RENEWABLE RESOURCE ADVISORY COUNCIL
Notes from meeting on December 3, 2008

Attending from the Council:
Doug Boleyn, Cascade Solar Consulting
Lori Koho, OPUC
Carel DeWinkel, Oregon Department of Energy
Troy Gagliano, EnXco
Suzanne Leta Liou, Renewable Northwest Project
Frank Vignola, University of Oregon
Sandra Walden, OSEIA
Debra Malin, Bonneville Power Administration

Attending from the Board:
John Reynolds

Others attending:
Jerry Bryan, Farmers Irrigation District
Brian Crise, NIETC
Dave Tooze, City of Portland
Brandon Trelstad, OSU (by phone)

Attending from the Trust:
Kacia Brockman
Pete Catching
Margie Harris
Ben Huntington
Erin Johnston
Jed Jorgensen
Betsy Kauffman
Max Mizejewski
Thad Roth
Lizzie Rubado
Brian Thornton
John Volkman
Peter West

1. Welcome and Introductions

Peter West convened the meeting at 9:38am. Everyone in attendance introduced themselves. The minutes for the previous meeting and the agenda for the current meeting were adopted without change.

Prior to beginning his discussion on the budget, Peter explained that the California PUC is about to act on an order to change how utilities can meet their RPS requirements, by allowing out of state green tags to satisfy the in state RPS. Right now utilities have to deliver energy and tags together, now you will be able to divorce the two and just deliver tags. This will put additional upward pressure on tag prices and potentially create more friction with Energy Trust's tag policy. Our current forecast had assumed that this would be likely to happen, so right now we don't need to change our forecast of tag prices, but we will continue to monitor the prices and the situation.

2. Final Budgets 2009 - 2010

Peter West outlined the final budget proposal for the renewable energy programs for the next two-years, which goes to the board for approval on December 19th.

Peter noted that historically Energy Trust has spent 18% of funding on biomass, 7% on the Open Solicitation program, 45% on solar, and 30% wind. Our budget themes for the next two years project wide uncertainties and the need to retain extensive flexibility. Tax credits will be helpful, the economy will not. We will stick with our range of successful programs, perhaps tighten OSP to get away from

new technology and towards more small geothermal, perhaps add wind and rename the program. Solar will only see incremental changes.

We will focus on new ways to deploy incentives: maybe taking equity positions, maybe pre-purchases of equipment, maybe help finance construction loans. We will take more responsibility to help projects move forward faster: financial reviews, interconnection studies, helping to line people up with financing.

In terms of new revenues, the PGE forecast is the same as we presented in October. PacifiCorp is down by $159,000 in 2009 and another $163,000. In 2009 we expected a larger carry over for PacifiCorp. In August our guess of projects that would fall off was too robust, more projects are sticking around. It means that we have less non-contracted funds to supplement 2009 revenues. In total we have to cut about $2 million from the draft budgets.

In general, we propose spreading the impact over 2009 and 2010. We are also reducing the ending balances in 2010 to near zero. Most cuts are proportional to program size. The largest cuts will be in community wind. It is the largest wild card. We will delay cuts to solar until 2010, giving the industry time to respond. Since 2009 is a wild card, at a staff level these cuts aren't worrisome to us.

The good news is that there is still a lot of money. The total renewables budget for the two year period is $42.43 million.

Between PacifiCorp and PGE, there is much more opportunity between many more resources in PacifiCorp. There are greater opportunities in almost all renewables, but less money is available, meaning it is harder to satisfy the demand for solar in that territory.

For PGE the mix is heavily weighted to solar electric. There are opportunities for community wind in PGE if we can work with BPA to have the power moved through a co-op to PGE.

In 2010 the story is pretty much the same in terms of percentages. There is a more substantial cut in PacifiCorp compared to PGE. Overall this is a 5% change from the draft budget: a 3.8% change in PGE and a 7.5% change in PacifiCorp.

