RENEWABLE ENERGY ADVISORY COUNCIL
Notes from meeting on July 17, 2013

Attending from the council:
Glenn Montgomery, Oregon Solar Energy Industries Association
Robert Grott, Northwest Environmental Business Council
Juliet Johnson, Oregon Public Utility Commission
Bruce Barney, Portland General Electric
Vijay Satyal, Oregon Department of Energy
Dick Wanderscheid, Bonneville Environmental Foundation
Tashiana Wangler, PacifiCorp
Suzanne Leta-Liou, Atkins

Attending from Energy Trust:
Betsy Kauffman
Jed Jorgensen
Thad Roth
Aaron Wythe
Dave McClelland
Chris Dearth
Peter West
Hannah Hacker
Jackie Cameron

Others attending:
Erik Anderson, PacifiCorp
Matt Hale, Oregon Department of Energy
Jimmy Lindsay, Renewable NW Project
Wayne Lei, Portland General Electric
Jeff Bissonnette, Citizens' Utility Board of Oregon

1. Welcome and introductions
Betsy Kauffman called the meeting to order at 9:30 a.m. and reviewed the agenda. The agenda, notes and presented materials are available on Energy Trust's website at www.energytrust.org/About/public: meetings/REACouncil.aspx. Approval of June's minutes was delayed until the next meeting due to a delay in posting the minutes online.

Glenn Montgomery announced that he will be leaving Oregon Solar Energy Industries Association. He will be serving as a part time, independent contractor and other portions of his prior role are posted as part-time positions now.

Betsy Kauffman announced that Troy Gagliano is leaving EDF Renewable Energy and will be resigning from the Renewable Energy Advisory Council. Troy has served nine years on the council and will be missed.

2. 2013 legislative session wrap-up
Jeff Bissonnette from the Citizens' Utility Board of Oregon presented and provided a summary of energy-related legislation that came out of the recently completed 2013 Oregon legislative session.

Jeff: This session can be most aptly described as not having any game changing legislation; nothing came out of it that will significantly change the way that we do business.

> The Emissions Performance Standard loop was closed and Senate Bill 242 was passed. This regulates out of state resources, saying that they must be from the most efficient source. Any new plants have to be constructed to meet an emissions standard of the most efficient, new natural gas plants. PacifiCorp expressed concerns that natural gas resources will not fit in the standard. We worked through some issues and passed the bill.

The future feed-in-tariff framework, House Bill 2893, has passed. This bill extended the feed-in tariff pilot for one year and set the limit for commercial systems in the pilot at 2.5 MW. There may also be a docket by CUB, Renewable Northwest Project and the utilities to address issues about cost shifting and cost substitution within net-metering programs.

There were a few siting and zoning bills. Renewable Northwest Project was the main proponent behind these and can answer questions better. House Bill 2981 was passed, which allows counties to establish a voluntary waiver to the employment requirements for rural renewable energy development zone exemptions from property taxation if a certain minimum investment is made in qualified property. This is meant to encourage new renewable energy development. HB 2020 was also passed.

A bill to standardize net metering was introduced by CUB and others, but it did not get out of committee. It would take net-metering rules used by investor-owned utilities and standardize them statewide across consumer-owned utilities. This bill will continue to be worked on and an informational hearing will be held, most likely in the September legislative days, to start the discussion. RNP will take the lead in interacting with the consumer-owned utilities and on preliminary discussions. From this hearing, CUB is hoping to set up framework for a more formal dialogue on this issue in 2015.

Several bills to weaken, undo or bend the Renewable Portfolio Standard were introduced but were defeated. A significant one was from Umatilla Electric Co-op, who will be categorized as a large utility under the standard due to data centers in its territory. UEC would like to be exempted from the large utility standard.

