



FIRST PERSON *with Mike Howard*

‘WE HAVE TO LISTEN AND LEAD’

This September, Dr. Michael Howard will succeed Dr. Steven Specker as president and CEO of the Electric Power Research Institute. For the past five years, as EPRI's senior vice president of research and development, Howard has overseen EPRI's entire research portfolio. Previously he served as president and CEO of EPRI Solutions, Inc., formerly a wholly owned subsidiary of EPRI. Following his election by the EPRI Board, Howard sat down with *EPRI Journal* to provide his perspective on the electricity sector, its research and development needs, and EPRI.

EJ: *You have been a key member of EPRI's senior management team for several years. As you become president and CEO, what will change? What will stay the same?*

Howard: I'm very excited to step into a greater leadership role at EPRI. Under Steve's leadership, EPRI has become more technology focused and has provided thought leadership for challenging issues. I want to continue the focus on research that addresses solutions needed by electricity providers and the public. That's our mission, and that's not going to change.

Our objective, vendor-independent assessment of technologies is critical if the industry is to make the right decisions with the right data to decarbonize affordably. Examples of the right decisions include integrating renewable energy with the power delivery system, increasing energy efficiency, using electro-technologies to reduce direct combustion of fossil fuels, advancing carbon capture and storage technologies, and ensuring that our nuclear fleet continues to operate safely and reliably.

We'll continue to emphasize such areas as the smart grid—or as I call it, the “smarter grid”—which will help us operate our power delivery system as efficiently and reliably as possible and enable consumers to actively manage their energy consumption more economically and efficiently.

I think our research activities are focused

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in the right areas, and I hear our members saying the same thing. However, we can't be complacent and must continue to evaluate the research portfolio to be sure our work is technically relevant and that we are providing the leadership our members expect and all stakeholders in the electricity enterprise expect from EPRI.

EJ: *You emphasize that people whose primary focus is research and development also must keep their eye on the business. From a business perspective, where do you think EPRI needs to put its focus in the next couple of years?*

Howard: In order to provide solid technical knowledge and thought leadership, it is not enough to just understand the technology. We have to articulate the issues in a compelling, objective way to our members and society in general. That's a key focus for EPRI at all levels. At the same time, we've got a business to run, and that also needs to be a key focus for everyone working at EPRI. I'd like to see us reach a point where every member of our research staff can easily answer such questions as,

What's your R&D funding and spending, How many members are engaged, and—most important—What value are you creating through the research? The research staff should know and own the numbers, understand their business, and understand how their research activities increase the value of the results.

We have to be rigorously objective; EPRI's continued success requires that. And we have to ensure that our collaborative research is applied for the public benefit. I intend to continue strengthening this collaboration. Technical excellence coupled with business operations excellence will make us the provider of high-value R&D to our members and to the public at large.

EJ: *In terms of understanding R&D and our members' business, how do we make sure we're aiming at the right targets?*

Howard: To do that, we have to listen and lead. Listen to our members, our industry advisors, and—equally important—our advisors from outside the industry and from organizations that play key roles in

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technology development. These include government, regulators, NGOs, universities, and industry suppliers. We must develop new ideas for our R&D portfolio that address today's challenges and anticipate tomorrow's challenges. We must also read, a lot—technical journals, the *Wall Street Journal*, the Web—to stay right on top of the issues. I read at least two hours a day to stay up to date on key business drivers. It's a challenge to be out in front of our industry advisors and to understand their world, where they sweat it every day, but we need to do that.

Listening and leading means paying particular attention to those with different viewpoints and understanding the basis for their views—not just knowing that they may disagree with EPRI's thinking. Without close listening, EPRI cannot develop relevant technology and successfully transfer it so that it can be applied. If we don't listen, we can't lead, and we cease to exist.

EJ: *From the R&D perspective, what are the so-called megatrends in the electricity sector?*

Howard: The biggest trend is decarbonizing our electricity sector in ways that allow society to have affordable, reliable, and environmentally responsible electricity. So, what does that mean? We find the

means for an economical transition to low-carbon generation and use this low-carbon electricity to decarbonize transportation and other sectors that use direct combustion of fossil fuel. But we must recognize that we will not and cannot instantaneously move away from coal. We need to press forward on technologies that will allow us to continue using coal as a fuel but do it in a way that will minimize its environmental impact. Nuclear and renewable energy will continue to be our focus, too.

At the same time, we must become more energy efficient. We must develop more efficient technologies, including LED lighting and more efficient power supplies for billions of proliferating consumer electronic devices. What role will renewable energy resources play, and how can we better integrate them into the system? How will we deploy the smarter grid? Electric vehicles can help us decarbonize, but if they're going to compete, we must integrate them with the grid and make energy storage affordable and reliable.

