979 accident at the Three Mile Island nuclear power plant, Chauncey was asked by the nuclear power industry to design the initial organizational plan and scope of the Institute of Nuclear Power Operations.

In 2001 (60 years after his publication regarding the liquefaction of hydrogen), Chauncey made a presentation at an American Nuclear Society meeting in which he proposed a continental superconducting supergrid, in which electricity would be delivered, along with liquid hydrogen. He continued to work on this concept with colleagues and coauthored a 2006 *Scientific American* article on the subject.

Among his many public and professional activities, Chauncey served on at least 18 boards and advisory committees, including service for the U.S. Department of Defense, U.S. Department of Energy, Office of Technology Assessment, Atomic Energy Commission, National Aeronautics and Space Administration, ENC, People's Republic of China, National Council on Radiation Protection and Measurements, President's Scientific Advisory Committee, Office of Science and Technology Policy, National Academy of Engineering, National Academy of Sciences, and four universities. He served as vice president of the National Academy of Engineering; as a fellow, founder, director, and president of the American Nuclear Society; as a consulting professor at the Stanford School of Engineering; and as a member of the Rockefeller University Council. In 2004, Starr donated \$2 million to Resources for the Future to fund a chair in risk analysis that bears his name.

Over his long and productive career, Chauncey received many awards and honors. These included an honorary doctorate of engineering from Rensselaer Polytechnic Institute

(1964); election as a foreign member of the Royal Swedish Academy of Engineering Sciences (1973); the Atomic Energy Commission Award for Meritorious Contributions to the national atomic energy program (1974); the Pender Award for Outstanding Research Director of 1975, from the University of Pennsylvania; nomination to the rank of officer in the French Legion of Honor in recognition of efforts to promote and further understanding between France and the United States in the field of scientific and industrial achievements (1978); the Walter H. Zinn Award from the American Nuclear Society for outstanding contributions to the advancement of nuclear power (1979); the Founder's Award of the Seventh Energy Technology Conference in recognition of scientific planning and management talents leading to successful establishment of innovative concepts of industry-wide energy technology R&D, from EPRI (1980); an honorary doctorate of engineering from the Swiss Federal Institute of Technology (1980); the Henry D. Smyth Award from the Atomic Industrial Forum, Inc., for contributions to nuclear energy (1983); the Distinguished Contribution Award of the Society for Risk Analysis for contributions to risk analysis (1984); an honorary doctorate of science from Tulane University (1986); the "Tommy" Thompson Award from the American Nuclear Society, for contributions to nuclear reactor safety (1988); the Rockwell Medal by the International Technology Institute, for excellence in technology and contributions to the betterment of mankind (1988); the United States Energy Award from the United States Energy Association for long-term contributions to energy and to international understanding (1990); the National Medal of Technology from President George H. W. Bush for contributions to engineering and the electric industry (1990); the George E. Pake Prize by the American Physical Society for visionary leadership and physics contributing to the establishment of a worldwide nuclear power industry for peaceful purposes (2000); the George C. Laurence Pioneering Award by the American Nuclear Society for outstanding pioneering contributions to nuclear reactor safety (2006); and the Arthur M. Bueche Award from the National Academy

of Engineering for leadership in the development of nuclear power, contributions to the creation of the field of risk analysis, and leadership in electric power R&D as the founding president of EPRI (2006).

Chauncey was a vigorous and dedicated outdoorsman. He swam regularly in the pool at his home. He hiked and backpacked throughout the Sierra Nevada Mountains, including a moonlight ascent of Mt. Whitney and crossing of the Palisades Glacier. He skied avidly in both California and the Alps, dissuaded only at last by a second broken leg. Following the move from UCLA to EPRI, Chauncey and Doris switched from season tickets to UCLA's men's basketball games to the Stanford women's team, and both agreed that they enjoyed the women's games more.

When he passed away, Chauncey was survived by his wife of 69 years, Doris Starr (of Atherton, California); two children, Ariel Wooley (of Los Altos) and Ross Starr (of San Diego); and five grandchildren.