Renewable Energy Advisory Council Meeting Notes

July 27, 2016

Attending from the council:
Bruce Barney, Portland General Electric
Suzanne Leta-Liou, SunPower
Rikki Seguin, Environment Oregon
Frank Vignola, Solar Monitoring, University of Oregon
Dick Wanderscheid, Bonneville Environmental Foundation
Matt Mylet, Beneficial State Bank

Attending from Energy Trust:
Chris Dearth
Sue Fletcher
Fred Gordon
Jeni Hall
Betsy Kauffman
Dave McClelland
Dave Moldal
Lizzie Rubado
Jay Ward
Peter West

Others attending:
Erik Anderson, Pacific Power
Stasia Brownell, 3Degrees
Doug Gross, Sunverge
Nadine Hanhan, Oregon Public Utility Commission
Kendra Hubbard, Oregon Solar Energy Industries Association
Andria Jacob, City of Portland
Alan Meyer, Energy Trust board
Caroline Moore, Pacific Power
John Reynolds, Energy Trust board
Adam Schultz, Oregon Department of Energy
Brian Spak, Portland General Electric

1. Welcome and introductions

Betsy Kauffman convened the meeting at 9:45 a.m. The agenda, notes and presentation materials are available on Energy Trust's website at: www.energytrust.org/About/public-meetings/REACouncil.aspx.

2. Announcements

Lizzie Rubado shared out that Energy Trust created a document summarizing support for customers regarding consumer protection. We will condense the document for use on our website, and can distribute copies to council members. Rikki Seguin said she would be happy to help with further distribution.

3. Sunverge Solar Integration System

Doug Gross provided background on Sunverge and its role providing small, distributed, lithium-ion battery systems coupled with renewable power that can be aggregated into virtual power plants for a utility through a cloud-based software. The company started in Northern California after the founders identified problems with reverse power flows related to solar photovoltaic integration in the grid. Sunverge operates in Australia and North America, including California and Hawaii, where its solution makes economic sense based on regulatory conditions. Arizona and Nevada are newer opportunities.

> Sunverge's solution is the Solar Integration System. It has three component parts: the storage battery system; a renewable power source, typically solar; and cloud-based software.

Utilities are the primary customer of Sunverge. Doug sees opportunities for use with Portland General Electric based on the outcome of regulatory proceedings. Doug described examples from New Zealand, Consolidated Edison and Sacramento Municipal Utility District. The homeowners in the Sacramento Municipal Utility District example are saving 85 percent on their electric bills, and the system is meeting the needs of the utility.

Doug described the value of the Solar Integration System to consumers as providing backup power, reducing energy bills and being well-suited for time-of-use customers. The value to the utility is grid stability (using smaller distributed systems to firm up solar before it hits the grid), system upgrade cost deferrals, ability to aggregate the systems and dispatch as needed, and voltage optimization.

Bruce Barney: Can you discuss system size in terms of power?
Doug: The individual systems are a variety of sizes. Consolidated Edison will have 300 different systems. The systems will range from 7.7 to 19.4 kilowatts.

Bruce: How do you balance the competing needs of backup power and bill management systems? Do you always leave power reserve for backup?
Doug: Yes. Depending on the needs of the utility, you always want an amount in reserve for the consumer. The complexity is in the contracts, not in the technology.

Brian Spak: What are the dimensions of the Solar Integration System?
Doug: It is about 6.2 feet tall and 2.5 feet wide. It weighs between 725 and 800 pounds, depending on which battery is selected. Future systems will be smaller.

Brian: You are managing all business aspects right now. What is your core competency? Do you expect that other businesses will do part of this work?
Doug: We are seeing specialization in different parts of the storage value chain. We do and will use installers that are good at installing solar with battery backup. Our core competency is the software. We also work with companies in the hardware business. There are likely to be more actors in the market in the future, and we will integrate with them.

Fred: Are you looking broadly at demand management and load management, even without storage? For example, are you considering water heaters within your concept?
Doug: We see that integration happening at the next level up. We are not looking to bring in the integration of other parties' systems.