There was a proposal to allow historic hydro into the Renewable Portfolio Standard, which is the hydropower from the dams. Lobbyists from UEC have filed a ballot measure to allow this. CUB hopes to negotiate with the UEC before too long and the Governor is open to starting a task force to look at this issue. CUB is taking the prospective measure seriously. The ballot title has been approved but only two signatures have been collected, Representatives Smith and Hansel.

Betsy: What did UEC ask for?
Jeff: To be either exempt or exempt the load from single large entities from the standard. They have said that it will cost too much but our analysis says it won't cost enough to reach the cost cap. I hope the task force will help to work through the issues as I am pretty sure that the ballot initiative goes away if the issues are solved.

Betsy: At the Future Energy Conference, it was discussed that some of the owners of these data centers want green power; does that come up in these discussions?
Jeff: It has come up but these owners have not been that active in the legislative session. For example, RPS advocates tracked down the Amazon contacts for the data center in UEC territory and talked to them but they decided to ignore this for 2012. It's time to circle back and have a larger discussion and we need to engage these owners more.

Jeff continued: There was also a public purpose issue that came up very late. On the last Sunday night of session, there was a proposal to redirect some money out of the low-income weatherization portion of the public purpose charge to the Oregon Department of Energy for Clean Energy Works Oregon.

Juliet: Did the full body pass that?

Jeff: Yes, they passed HB 2322 that has the redirection of public purpose funds that had previously been going to low-income weatherization.

Juliet: Which section of this bill addresses that?
Jeff: Section 31.

Juliet: What happened with the host of carbon tax bills?
Jeff: One carbon tax study bill moved forward, SB 306. Under the oversight of the legislative revenue service, an RFP will be put out for studies of a carbon tax. The intention is to have studies ready for 2015 to inform debate.

Vijay: What is the big picture goal of these studies?
Jeff: To identify if the tax can work, how would it work and can it work in junction with other existing programs. Is this an efficient way to reduce emissions? What would be the revenue economic impact?

Dick: I wanted to highlight that SB 837, which is a hydro bill that has passed and may help small-scale hydro projects move forward. Also, what happened with the Low Carbon Fuel Sunset removal?
Jeff: It failed. No one is giving up on it. Oregon Environmental Council is the lead group but it is a priority of the overall environmental community. The sunset does not enact until 2015 but we were hoping to be proactive and get the sunset extended and actually implement the program. We will revisit in 2014.

Matt: Did you want to mention anything about how the Oregon Institute of Technology was interested in adding geothermal to the list for net metering?

Jeff: Yes, they wanted to have geothermal added to the list of acceptable net-metered resources and increase the cap from 2 MW to 5 MW, which raised a lot of issues. No one minded having geothermal added. It didn't make sense in 1999 but there is no reason not to add it now, but just up to 2 MW. The net-metering piece was added to HB 2435 and passed.

Jed: I should speak more to SB 837, the hydro bill. It gives another pathway for in-conduit hydro projects, those that use water from existing diversions, to comply with environmental regulations about fish passage. If they have fish passage issues at the site where the water is diverted, regardless of actual project site, they are required to provide fish passage both upstream and downstream. This statute allows them to instead pay into a fund at a reasonable rate if the hydro project cannot bear the burden of fish passage. The fee is scaled based on the size of the project. This was a good outcome and it dovetails well with a case study that Energy Trust and Bonneville Environmental Foundation funded, which shows the environmental and social benefits that have accrued over the last 30 years due to irrigation hydro installed in the Hood River watershed.

Vijay: Do those benefits capture the environmental impact concerns?
Jed: Yes, the case study looks at negative and positive impacts.

Suzanne: For the solar-related resource assessment study required of the OPUC, I would want to make sure that the commission and Energy Trust find a way to help use the study for Energy Trust's benefits. Not just ensuring the OPUC understands Energy Trust's incentives and how that plays into the studies but if the study is intended to look at the solar market and future costs and incentives, and how this could inform Energy Trust and its longer plan. If there is a way to combine resources on this study, this could be a good thing.

