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At 90, energy scientist still busy working on new ideas

By Glennda Chui
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If the biblical prophecy is apt -- that old men will dream dreams and young men will have visions -- then Chauncey Starr, who just turned 90, is young indeed.

His latest vision: Build a high-tech cable that carries electricity coast to coast with perfect efficiency, fed by dozens of nuclear power plants buried to protect them from terrorists.

Long retired, Starr still works six hours a day. Although he can no longer backpack or ski the Sierra Nevada the way he used to, he takes one-mile walks around the home he shares in Atherton with Doris, his wife of 64 years.

He believes that the spread of electrification is an essential foundation for social change and a healthier, longer, more comfortable life. And he still relishes a challenge, whether it's making something work or selling a visionary idea.

His idea of a ``continental supergrid'' would make the electrical system much more reliable and efficient, shifting power to wherever it's needed most, Starr argues, since energy use reaches a peak three hours later in California than it does in the East. And there's a bonus: The power plants would also generate hydrogen, which could be used to power fuel cells.

Thus engineers could realize a decades-old dream of creating a more flexible grid while kick-starting what many think will be the new energy economy -- one based on clean and abundant hydrogen, rather than on fossil fuels.

No flight of fantasy

The reality of his vision is decades away, if ever, but it's no flight of fantasy. All the parts are scientifically feasible. And Starr, founder of the Electric Power Research Institute in Palo Alto, is in a position to push it forward.

Even before founding EPRI 30 years ago, Starr had already worked on the Manhattan Project, helped start the nuclear power industry and pioneered the field of risk-benefit analysis.

``I not only enjoy what I have done, but I've just loved the people I've worked with,'' Starr told people who gathered at EPRI 10 days ago to celebrate his 90th birthday. ``If I have any knack,'' he joked,

``it's to get other people to do the work.''

Chris Whipple was one of many former EPRI employees in the audience. Now with Environ, an environmental consulting company in Emeryville, he was Starr's technical staff assistant for many years.

``He really loves to challenge you to think big, big ideas,'' Whipple said, adding that he still remembers the pitch Starr made to lure him to EPRI: ``If you want to think about new and different stuff, come and work for me. It'll be fun.''

Trained as a physicist, Starr worked during World War II on the Manhattan Project, where he helped to develop materials for the atomic bomb.

When the war ended, he became president of Atomics International in Los Angeles, which developed nuclear reactors and helped to launch the nuclear power industry.

Twenty years later, he moved to the University of California-Los Angeles to serve as dean of engineering and applied sciences. There, Starr wrote a landmark paper on how to weigh the risks and social benefits of various technologies -- whether driving a car or operating a nuclear power plant. His approach became the basis of modern risk analysis.

Starr said he was happy at UCLA: ``I intended it to be more or less the remainder of my life's activities,'' he said. But then he got an offer he couldn't refuse.

A major blackout in the Northeast in 1965 had drawn attention to the vulnerability of the electric grid, actually a hodgepodge of small grids set up by various utilities over a period of decades. After a Senate investigation, the government was poised to set up an agency to oversee the development of more reliable power systems.

That didn't sit well with the utilities, which wanted to determine their own future, Starr said. So the industry formed its own research institute, EPRI, in 1972, and financed it by setting aside a tiny fraction of the money people pay for electricity. It asked Starr, then 60, to put the institute together.

Great opportunity

``I pointed out that this was an opportunity for the electric power industry to make some real social contributions on a big scale,'' Starr said. Rather than take a narrow perspective -- focusing on better equipment and the like -- he thought the institute should consider how to electrify society in the most effective manner.

He knew it would take years to build a conventional research institute from the ground up. So he took a novel approach: He created a sort of virtual institute giving money to researchers at universities, national laboratories and companies and nudging them to work together.

``If you want to do things fast, you'd better go to the people who are already doing pieces of it and put

them together as a team, and not worry about their geographic location,'' Starr said. ``When you work as a big team, and work on a big objective, the people involved discover that it's fun.''

Not everyone agreed with Starr's positions on the balance between energy conservation and the need for new power sources, or the desirability of nuclear power. (``I'm a nuclear enthusiast,'' he says.) He got into a lot of fierce debates.

But even his staunchest opponents seem to view him with respect.

``We found ourselves as friendly adversaries, but also good friends,'' said Lee Schipper, co-director of a program at the World Resources Institute on clean transportation in the developing world.

``The genius of him was, it was really fun to engage the man,'' Schipper said. ``I don't believe the people involved today are anywhere near as gentlemanly.''

In the 30 years since Starr founded it, the Electric Power Research Institute has probed a wide range of scientific and technical issues of interest to its sponsors in the electrical industry -- from safer and more reliable ways to generate and transmit power, to the health effects of pollutants from smokestacks. It has gained a reputation as an impartial and credible source of scientific information.

Ralph Cavanagh, energy program director for the Natural Resources Defense Council in San Francisco, said, ``EPRI is the strongest engine for research and development in the public interest in the energy industry. Chauncey found a way to make technology research a small part of everyone's electric bill. In doing that, he built an institution capable of looking out beyond the next three months of shareholder earnings.''

Retired in 1981

Although he retired from EPRI in 1981 and no longer has day-to-day responsibilities, he continues to work there.

``He's got a set of colleagues around the world that he stays in constant contact with,'' said Ric Rudman, the institute's chief operating officer. ``He's very, very active.''

His latest collaboration is with Paul Grant, a science fellow at EPRI, who arrived nine years ago after a career with IBM.

``Chauncey sort of took me under his wing, and at my age I suddenly obtained another mentor,'' said Grant, who is 67. ``It turned out, fortuitously, that in about three months my office was located next to his, so we just hung out together all the time, and I learned what a helluva guy this person was.''

The continental supergrid is one fruit of their collaboration.

Grant had been thinking about making long-distance electrical cables out of a new generation of

superconductors, so called because they conduct electricity without losing any of it along the way. After absorbing some of Starr's enthusiasm for nuclear power, he conceived of a ``supercity,'' with a nuclear reactor at its heart, that would operate without generating pollutants or greenhouse gases. The nuclear plant would generate electricity and break down water into hydrogen and oxygen; the hydrogen could then be used in fuel cells for cars, buildings and industry.

Starr came up with the idea of stringing one of these superconducting cables across the country, uniting the electrical system into one big grid, and studding it with nuclear reactors about every 60 miles. Electricity and hydrogen would be siphoned off into substations for distribution to customers along the way.

They plan to hold a three-day workshop to explore the idea in November.

``I'm still having a great deal of fun, trying to stimulate people to do work that might be dropped,'' Starr said.

``One of the problems when you get to be my age is that you realize you only have so many years until the end point comes, so I take every opportunity to get new ideas floating.''

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