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Austin Energy readies to pioneer next level of smart grid

If Boulder is 'smart grid city,' Austin is version 2.0

Unlike any other utility applying for a DOE Smart Grid Investment Grant, whatever matching funds Austin Energy gets will be used for a comprehensive approach to a "next-gen" smart grid that Andres Carvallo calls smart grid 2.0. He's the municipal utility's CIO.

Austin is asking DOE for about $100 million, he told us during an exclusive interview in his office just across Lady Bird Lake from downtown Austin.

Austin Energy will, by the end of this month, have deployed 410,000 smart meters from Elster, GE and AMI partner Landis & Gyr covering all of its service footprint -- a million homes plus 43,000 businesses.

"Most places have announced they're going to deploy smart meters or put some intelligence on their wires with sensors -- and they'll be done in 2012 or 2015. Boulder is closer. It will be done in 2010," said Carvallo. "We're done now. And we'll start rolling out pilots for 'smart grid 2.0' in the beginning of next year."

"Smart grid 1.0," as he referred to Austin's initial smart grid plan, took the utility five years to deploy and cost about $150 million. About $10 million of that came from DOE to improve energy efficiency. The muni deployed its first 125,000 smart meters in 2003.

"It was all about the seamless integration of the electric grid itself plus all the electric assets we own including power plants -- with a communication network" that includes fiber optic throughout the infrastructure and out to the substation and wireless AMI technology from Landis & Gyr for the last mile, Carvallo reported.

The upshot is "a lot of hardware and software that leverages the gathering of a lot of information to make smarter decisions."

The 410,000 smart meters can deliver consumption data every 15 minutes -- and will start doing that as the plan moves forward.

Austin Energy is testing the meters now and plans to, early next year, "come out with some programs that will allow customers to benefit from some of the investments we've made, in terms of information," said Carvallo.

Data-display partners are not in short supply, said Carvallo, and ongoing conversations on the topic include Microsoft and Google.

Austin installed 86,000 remote-control thermostats from Honeywell and Comverge and 2,500 wireless distribution grid sensors from multiple vendors.

Austin Energy, the City of Austin, its chamber and the University of Texas teamed up to create Austin's next-generation smart grid implementation with these firms: Applied Materials,

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New York PSC smart grid order lauded by energy marketers

The passing of the New York PSC's smart grid order last week "squarely identifies the state as a national leader in restructuring energy markets to accommodate new demand-related resources," Craig Goodman, president of National Energy Marketers Assn told us yesterday. "This order has left the market open for competitive energy suppliers to participate."

NEM's members work to fulfill the promise of competition in states with retail electricity and/or natural gas markets -- and tend to see the smart grid as a platform they will be able to use to deliver a wide range of extra energy-related services and value-adds.

"The PUC has done a thoughtful job of prohibiting the creation of demand-side related monopolies," he added. New York utility regulators voted last week to approve a wide-range of advanced smart grid initiatives as proposed by six major electric utilities (SGT, Jul-27).

The approved projects are expected to cost about $825 million and ratepayers would shoulder some $390 million, said the report. The breakdown of the total project costs by utility was Consolidated Edison (ConEd), $175 million; National Grid, $145 million; Rochester Gas & Electric, $36 million; New York State Electric & Gas, $20 million; Central Hudson Gas & Electric, $10 million, and Orange & Rockland Utilities, $5 million.

"We will work with the PSC and other stakeholders to install the best technology needed for our complex underground networks and dense urban environment," a ConEd spokesperson told us yesterday. "To completely make New York City and Westchester County a smart grid region will require a substantial investment but we will proceed carefully to hold down the costs for customers."

The PSC made a significant commitment to provide money to meet the DOE match, PSC Public Information Officer James Denn told us yesterday. "The PSC is not saying they'll look into this later. They are saying 'we are ready to help out now'."

Under the order, ratepayers will pay a temporary surcharge to be

implemented on completion of each project. The surcharge proposals by the utilities will wait until DOE makes grant announcements -- and will be subject to a comment period that is likely to see discussion of the manner of the surcharge and the classes of ratepayers impacted by it. The PSC does expect the impact of the surcharge to be moderate.

The PSC found that the proposed projects offer a reasonable investment in technology that improves the efficient and intelligent operation of the electric grid. The PSC is banking on big benefits from these investments.