Juliet: I want to make sure I understand your point. You're talking about the first study discussed, regarding the feed-in tariff? How it is scoped, it should not only be applicable to the feed-in tariff but also be beneficial to Energy Trust?
Suzanne: Yes. Not intended to look at just the feed-in tariff, but a broader look at the solar market. Keeping that in mind, I recognize that the OPUC can only do so much and is limited in what is possible. But if there is a way to work with Energy Trust to add capabilities so that if you're looking at the markets, incentives, cost drivers, etc. Energy Trust can benefit. If no extra funding is available, just make sure the study is broad enough.
Juliet: I think that is doable.

3. PGE Smart Power project in Salem

Wayne Lei from Portland General Electric briefed the Renewable Energy Advisory Council on PGE's project in Salem that includes a 5-MW battery inverter system.

PGE is participating in the Pacific Northwest Smart Grid Demonstration Project and has installed a 5-MW lithium ion battery system. This battery is housed in an 8,000 square foot facility in Salem and is being coupled with several features. One is to test automated power transactions on a five-minute basis, which is faster than most people can handle. The idea is to take a shot at doing an offline, off grid test where 12 utilities have lined themselves up to test this system and give it a shot.

The battery is in Salem because it is close to three substations and on a feeder line that serves both commercial and residential customers. This project is funded principally through federal American Recovery and Reinvestment Act funding, via Bonneville Power Administration and Battelle in the Tri Cities. PGE is a sub-contractor to Battelle. The project timeline is 2009 to 2015 and in 2013 PGE is looking to get the battery fully operable. There are only a couple dozen batteries of this size in the United States and a large portion of this project is software development as virtually none of this can be purchased off the shelf.

Lithium ion is notorious for fire so the facility has a variety of fire controls. The battery can be operated in three ways: on-grid, on-grid and peak shaving and off-grid. The battery can recharge in 15 to 20 minutes, though that is hard on it to go so fast. The lifecycle is not known but stress tests are being completed. The best estimate is a 10-year lifespan.

One of the uses of batteries like this could be firming and shaping up intermittent power, such as wind turbines like those in Biglow Canyon. This particular battery will shape the power from the Kettle Foods 100-kW solar array, which is just down the street from the location.

Hannah: Does the location matter? The battery is in Salem which is far from the wind turbines in Biglow Canyon. Does the distance affect ability to firm up intermittent power?
Wayne: Yes and no. It matters from the perspective of transmission loss. It does help if you are closer. Biglow is an example of how far can you push this kind of technology.

Suzanne: I am totally impressed with this presentation and the project. Could you talk a little bit about next steps, such as tweaks, changes and other project related next steps?
Wayne: You incur a fair amount of learning in a new project like this and we will be applying that learning. In the upcoming year, our goal is to make it useful by the third quarter of the year.

Robert: Are you going to actually island the battery?
Wayne: That is to be determined. This is great reliability, but raises the question if we want to actually release it on the customers. We are not sure how that would be handled yet.

Robert: What are PGE's long-term goals? This whole thing with transactive control and pricing, will the price differential be enough for customers to care?
Wayne: There is a huge amount of learning to be gained here. Would PGE ever have paid the full cost, without the outside funding? No, but how could we not jump at the chance to be a part of this.

Jimmy: To figure out if you would pay the full cost, don't you need to have a method by which you can quantify the benefit? PGE has been unable to model the storage device principally because they haven't been able to quantify the benefits provided. How is this going to help the challenge of quantifying?
Wayne: There are quite a few reports out there that allow you to quantify these benefits. There are something like 31 evaluation mechanisms. We could probably qualify for "spinning reserve" but we would need to work through semantics since nothing is spinning. Arbitrage, being what it is, doesn't do much for right now, you'd put most of the valuation on the survey and spinning reserve, and then start to explore the firming and shaping potential.

