Renewable Energy Advisory Council Meeting Notes

June 3, 2015

Attending from the council:
Diane Broad, Oregon Department of Energy
Shaun Foster, Portland General Electric
Kari Greer, Pacific Power
Matt Mylet, Beneficial State Bank
Michael O'Brien, Renewable Northwest
Frank Vignola, Solar Monitoring, University of Oregon
Dick Wanderscheid, Bonneville Environmental Foundation

Attending from Energy Trust:
Chris Dearth
Sue Fletcher
Jennifer Hall
Ally Hoffman
Betsy Kauffman
David McClelland
Dave Moldal
Gayle Roughton
Lizzie Rubado
Peter West

Others attending:
Cindy Dolezel, Oregon Public Utility Commission
Bill Eddie, OneEnergy Renewables
Tyler Graham, Solar Oregon
Wendy Koelfgen, Clean Energy Works
Nick Lawton, Green Energy Institute, Lewis & Clark Law School
Lisa Logie, Solar Oregon
Alan Meyer, Energy Trust board
Elaine Prause, Oregon Public Utility Commission
John Reynolds, Energy Trust board

1. Welcome and introductions

Betsy Kauffman convened the meeting at 9:30 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. Solar update

Dave McClelland provided an update on a solar request for proposals. Energy Trust offered $2 million for large solar projects in Pacific Power territory with applications due May 15, 2015. Seven developers submitted 16 applications totaling 130 megawatts DC for a total incentive request of $14.6 million. The projects are under review, and one or more could be selected for board approval in Q3.

Dave presented information on solar reservations and costs so far this year

Dave: Oregon now has more than 100 MWDC and 10,000 solar systems installed. Net-metered projects make up about 60 percent of that, including 54 MW from Energy Trust's standard incentive programs. The volumetric incentive rate pilot, also called feed-in tariff, comprises about one-quarter of installed capacity, 24 MW, and the remainder of capacity is from utility scale projects, 16 MW.

Dick Wanderscheid: What kind of equipment is being installed?
Dave: SolarWorld modules make up about 40 percent of the Oregon market. Residential customers have expressed the most interest in buying local products. There aren't many U.S. players besides SolarWorld. Most other manufacturers are in China.

The Oregon commercial solar market is rebounding after a few years of struggling after the repeal of the state's Business Energy Tax Credit, BETC. System prices have come down to the point where Energy Trust incentives can be effective without other state funding. Energy Trust has its largest commercial pipeline in five years, with up to 10 MW expected to be installed this year.

Residential solar had a strong start to the year with over 500 projects installed in the first five months. Typically, about one-third of all projects for the year are installed in Q1 and Q2, so the program is on track to support more than 1,500 residential projects this year, which would make it our largest year to date. The market has seen a shift away from third-party owned solar systems over the past two years, with more homeowners purchasing a system than leasing or signing a power-purchase agreement, PPA. So far in 2015, 61 percent of residential applications are for systems purchased by customers.

Now I will explain drivers for setting standard solar incentive rates. The program is limited to providing above-market cost of renewable projects. For standard incentives, the program compares average costs, including capital costs, ongoing project expenses and average project revenues, including the value of the retail energy offset and other incentives such as the state Residential Energy Tax Credit, RETC, and Federal Investment Tax Credit, ITC.

The above-market cost sets the maximum incentive the program can set. Typically, the program targets a lower incentive because market demand exceeds the available program budget.

Alan Meyer: Is the Renewable Energy Credit, REC, policy construct the same for residential and commercial projects?
Dave: Yes, both agreements dictate that the customer owns the credits the first five years.

Dave: Energy Trust has to consider external policies when setting incentive rates. External incentives impact both demand for projects and the above-market cost of projects. Oregon's Volumetric Incentive Rate, or feed-in tariff, pilot just finished its last round of funding, so the program expects demand to shift toward Energy Trust incentives. The end of the ITC for residential projects in 2017 will also drive demand in the next 18 months. The state RETC is currently set to expire one year later.

The program uses a stepped incentive reduction model, where demand triggers incentive reductions. Funds are allocated at a given incentive rate. When the funds are fully allocated, the incentive drops to the next available rate. This year, Portland General Electric residential funds are in high demand, so the program has already dropped the incentive once in March, and another reduction was just triggered this morning. The program increased the size of the drop from 5 cents per watt to 10 cents per watt to respond to higher-than-expect demand.

Falling project costs are also expected to drive incentive reductions in the next 18 months. Over the last five years, the program has seen prices falling at an average rate of 2 to 3 percent per quarter, about 8 to 11 percent per year. If we forecast a 2 percent drop per quarter over the next few years, the above-market cost will constrain the incentive we can offer. These slides show how we build up a forecast of above-market cost. We forecast the cost and then subtract out the modeled energy value, RETC and ITC. Under this scenario, we expect to have to drop our residential incentives in half by the end of 2016. This also means we'll be able to support more projects with our budget.

Kari Greer: Do the slides only represent PGE?
Dave: Yes, though Pacific Power is a similar situation and will likely be at about 30 to 40 cents per watt by next year.

Dick: Is the appreciation of the retail value of electricity assumed?
Dave: Typically, a 2 percent escalation of retail electric rates is assumed.

Matt Mylet: How do you arrive at the retail energy value? What discount rate is used?
Dave: It's the target rate of return for the customer. For standard incentives, we use 7 percent.