Frank asked how much the change is from 2008 to 2009. Peter noted were trying to keep the 2008, 2009, and 2010 budgets roughly the same for solar.

Sandra asked why we expect money to be left over from 2009 to roll into 2010. Peter said we are always optimistic with respect to financing, but if the economy continues to have as many surprises as it has recently there may be less demand. If the economy recovers quickly that might be different and fewer projects would drop off.

John commented that he is starting to read proposals that would funnel money through state programs for energy efficiency. He wonders if similar things will happen for renewables. Peter said he did not know any specifics on this for renewables but would welcome additional funds.

Troy asked about our increased role in project development. With small projects Peter says that after we do a feasibility study there are some spaces where Energy Trust could help connect people to financing or to engineers, designers and builders. It could be helping to bid projects for municipalities.

Troy asked if we would provide assistance through the permitting path. Peter thinks we could talk about that but we would probably want to avoid being used in the permitting process by advocates. He also thinks that if you can't get through the permitting process in Oregon you may have fundamental problems with your proposal.

Margie commented that it is great that we have distributed funds across the two years. She asked the RAC to focus on the cliff that is 2011 and to work to avoid it. We can't lobby for additional funding but entities like the RAC can spread the message about the renewables budget. She noted that when we presented our budget to the PUC in draft form they asked if we can reduce our incentives to extend existing resources. She says we have done that to make sure we are keeping projects at the tipping point., but there is a resource need that is ahead of us in the out years. She noted the comment period on the budget technically ends today. We will represent any comments to our board at their meeting on December 19th.

Peter said we presented the budgets to PGE and PacifiCorp and didn't receive any comments suggesting changes on the renewables portion.

Margie stated that SB838 allows the public purpose charge to be raised above its base level to generate more funds for the efficiency program. There is no mechanism for increasing the amount for renewables. These resources are increasingly important when we put a value in terms of carbon on them.

Lori stated that we've already got an RPS that is requiring renewables to be acquired on behalf of ratepayers. She thinks it is curious that we could have a cliff so quickly after eliminating the utility scale projects.

Peter responded that the cliff was always there. You would never have a cliff if you weren't successful. We've known that if we were good we would use up the money. Margie said that the cliff is there due to the growth of interest and demand in the marketplace. As we turn more attention toward efficiency and renewables we put pressure on the market to deliver results. By 2011 we won't be able to satisfy that demand. Most of the demand is in solar, in PacifiCorp, and for commercial projects. The utilities wont accomplish these smaller projects with the RPS and we need both.

Sandra added that distributed generation is in an incredible growth phase. Solar will not always be the most expensive option, but the science has not caught up with the demand yet. Anything that the state and Energy Trust can do will help in the long run to lower to cost of carbon will be very appreciated. She says she keeps hearing conversations about solar being reclassified at the state level as an augmentive energy efficiency resource.

Frank noted that solar, wave, wind, and geothermal all need to compliment each other. If you go too far in one direction you will throw the energy mix out of balance. We have to take a look at the overall picture and grow the industries concurrently.

Suzanne asked what the definition of utility scale is. Peter said this is a program that is going away. It was a program where we worked with the utilities on large scale wind projects.

Suzanne asked about the increase in 2009 for utility scale in PacifiCorp. Is that a payout? Peter said that it is contract monitoring. Rather than pay at an accelerated rate we are paying much more slowly to account for monitoring, evaluation, and accrued overhead.

Suzanne said that given the resources Energy Trust has she thinks they are being spent very well and in the right ways. She agrees with everything Margie said with continuing to support solar for its benefits to distributed generation. She thinks that a production based incentive focused on commercial scale could be a good tool but we would also need to figure out what the best tool is to meet residential demand. If Energy Trust can't meet that demand we will be moving backwards.

Carel said that in general the budget looks very good. He likes the Open Solicitation program and the small wind. He said that his department is very happy with the direction Energy Trust is going.

Sandra asked that if there are increased resources that come to the ETO in 2009 or 2010 it would be nice to see some guidelines to see how those monies would be spent.