Peter: Are you going to quantify any of the environmental benefits? Quantify the ability and benefit to replace onsite backup diesel generators and displace the local pollution?

Bruce: In terms of having a battery replace the need for an immediate diesel generator, that won't be possible. There will always be a need for locally diesel fueled machines for emergencies such as weather events. Codes require that you have to have onsite fuel for lifesaving machines.

Dick: Did you have a hard time getting customers to opt in to this test or did you have to pay them to do this? How many customers are on this and did you have to entice them at all?
Wayne: There is a $50 Fred Meyer gift card involved. These customers are radio controlled and PGE was particular about who to include. Everyone has been very cooperative. The 51 commercial customers are voluntary.

Vijay: Follow up to Jimmy's question, without which external money you would not have done this project. Don't you want to quantify transmission and distribution benefits? And other benefits? The proposal was built on the idea of islanding and to facilitate reliability if there is an outage. If islanding is not the goal, what is the goal and how will you do the metrics?
Wayne: I don't doubt that there wasn't good cost-benefit analysis before this was started. Most of our expenditures in the beginning were to figure out how to place this into this system. This work and learning can be assigned a price value. For all intents and purposes, we jumped for financial opportunities because why would you not have jumped at the chance to learn.

The Renewable Energy Advisory Council thanked Wayne his presentation.

4. Quarter 2 dashboard
Jed Jorgensen presented the dashboard from Quarter 2, which shows progress toward budget goals for the first half of 2013.

Jed: The goal of this presentation is to give the RAC an overview of the renewable energy sector's budgets so that the Renewable Energy Advisory Council can be better prepared to provide feedback during the budget cycle. To recap, funding is applied to projects for above-market costs and project development assistance. Energy Trust sets aside money from the current year action plan budget until the project takes place or it becomes clear that the project can't move forward. Both custom projects and development activities are paid over time, often

over multiple years, so staff has to keep track of when and how much funds have been committed. Because there are these previously "dedicated" funds, there are two budgets: the action plan budget and a profit and loss budget. The action plan shows current year new funds. This plan is about how funds will be dedicated and/or spent but doesn't include previously dedicated funds. Profit and loss budget shows, just for 2013, the money that will actually get spent through new money or previously dedicated funds.

Jed presented the action plan budget chart for PGE for Q1 and Q2. It shows the new funds that are available to commit to spend in this year and future years. Not a lot happened in Q1 but a little changed in Q2. Last year the solar market was incredibly hot and this year it is much slower, especially in the commercial sector. Energy Trust implemented some commercial solar incentive changes and June was the strongest commercial solar month since March of last year. In PGE territory, there is a little bit more of a challenge in getting custom projects so staff hasn't seen much activity yet. Staff is working with two biomass projects that may show up later in the year.

Bruce: Does Q2 show Q1 as well?
Jed: Yes, it is year-to-date.

Jed presented the action plan budget for Pacific Power. There is a larger diversity of project opportunities in Pacific Power territory. Activity shown is development assistance activities that occurred and the commitments are for the Central Oregon Irrigation District project as well as $120,000 in hydro development assistance and two other commitments for wind. Incentive changes pushed up commercial solar in Pacific Power territory, too.

Robert: Just a suggestion, can you break out the solar into sectors with different colors so we can see the differences?
Jed: We can look at that and see if it makes sense to do.

Suzanne: What we are seeing is the levels of committed and completed in comparison to total budget. Are we not seeing quarterly projections?
Jed: Correct, we don't have our projections laid over this. With solar, we have some projections but for custom projects we don't.

Suzanne: This represents the expected budget for the entire year or quarter?
Jed: Yes, the entire year.

Suzanne: How far below projections are you for the quarter?
Betsy: We don't get that granular in our projections. We only do projections for the year, not the quarter.