Diane Broad: How many customers are in the model that don't have ITCs impacting the cost of their system?
Dave: Most people take advantage of the tax credit, especially residential customers. Some public sector projects require other grant structures, such as Pacific Power Blue Sky^{SM}, Renewable Energy Development or Renewable Energy and Energy Efficiency grants. These are considered.

Elaine Prause: At what point does Energy Trust no longer need to provide an incentive? How is the soft cost reduction initiative impacting this?
Dave: The soft cost initiative is supporting contractors in making price reductions. There's more opportunity to reduce costs, but the most successful contractors are already at the more competitive prices.

> Note on the last slide that if the ITC and RETC expire as planned, the above-market cost will double in 2017 and double again in 2018, even with consistent cost reduction. Energy Trust doesn't expect to be able to fill that gap.

Matt: Do solar panel costs and total project costs come down at the same rate?
Dave: There's been a shift in project costs from primarily equipment costs to soft costs. Soft costs used to be about 25 percent of system cost and now can be more than one-half the overall system cost.

3. Oregon Public Utility Commission dockets related to solar

Cindy Dolezel from the OPUC updated the council on the Volumetric Incentive Rate, VIR, pilot and UM 1716 related to the resource value of solar.

Cindy Dolezel: UM 452 VIR, or the Feed in Tariff, FIT, program is coming to an end. On July 31, all parties are meeting to review it.

> Docket UM 1716 encompasses a review of resource value, fixed cost recovery and the reliability and impacts of solar. The goal is to create a catalog of elements to be included in the resource value assessment for Oregon solar.
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> To assess resource value for Oregon solar, a consultant will be hired to ask utilities to run numbers and will also present a final report to commission. To assess fixed cost recovery, a concurrent investigation will be conducted with the numbers feeding into the above report. A separate team will lead an investigation of the impact of solar.
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> The portfolio options committee is considering a new program from PGE that would allow residential customers to buy into a specific project for RECs.

Betsy Kauffman: What elements are included in the value of solar investigation?
Cindy: Several different elements. A list will be presented to the commission and they will pick and choose resources. All will be included in the chart to come out at the end of the month.
Shaun Foster: The list includes avoided energy, transmission and distribution, and most everything you could imagine across the country is being considered.

Frank Vignola: How much has been investigated across the country?
Cindy: The baseline list came from Nevada and Minnesota reviews.

Michael O'Brien: The process is well structured. Thinking of elements rather than costs and benefits removes the negative personal effects. It's been great to see agreement on what should be measured.

4. Green Energy Institute's solar policy comparison report

Nick Lawton from the Green Energy Institute at Lewis & Clark Law School presented a comparison of Oregon's solar policies to those in states with the largest solar markets, the lowest solar costs and the most quickly falling solar costs.

Nick Lawton: The Oregon solar market has grown more than ten-fold since 2008, though a few large systems account for most of the capacity. States with leading solar markets have more solar capacity and more quickly falling prices. The goal of the report is to consider how policy can help encourage falling prices.

> Most states provide direct incentives, but the model varies. Development requirements are not as common, nor are mandates for solar on private new construction. Other confounding factors include equipment costs and resource and power prices.
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> Few states have policies that track impact on their solar markets of tracking and reducing soft costs. The top policies from other states are carve-outs, direct incentives, solar-ready requirements, tax credits and promotion of utility- and commercial-scale projects. Oregon could promote more low-cost solar by promoting large-scale solar.

Matt: Are there specific states that are better comparisons to Oregon-? Are there states with similar solar resource and prices?
Nick: The short answer is not really. This report is not intended to be a fair comparison, but to show how Oregon stacks up against all market leaders, how the leaders reached their positions and how Oregon compares in that respect.

Elaine: Do other states look at above-market cost as an investment guide?
Nick: Oregon is a relative leader in that regard. Some states have incentive structures managed by analogous institutions to Energy Trust. California has a tiered declining incentive program, which considers above-market cost. However, the report doesn't consider methods of incentive calculation.

Betsy: Was your analysis of Oregon capacity growth versus capacity growth of other states performed on a per capita basis?
Nick: No, but it would be interesting to compare with budget amounts.

Frank: Oregon has some small utilities as well as larger ones like PGE and Pacific Power. Have you studied states with a similar mix of utilities?
Nick: We have looked into the municipal utilities, but not extensively.

Alan: The California comparison is not necessarily relevant because the factors are so different. For example, the government-instated policies seem to drive the transition to solar.
Nick: Yes, and I personally favor government incentive structures. However, the report is not intended to make comparisons to Oregon, only to showcase what has worked in other states.

5. Public comment

Diane: The amount of solar capacity in New Jersey shows potential for increasing resiliency on the grid. It would be interesting to consider how we can target state money to improve grid resiliency. New Jersey is funding 13 separate projects that are all capable of providing emergency services. The state has leveraged a large number of solar installations, and all are projects that had existing distributed renewable energy already in place. The project aims to change the interconnection and enable islanding with lithium batteries, while an incentive was provided to reconfigure the systems. Oregon faces serious risk of long-term outages from natural disasters. This is up for consideration in solar tariff, and may be considered in policy development.

Betsy announced that Mike Kaplan will speak about the Oregon Department of Energy at a Northwest Environmental Business Council breakfast on June 23.

6. Meeting adjournment

The meeting adjourned at 11:14 a.m. The next Renewable Energy Advisory Council meeting is scheduled on July 15.