

## Tangent Energy Forges the Customer-to-Grid Distributed Energy Connection

"Software to turn solar panels, building controls and backup generators into energy market players"

Jeff St. John: March 25, 2015

Lots of utility customers have solar panels, or backup generators, or the ability to curtail or shift energy consumption in ways that can help reduce energy costs. But there's a big difference between treating each of these systems in isolation, and integrating them to maximize their combined grid-responsive and money-making potential.

At least that's how Tangent Energy sees it. Since its 2009 founding as a solar developer, the Pennsylvania-based company has built a software suite aimed at identifying, controlling and optimizing all of these grid-edge assets as a whole. Now it's starting to go public with a list of customers that includes steel mills and food manufacturers, municipal utilities and retail energy providers, and natural gas and co-generation equipment manufacturers.

In all of these cases, "Tangent is the platform that ties the end-use customer to the marketplace, and to the energy retailer or the municipal utility, to optimize it, and monetize it," CEO Dean Musser told me in an interview last week. And unlike traditional demand response providers that use utility or grid operator programs as the pathway to monetization, Tangent is focused on serving as the distributed energy resource management system (DERMS) to link customers to energy markets.

Tangent has plenty of company in the space. Demand response providers like EnerNOC, NRG's Energy Curtailment Specialists and the company formed by Constellation Energy and Comverge are working these avenues, as are newer contenders such as Viridity Energy, Blue Pillar, Powerit Solutions, Innovari and Demansys, to name a few.

Tangent's approach differs from many of these contenders in that it's working solely through third-party channels, rather than acting as the aggregator and market-maker for the energy-shifting capabilities it enables, Musser noted. It makes money by offering its services on a shared savings model or through recurring revenue subscriptions, which allows it to avoid the up-front costs and capitalization requirements to play in energy markets.

That's also allowed the company to raise a relatively small amount of venture finance -- about \$12 million from key investor EnerTech Capital and others -- and use its ongoing revenues to support the development and deployment of its software for different applications, he said.

At the same time, the company is starting to reveal some significant energy equipment vendors as partners. Last month, for example, it announced a



partnership with Cummins to integrate its software platform into the generator giant's networked clean diesel and natural-gas-fired backup generators.

The platform allows the owners of those generators to crank them up not just in emergencies, but in advance of moments when energy prices will reach their peaks -- a capability that can not only cut costly power consumption at that moment, but also prevent higher prices from being assessed on those customers in the future.

That understanding of how big energy market participants get charged for their electricity consumption is critical to Tangent's approach. It applies to customer classes ranging from big industrial users, to municipal utilities that buy the extra power they need from wholesale markets, and energy retailers and energy services companies looking to optimize their long-term contracts and day-to-day purchasing decisions for themselves and their biggest clients.

### Software to predict and pinpoint key energy assets opportunities

The software platforms that enable this are Tangent AMP, the control layer for all the endpoints being managed; Demand Design, which assesses a customer's existing energy assets for their suitability as flexible, controllable energy market assets; and Demand Design Plus, which analyzes what additional investments could "supercharge their savings by providing them optionality in how they use energy," Musser said.

Here's one example of how Tangent helped an unnamed steel mill save about \$2 million on its annual energy spend by cutting energy use in half, from 80 megawatts to 40 megawatts, for just three hours out of the year.



Steel mills can't really enroll in demand response programs that may ask them to curtail energy for large blocks of time, he noted. But they can use Tangent's software to predict which five hours in the year will drive their capacity obligations for purchasing energy in the following year, and then turn down equipment for three of those five hours to achieve cost savings that outweigh the costs of cutting power use.

The same imperatives hold true for municipal utility cooperatives like Tangent customer Energy New England, he said. These munis pay capacity costs based on the Installed Capacity Tag (ICAP) readings from all interval-meter-equipped customers -- and those ICAP readings are assessed during a single peak hour in the year. These capacity charges can add up to an average 20 percent of each customer's bill, and "you either pass that on to your customers, or team up with someone like ourselves, who creates a way to help their customers curtail their load," he said.

Retail energy providers face a similar set of complexities when determining how to set up the long-term contracts they make with customers, he added. "If I were selling you competitive energy, I have to look at your last year's performance and when the power pool peaked. What did you contribute to that peak? Let's say you contributed 1,000 kilowatts to that peak. Next year, I have to go out and procure 100 kilowatts of capacity -- and I have to build that into your price."

If they can get customers to use Tangent's software, by contrast, "the retailer doesn't have to buy that capacity, and the customer doesn't have to pay for it," he said. Tangent is now working with energy services company Usource Energy

(PDF) on enabling this kind of business model, and has lined up three unnamed "large energy retailers" in the regions served by grid operators PJM and MISO.

"We believe the retail energy providers need a platform like ours to retain stickiness with their customers," Musser said. No doubt this is a realization that today's biggest retail energy providers haven't missed, which may explain why diversified energy companies like Constellation Energy and NRG Energy have acquired big demand response providers in the past half-decade.

In addition to cutting costs, Tangent's customers can flip this equation on its head, and use their energy assets to bid into grid energy and ancillary services markets to earn revenues. As an example, this unnamed municipal utility customer used Tangent's Demand Design Plus platform to discover about \$500,000 in annual revenues it could tap for three 2-megawatt Cummins generators it owns, that are otherwise "just sitting there for use in backup power."



"We can now enter them into the market on an hourly basis, and dispatch them for maybe 10 to 20 minutes a pop, a couple of dozen per year," he said. "All we are is the brains on top of an existing control system."

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