Suzanne Leta-Liou: What is your view on the rest of the market?
Doug: We are pursuing markets where the economics of solar plus storage make sense. In the Pacific Northwest, we see an evolving situation. We need to properly assess the value streams, and that work hasn't been done. In California, there are a great deal of credits and regulatory aspects that make it economically viable. The scenario is market by market at this point.

Dick Wanderscheid: What is your distribution channel? How do you get equipment installed?
Doug: Our single biggest partnership is with SunPower. They are our distributor in many respects. Installers vary based on market.

Alan Meyer: How is the unit wired into the home?
Doug: All of the power coming off of the photovoltaic system supports loads in the home. The power then flows through the system and back to the grid. Energy from the grid flows through the system. The system has islanding capability.

Brian: Is the typical installation in front of the meter?
Doug: It is typically behind the meter, but it can go in front of the meter. Both are feasible.

4. City of Portland, Bureau of Planning and Sustainability
Andria Jacob provided an update on the city's efforts to achieve climate and energy goals, and offered her perspective on storage considerations for the city.

> The Climate Action Plan is the city's guide for energy planning. The most recent version was adopted last year. The plan includes a 2030 goal to supply 50 percent of all energy used in buildings from renewable resources, with 10 percent produced within Multnomah County from on-site renewable sources, such as solar. The city is looking to increase on-site generation, which is currently at 9 percent with four different systems currently in development. The bureau works collaboratively with other bureaus to set goals and advance progress. The Comprehensive Plan adopted in June is also aligned with energy objectives. The growth strategy is to grow up rather than out, and develop robust centers and corridors.
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> The Climate Action Plan does not currently address renewables with storage. The Bureau of Emergency Management determines how all agencies will respond, and the bureau's planning tools do mention energy storage in a limited capacity.
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> Andria has a specific line item for solar system development, and plans to pilot some efforts related to storage. The Central Fire Station, Fire Station 1, is a candidate for a solar installation plus storage as a demonstration project. It will be a learning process. The city has learned that the fire station didn't see power at the building as necessary to fulfill its first responder role. Pilot sites must have already been retrofitted to withstand an earthquake.
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> Other opportunities could be the post office redevelopment in the Broadway corridor. This site will undergo a master planning process, and any opportunities there are years out. A multifamily project in Lents with Portland Housing Bureau also offers opportunities. Andria is also learning from other cities like San Francisco.

Alan: Are the generation levels achievable?
Andria: They are aspirational goals. We buy renewable energy credits for what we cannot generate.

Brian: You are interested in Fire Station 1 as a pilot project. How far along are you?
Andria: We are scoping and working with an electrical contractor, and we have applied for PGE funding. The system is not yet designed.

Betsy: Does the city prefer to own its renewable systems?
Andria: Yes.

Dick: What has been the performance of the Lucid Energy system with city water lines?
Andria: It was an interesting demonstration project, but it wasn't the best technology for our system.

Lizzie: What is the interplay between the county, city and region regarding resilience planning?

Andria: The groups are meeting quarterly through an Emergency Management Steering Committee to make decisions about ownership and responsibility of various functions in a disaster.

Frank Vignola: Have you considered solar systems that are removable and can be taken to another place during an emergency to make energy available at a different site?
Jeni Hall: There are systems like that on the market. It is early but something to consider.

Brian: PGE is interested in helping the city, and we hear interest from lots of different customers related to piloting renewables plus storage. We want to work with the city to make the right decisions for these systems and pilots.

Andria: The Local Energy Assurance Plan outlines the risk of having energy infrastructure in a place that would be destroyed in a disaster. This is another planning tool to consider.

Lizzie: How do you see Energy Trust as a partner?
Andria: We have a nine-year history of working well together. We look to Energy Trust for thought leadership and technical assistance. We should keep communication open and invite dialogue. Support for pilot projects is also of benefit.

5. Public comment
There was no additional public comment.

6. Meeting adjournment
The meeting adjourned at noon. The next Renewable Energy Advisory Council meeting is scheduled on September 7, 2016 from 9:30 a.m. to 12:00 p.m.