Energy storage will have profound impacts on the electricity sector, and we're seeing progress. For example, I recently read that lithium-air batteries may have an energy density around 4,000 watt-hours per kilogram. Existing lithium-ion batteries have an energy density of 110 watt-hours per

kilogram. A 4,000-watt-hour per kilogram battery gives us the equivalent energy density of a gasoline engine. That's a potential game-changer for electric vehicles. Batteries like these could play a very important role in both electric transportation and renewable energy.

EJ: *What message would you like to deliver at the beginning of your tenure as EPRI CEO about the need for R&D funding?*

Howard: There is tremendous societal benefit to investing in research, but the research must be further developed, deployed, and applied to make a real difference. For example, it's very expensive to develop advanced materials for power plants. We must understand and evaluate their benefits in terms of improved plant efficiency and reliability. A key EPRI role is to analyze whether the benefits warrant the investment. Before R&D dollars are invested, utilities, policymakers, regulators—and society—have to understand where we're headed and why it makes sense to get there. We have to listen and communicate on relevant topics.

We can't develop a new material that will last for 50 years, that won't crack or corrode, by just throwing things together. But we can't just ask for more money. We must be able to articulate why we need it, and the benefit. We also need to leverage fund-

The Oak Ridge Boys

A remarkable coincidence links Chauncey Starr, EPRI's founder and first CEO, with its newest CEO, Michael Howard. Separated by more than three decades, both worked in the same research building in Oak Ridge, Tennessee. Howard recalls how Starr, who died in 2007 at age 95, offered the benefit of his personal perspective to the newly arrived executive when Howard became EPRI's senior vice president of research and development in early 2006. Howard recalls:

"When I took on the R&D job at EPRI, Chauncey brought me into his office and we chatted for probably an hour. He said he was going to send me something. It was a five-page, typed letter outlining his thoughts on the history of the electric utility industry, his vision for EPRI, and the important role for research and development. I was absolutely blown away. I wish he had signed it. His name was typed—Chauncey Starr—at the bottom.

"My first summer engineering job was in 1977 at a DOE facility in Oak Ridge, Tennessee, called Y-12. The building looked like a very large concrete bunker, almost the size of a football field, where in decades past, huge magnets had been used to separate uranium isotopes. Chauncey told me that in the early days of the Manhattan Project in Oak Ridge, he had worked to get that facility up and running. In my 1977 summer job, I was assigned to that building to organize boxes and boxes of technical papers for preservation. I'm sure many of the boxes included Chauncey's papers. I didn't think anything else about that summer's project until I met Chauncey and he asked me about my educational and work experience. Turns out he knew some of my wife's relatives, who are also from Oak Ridge and who had connections with the Manhattan Project and Floyd Culler, who worked with Chauncey at Oak Ridge and would later become EPRI's second CEO. Whenever we talked, I think it took him back to those days, and he would always tell me, 'I have the fondest memories of my years working in Oak Ridge, Tennessee.'"

ing, not just from the electricity industry but also from state and federal entities that are working toward developing technologies for the electricity sector. Analyses such as our Prism/MERGE work are excellent tools to articulate an industry vision. Achieving the vision requires research, development, demonstration, and deployment of technology. That takes money. But EPRI has to show the value of the funding.

EJ: *Should we see a greater sense of urgency with respect to electricity sector R&D?*

Howard: There's a growing consensus that we need to do more, but we have to recognize that with global financial pressures and increased debt, everybody is financially squeezed. At EPRI we must make sure that we use every R&D dollar to its fullest potential. That is extremely important. Operational excellence in executing our R&D projects, leveraging our members' funding with state and federal support, and collaboration with universities and national labs will help us respond with

a greater sense of urgency to the challenges facing the electricity sector.

EJ: *Looking ahead, what aspects of EPRI's work will get your particular attention?*

Howard: Our people—developing the staff, the managers, and the leaders we need as an organization and as an industry. It's our responsibility to teach, to mentor, and to develop technical and business leaders. I'll continue to ask whether EPRI offers the right programs focused on the right technologies. Is our overall strategy right? We must make sure we are objec-

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tive, independent, and credible. For example, if research has demonstrated that a promising low/no-carbon generation solution can be accommodated only to a limited degree without impacting reliability or creating other adverse environmental consequences, we must say so. We must provide the scientific and technical data that support that conclusion, we must listen to and understand those who may disagree, and we must continue the search for solutions. Objectivity is what EPRI is all about. We cannot compromise on that.