Peter said that any discussions about new monies would come back through the RAC and the board through a re-budgeting process. Margie said that it is incumbent upon us to show the demand that we cannot currently meet.

3. Open Solicitation Projects

Jed introduced two projects currently under consideration by the Open Solicitation Program.

Project 1:
Farmers Irrigation District proposes to upgrade its water delivery system by replacing existing canals with pressurized pipes and additional equipment to regulate water use. The pressurized pipes will eliminate canal leakage, evaporation, and spills at the end of each branch of the canal network. Flow control valves will prevent overuse by district members.

The project will enable the district to save 4.91cfs of water averaged over an irrigation season. This additional flow will be run through the district's existing 1 and 2 MW turbines to generate an additional 465 megawatt hours each year.

The project has multiple benefits in addition to the incremental generation:

- Reduced operation and maintenance costs for the district
- Energy savings of 489 MWh per year passed for district members who will no longer have to own and operate their own pumps
- Reduced operation and maintenance costs for district members (including pump service, repair, and replacement)

The project also serves as a demonstration of these techniques and technologies for other irrigation districts in Oregon and helps FID meet its goals for water and energy conservation outlined its sustainability plan.

This project produces both energy savings and renewable generation from the installation of common components. FID applied to Energy Trust for incentives from both the Energy Efficiency and Renewable Energy programs. To evaluate the project Energy Trust staff had to create a methodology which met the goals and requirements of both programs.

For this project it is extremely difficult to separate unique costs for energy efficiency and renewable energy. The simplest, fairest and least judgmental method of allocating costs was to divide the project's costs proportionately based on the percentage of kWh either generated or saved.

Each program evaluated the project separately with its share of costs to see if it met the program's requirements and to determine if it was eligible for an incentive. Following that determination, the Renewables program ran an additional test to evaluate the project as a whole, including the proposed incentives from both programs, to determine if the cost allocation method was resulting in a reasonable and defensible combined incentive.

In this case, the project is eligible for incentives from both programs. The efficiency program has offered an incentive of $154,067. The Open Solicitation program recommends an incentive of $225,000. Open Solicitation staff performed the secondary test described above and found that the combined incentive is reasonable and does not push the project past a reasonable internal rate of return.

Staff supports this project and recommends it be accepted as a project under the Open Solicitation program for up to $225,000 in funding, representing 38% of the project's above-market costs for the renewable portion of the project. This level of incentive plus the funds for energy efficiency meet the minimum financial goals FID has for the project.

When combined with the incentive from efficiency, a BETC pass-through payment, and the completion of payments on previous loans, Energy Trust's renewable energy incentive will enable FID to also meet sustainability guidelines regarding in-stream flows and provide service to members in a way that does not produce negative yearly cash flow.

Energy Trust will take title to 38% of the tags associated with the additional, incremental generation.

Carel asked about the size of the pipes to be used. Jerry answered that the pipes used for this project will be between 4 and 24 inches.

Carel asked if any value was placed on the saved water. Jed answered that the electrical generation was assigned to Renewables and the electrical savings was assigned to Efficiency, so the water savings goes to Efficiency.

Frank wanted more explanation on the methodology of the multiple benefit incentive calculation. Jed answered that the pipe is the main cost to the project, and one cannot divide the cost of the pipe into the cost for the generation and the cost for the efficiency. For other projects, where costs can be more easily assigned to renewables and efficiency, that is what will be done. Peter concurred that if we can split the costs, we do. Peter also added that in the Efficiency department, a project needs to pass the societal test, and some projects don't pass that higher level screen and Efficiency rejects the project.

David asked where the power goes, and Jerry answered that it goes to Pacific Power.

Suzanne (later in the meeting) asked if FID has been successful in finding a pass-through partner. Jed replied that he didn't know. Carel added that according to record, projects have been able to find a pass-through partner.

Peter closed the discussion by asking for the sense of the group. All were strongly in favor of the project.