Suzanne: Okay. I'm trying to figure it out from a trending perspective, how the year is going.
Thad: Custom and solar are very different in terms of trends. Solar lends itself to trending and can help you project the rest of the year. Custom has a small number of projects and does not allow you to project out the rest of the year. Our budget becomes our expectations. We can better project on solar but it is just more difficult to do on the custom side.

Betsy: Are you asking, how are we doing? Is this what we expect? Do we feel we are in a good spot?

Thad: We had an RFP in 2013 and had $2.5 million available for custom projects and have allocated about one-half of that and have a project we are still talking with. There could be

dollars left over and a decision will have to be made later in the year how to deal with unallocated funds. In the past we've done additional RFPs. We've allocated half the funds and are half way through the year.

Jed presented on the profit and loss budget. This budget is not presented as custom vs. solar, just dollar amounts in PGE and Pacific Power. This has less change in Q2 because previously dedicated funds are still dedicated. The completed shows a biomass project that came on. If the program doesn't reach the budget, something about the expectations changed such as a project moving into another year. This also shows some hydro project development activity, ongoing payments and biomass.

Vijay: Committed dollars hasn't increased in proportion to completed dollars. I would have expected the committed to have increased in proportion as well, why is it not?
Jed: This is previously dedicated and current year. This is only 2013 so commitments made for future years don't show up here.

Jimmy: One visual suggestion. Could we see how many projects are represented, perhaps using little black lines to indicate how many projects?
Jed: On the custom side that might help but with solar, there would be too many solar projects to count. There is a lot more data we can show if there is a desire to see it.

Jed presented on solar generation, comparing commercial and residential across the past two years. 2012 was a large year in solar due to state tax credit and incentive changes, which led to some big changes and spurred more activities.

Bruce: Why is this presented as kWh instead of kW?
Thad: That is how we count on the efficiency side of things, so we present as kWh to stay consistent. It is a standard assumption of what the generation will be.

Bruce: But why not just use kW?
Peter: Organizationally, we are not measured in capacity but generation. On a custom project, the first-year savings will be what you are seeing here. For solar, we do an occasional survey of performance. On the last survey, there was a 30 percent sample size and we took the average generation, which was per watt.
Jed: We use kWh because that is how Energy Trust measures itself.

Betsy: One of the goals of what we are doing is to help the Renewable Energy Advisory Council understand how we look at our budget and goals and vocabulary so that when we get to budget numbers in the fall, you'll have an easier time understanding what we are presenting because you'll have heard these kinds of things before.

Hannah: In 2013, hasn't your solar budget also declined? How would you show that?
Jed: We could show that as well, yes. The generation does embody the incentives.
Thad: That is something we will do during the budget process.

Suzanne: This slide doesn't get at what I'm asking regarding projections. I'd like to see if there is a way Energy Trust can be more aggressive or perhaps a little less risk averse if you feel like you are going to get a bigger bang for taking that risk. It was slow, you bumped up that incentive but are you getting the activity you really want?

Thad: Do we expect to achieve what we forecast we would achieve during budget? The answer is yes.

Suzanne: You still do?
Thad: Yes. We believe we are on track to achieve goals on the solar side but less certain on the custom side for a variety of reasons.

Betsy gave an outline of the fall meeting schedule. The next council meeting is in September then there will be October and November meetings. In September, budget themes will be presented and some overall numbers. In October, budget numbers will be presented and in November, final budget numbers will be presented and finalized before it goes to the board of directors in December.
Thad: We might also discuss some individual projects here. We are expecting some custom projects.

Juliet: When the OPUC approved the performance measures, there was a check-in on some items in six months. I believe they include the amount of money that is going to utility projects and a check in around costs per allocated MWh. This check in is coming up next month. Thad, we'll need to chat off line about planning for this.
Thad: Yes, we'll chat offline.

5. Public comment
There was no public comment.

6. Meeting adjournment
Betsy thanked the council members for their participation and adjourned the meeting at 11:55 a.m. The next full council meeting is September 11, 2013.