"In my opinion, it is better to ensure a competitive market structure before smart grid enabled problems get implemented than to try to revise programs that have been constructed in a way that either blocks competitive entry or makes it cost-prohibitive," Goodman said. "The PUC has laid the groundwork to do just that."

[Comments]

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Cisco, Dell, Freescale Semiconductor, GE, GridPoint, IBM, Intel, Microsoft, Oracle, the consortium SEMATECH and the Environmental Defense Fund. Comverge, Landis & Gyr and others of that group take part in the next go round, said Carvallo.

Austin Energy began working on its second phase of the smart grid in December, he added. The team is focused now on this question: What happens to the smart grid beyond the meter and into the premises, the homes, factories and businesses?

"The driver of all this vision is that, if that home were to have some form of distributed generation -- like a solar rooftop -- and some kind of electric storage and smart appliances with an electric vehicle or two in it, how would you integrate those assets" owned by the owner of the premises into the grid in a way that you could still have balance on the grid?

"Not only are they drawing energy, but they are putting energy back onto the grid," he added.

The city picked the historic name Pecan Street Project to advertise its intentions: www.pecanstreetproject.org. Sixth Street in Austin "is our Bourbon Street," Carvallo explained, referring to the focal point of live music in New Orleans, La. Sixth Street, too, is a major artery of Austin's famous live music culture -- and its original name was Pecan Street. "The team that came up with the Pecan Street Project name chose it because we are aspiring to have in clean tech the same kind of leadership we have in live music."

What if cars could talk?

South by Southwest, the enormous music and film festival Austin hosts each year, informs Carvallo's "vision of how the smart grid will be prepared for the future," he explained, painting this day-in-the-life scenario:

"Imagine that, in 2015, people in 80,000 automobiles come from all over nation to enjoy South by Southwest -- from as far away as Seattle or Washington, DC. Let's imagine that those 80,000 cars are either plug-in hybrid electric vehicles or electric vehicles.

As the drivers settle into their seats and enter into navigational systems the destination of South by Southwest in Austin, Texas, "the cars themselves will communicate with the Austin Energy smart grid, identify the characteristics of the vehicles and their batteries and register accounts for the drivers.

"With the accounts up and running, our smart grid will provide the vehicles with information around where drivers can charge their vehicle -- including fast or regular speed charging mechanisms at restaurants, hotels and homes."

Meanwhile, the grid will negotiate -- with the vehicles -- prices for those different spots that could take up to 10 hours to charge or as little as two.

Pioneering here is normal

The back-end Austin Energy creates will be able to handle that scenario, Carvallo assured.

"Now, what's really missing is the car having the ability to interact with us," he said, noting that Austin Energy is working with Mercedes, Ford, GM, Chrysler and Toyota to remedy that situation.

Is that scenario possible by 2015?

"Possible? Absolutely," Carvallo said. "It's going to be a function of how many electric vehicles will be available," he added.

President Barack Obama wants something like 1 million electric vehicles roaming the US by 2015, he added. Folks in Austin are likely to lead by example and switch to electric vehicles, he added.

Austin's involvement in the semiconductor revolution of the '80s to some degree shows what can happen in

PNNL to use stimulus cash to study smart grid data analysis

The electric infrastructure team at DOE's Pacific Northwest National Laboratory (PNNL) will use $867,000 -- of the $5.7 million in ARRA stimulus funds announced Tuesday -- to test ways of analyzing scientific data generated by the smart grid. So the federal lab told the press as it seeks faster and more effective ways to identify abnormalities and potential areas of stress on the grid.

Henry Huang, PNNL senior engineer, will lead the project in conjunction with the University of North Carolina, Chapel Hill.

PNNL will use $4.86 million off the funds to build a high-performance computer for "integrated assessment climate research, to understand human and natural Earth-system interactions and to create decision support tools for policymakers and the public," it said. The computer is expected to help scientists find ways people can best respond to climate change since it will allow for the combination of computer models of human factors including energy production and use.

"The projects provide vital funding and new tools for research aimed at strengthening America's energy security and tackling some of science's toughest challenges," Energy Secretary Steven Chu said in a prepared statement.

PNNL plans to "integrate climate and power grid analyses to provide a comprehensive view of the coupled energy-climate system," Steven Ashby, PNNL's deputy director for science and technology, said in a prepared statement.

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