Shaping the Future

# Innovation Scouts: Looking for the Next Big Thing

***By Scott Sowers***

If your job were "innovation scout," how would you spend your days? Hanging out in a Silicon Valley Starbucks? Eavesdropping at the major technology trade shows?

Perhaps, but the job consists of much more. Scouting is about matching innovation with opportunity. Stephen Stella is a self-described "emerging energy technology champion" and manager of EPRI's Innovation Scouting Program. He describes the role of scouting as critically important. "Scouts are always on the lookout for new information on emerging technologies that can potentially be applied in the electric power industry," said Stella.

In addition to digging through articles and reports, scouts need to seek out diverse people and opportunities. "They may reach out to and communicate with technology developers—including university research labs, national labs, and startup companies—to better understand the technologies and market approaches," said Stella. "They also interact with electric utilities, oil and gas companies, nonprofit organizations, venture capitalists and other investment entities, manufacturers, regulators, test facilities, and many others stakeholders. Dialogue can range from an informal chat in the break room to a formal visit half a world away."

While glamorous at first glance, innovation scouting requires digging and diligence. "One challenge with scouting is that technologies and opportunities do not always appear in a clear, concise, and compelling box that enables quick understanding," said Stella.

Scouts need to be nimble thinkers and skeptical of hype. "They must be able to cut through the clutter and glitzy marketing," said Stella, "A strong technical background is essential, as is the ability to deal with a wide variety of people, places, and situations. Scouts should also be savvy in evaluating costs and benefits as well as policies and regulations."

With EPRI's approach to innovation scouting, creating and engaging networks enables the crowdsourcing of ideas and greater collaboration.

Here are just a few of the areas that scouts are examining:

- **Solar modules**. Increasing the efficiency of solar photovoltaic (PV) cells by tinkering with their chemical makeup continues to offer promise. Another area under investigation is anti-reflective and anti-soiling coatings for solar modules. A recent study from an EPRI scout focused on two aspects: "First, anti-reflection coatings increase a PV module's power output by increasing the amount of absorbed light. Second, anti-soiling coatings mitigate the soiling of PV modules, which increases overall energy output and offers flexibility in PV plant operations and maintenance." While questions remain regarding their durability, coatings have the potential to reduce the price of solar electricity.
- **Ethernet-powered lighting**. Innovation scouts are working with an Iowa-based company developing LED lighting systems that can be powered and controlled by an Ethernet cable and smartphone app, and installed without an electrician. EPRI is assessing the technology's performance and potential market impact through laboratory testing.
- **Infrared cameras**. EPRI research reveals that these devices are suitable for diverse power industry applications. They can detect cold spots in concrete dams, indicating water penetration. They can "see" warm areas on an electrical relay that's about to fail and identify cold or hot spots on a solar panel that's

not operating properly or is partially shaded. Prices have plunged from thousands of dollars to hundreds, making them affordable for utilities to deploy throughout their systems.

- **Self-sensing concrete**. Concrete is used in nuclear and fossil power plants, hydroelectric dams, wind turbine bases, and many other power industry settings. Scouts are looking at concrete containing nanotubes—tube-shaped carbon molecules that can carry an electrical charge—potentially turning concrete into a sensor that transmits failure data. So far, the phenomenon has been demonstrated only in laboratories, but early results are promising.
- **Self-healing concrete**. "Autogenous healing" is a natural crack repair process in concrete that occurs as a result of chemical reactions among compounds exposed at the surface. Self-healing concrete extends this process. Researchers are experimenting with blending chopped fibers into concrete to make it more flexible, resulting in fewer and smaller cracks and more complete healing.

EPRI's scouts are active in many areas, including energy use, energy storage, wind power, advanced nuclear technologies, advanced fossil fuel power cycles, carbon capture, and water conservation in power plants.

Innovation scouts are not unique to the electric power industry. A listing of scouts on LinkedIn reveals researchers and a venture capitalist in biotechnology, telecommunications, management consulting, and transportation. "There's no formal training program for scouts," said Stella. "Some companies may have dedicated scouts, whose sole purpose is to seek out new technologies and innovations, or the scouting role may just be one of many responsibilities an employee has."

### Key EPRI Technical Experts

Stephen Stella