

Smart grid plans outlined at Leadership Forum

'Smart grid starts with a smart utility,' says McElmury
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Thomas Edison, meet Bill Gates.

APS is taking a number of steps to build a digitized, automated electric system — or “smart grid” — and Leadership Forum attendees got a window into some of the recent activities.

It’s all about upgrading some key components on the utility side of the meter in order to empower homes and businesses on the customer side, said **Mike McElmury**, Director, Northern Arizona Energy Delivery, who presented Tuesday.

“Smart grid starts with a smart utility,” he said. “Ultimately, we will improve reliability, save money and help customers make decisions about how they use our product.”

The challenge will be to create a system that anticipates and seamlessly allows two-directional load flow, then to adjust it to gain economies of scale and other efficiencies.

Flagstaff, he said, will be Smart Grid Central. Over the next several years, APS will install and test a number of key components there and study how they work together — from smart meters and automated switches to weather stations and solar panels. He said the company is applying for a number of federal stimulus grants for its smart grid-related activities.

The overall initiative got under way earlier this summer. APS is currently installing the last of 36,000 new Advanced Metering Infrastructure (AMI) — or “smart meters” — in Flagstaff. Almost every customer will have one by September. The effort now brings the company across the quarter-million smart meter mark throughout its entire service territory.

AMI offers two-way wireless communication with APS. Essentially, the meters “phone home” about customer energy usage, says McElmury. This enables more accurate billing, instant connection or rate change capability, and quicker notification of outages.

Further up the power lines, APS will install automated switches over the next 18-24 months. Coupled with the company’s Distributed Operation Management System (DOMS), the grid will provide some powerful information.

“When a fault happens today, we don’t really know much except that it happened,” says McElmury. New switch and sensor technology will communicate back to APS and narrow things down considerably. “When it is pitch black and 3 o’clock in the morning, that kind of information will be incredibly helpful and will considerably speed restoration.”

The new equipment will be able to isolate faults and reroute power to another feeder keep the effects to as few customers as possible. In some cases, the grid will “self heal” and customers may never know there’s a problem.

The Community Power Project, announced in May, will test the effects of a high concentration of distributed solar energy on a single Flagstaff feeder. It will also test concepts for energy storage.

There’s not much “sizzle” for customers yet, said McElmury, but when the tests are complete, APS will have the key questions answered and the basic infrastructure in place to help customers maximize their energy lifestyles.

"We're not too far from smart homes filled with appliances communicating to the grid and smart markets, where customers directly manage their energy use. The work we're doing now will have some far-reaching effects," he said.