

Getting Smart About Renewables

By Corey N. Hessen

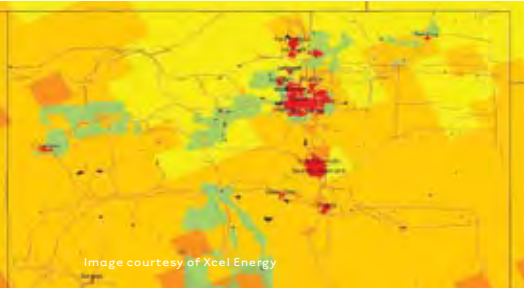


Image courtesy of Xcel Energy

▲ **NREL's software map provides Xcel Energy with useful data for deciding where to site solar projects.**

When his phone rang last April, little did Xcel Energy utility innovations director Dennis Stephens know he would be fielding an inquiry that would benefit not only his company, but potentially the utility industry as well.

On the line was Ben Kroposki of the National Renewable Energy Laboratory. NREL had satellite imagery and reams of data about solar intensity, wind speed, biomass and other renewable-energy resources. Could Stephens find a use for it?

The inquiry eventually led to a pioneering agreement between Xcel Energy and NREL. It called for software development to evaluate siting options for both off-grid and grid-connected commercial rooftop photovoltaic systems in Colorado. It also moved the company closer to meeting that state's voter-mandated, renewable energy requirement.

Xcel's GIS data — company facilities, load and consumption — was overlaid with NREL's data for solar resources, land ownership, land-use and satellite images.

"NREL's satellite imagery has the capability to zoom in right down to individual sites where our feeders are located," Stephens said. "It can then measure physical data such as light intensity, light duration and shadows." All of this information helped Xcel answer some important questions, such as where are the best PV sites in Colorado? How will solar installations affect its system? How much power could they potentially produce? Can solar power help meet peak demand?

"This project helps us predict when peak solar power will be available and how it works when there is peak demand" Stephens said.

And while solar applications are the company's primary focus now, the partnership is beginning to look at other potential benefits.

"We are providing NREL with feeder information, load profiles and projected load growth," Stephens said. "By studying feeders that are highly loaded in low-growth areas, we will be able to determine if the use of PV systems could delay replacement of electric facilities and related costs. We also will be able to study the broader applications of PV systems and their impact on transmission and energy-supply capacity requirements."

Corey N. Hessen is Xcel Energy executive director of IT strategy and customer operations.

I AM VERY BULLISH ABOUT THE OPPORTUNITY IN FRONT OF RENEWABLE ENERGY ...

energybiz: How well-briefed would you say utility executives today are on the work that you are doing?

ARVIZU: There is a growing interest on the part of utilities. Utilities tend to be quite conservative. They have many different dynamics and factors in trying to maintain profitability. Many utility executives want to know what will be the carbon policy of this country. They are concerned about the volatility of the price of natural gas. Clean coal is one answer, as is sustainable nuclear power. Maybe, there is a renewable or energy-efficiency option they might choose.

energybiz: How does renewable energy fit in?

ARVIZU: What isn't necessarily in the forefront of their thinking is how to accommodate renewable energy and energy efficiency. How do you extract the value of those technologies in this construct of big power plants and big wires? There must be a distributed nature to the future energy infrastructure. That is the part where the bridge needs to be built.

energybiz: What will the utility of tomorrow look like?

ARVIZU: It will be a mix of big power plants and big wires and smaller power plants and generation that's even more distributed than micro-grids. You could create sustainable businesses around them that fit into a very different future energy mix than the one we have today.

energybiz: Do you think utility executives should be paying attention to what you are nurturing here, in terms of emerging technologies?

ARVIZU: Yes, of course. The opportunity here is closer to a market reality than many utility executives realize. It is incumbent upon us to articulate what the business case looks like. As Wayne Gretzky likes to say, we skate to where the puck is going to be rather than where it is today.

energybiz: Are you optimistic?

ARVIZU: I am very bullish about the opportunity in front of renewable energy and energy efficiency technologies. You can do a lot more with renewable energy if you think about the future infrastructure differently than you think about today's infrastructure. ☺