Project 2:
The Dixon Recreation Center at Oregon State University is proposing to retrofit 22 elliptical trainers to generate renewable energy. The generation will be fed onto the utility grid through an inverter to displace some of recreation center's existing load. The university conservatively estimates the system capacity at 3kW and anticipates generating 3,500 kWh on an annual basis.

ReCardio is a product developed by ReRev.com, LLC, a Florida-based company. According to ReRev, the ReCardio product was successfully installed in 15 elliptical trainers at a health center in Gainesville, FL earlier in 2008. The product enables each trainer to generate a maximum of 400 watts on a continuous basis. To generate interest in the technology, ReRev is offering to install the product at their cost and provide all necessary operations and maintenance costs free of charge for five years.

OSU is seeking an incentive under the Renewable Resources department's demonstration project guidelines. Since the technology does not have a long history in the field this project provides an opportunity to better understand the amount of generation that is possible under different scenarios. To meet the goals of the demonstration project pathway, OSU has developed a plan for disseminating data gathered and information learned from the project.

Complete financial return is not OSU's sole objective with this project. Instead, the goal is to address student demand in a manner that is lower cost while promoting educational opportunities and public outreach.

Staff supports this project and recommends it be accepted as a demonstration project under the Open Solicitation Program for up to $5,812.50 in funding, representing 41% the calculated above market costs of the project. Energy Trust will take possession of 50% of the project's renewable energy certificates, as per negotiations with OSU.

Carel responded to Jed's comment that the project will not receive a BETC and asked if Energy Trust has talked to ODOE as this project would fall under the RD&D money available. Jed answered that he has put in numerous calls and not heard back.

Peter asked what the difference would be if the financial analysis included BETC, and Jed answered that Energy Trust would be covering 60% of the above-market costs in this case.

Suzanne asked if Energy Trust is considering doing this type of project elsewhere and gave the example of the gym on Alberta St. that is already doing this. Jed mentioned that he has spoken with Green Gym, the gym on Alberta, but this is the first of this type of project to submit an application. Frank added that there was also a demonstration of this technology at the Olympic Trials in Eugene which was well received, but this type of project is not the way to go for producing electricity. Jed agreed that it will not replace large power plants. John added that it is very attractive as it, by definition, is meeting peak demand.

John asked if each machine will produce 100W continuously. Jed replied that this is true while the machine is in use. John responded that according to his calculations this project would be 18MW. Jed said that the production varies with use and Energy Trust evaluated the project with a conservative estimate of generation.

Carel asked where the resistors are located. Jed answered that they are inside the machine. Carel asked if Energy Trust took into account the savings in air conditioning because of the removal of the resistors. Jed said no.

Suzanne asked if this project would have occurred without Energy Trust funding. Betsy answered that it is improbable. Brandon added that he will be approaching the OSU funding committee with this including Energy Trust funding. To get additional money, they would have to ask for money that is student fee funded.

Betsy added that the generation is very small, but there are many machines out there and it makes sense to do this. It should be standard for all machines. John asked if manufacturers are being encouraged to change how their machines are built. Brandon answered that Precor, the manufacturer of elliptical machines, has met with ReCardio and are interested in changing the way their machines are manufactured. So, there is some manufacturer interest and involvement.

Carel asked how expensive the inverter is in relation to the other costs because the electricity could be used directly and save on the inverter costs. Brandon answered that the inverter cost is a big portion of the $10,000 charge from the vendor. The final cost should be somewhere between $11k and $14k. Jed added that they are installing an oversized inverter to leave room for additional machine conversions. Carel replied that using an inverter is a high tech solution and the electricity could be used differently.

John said that there is a gym in Hong Kong that uses this technology to power the lights, and the lights get brighter when more people are working out. John added that this technology is solar's little brother.

Troy asked if it is a 5 year project, and Jed responded in the affirmative.

Peter noted that by the amount of smiles around the table, he thinks everyone agrees with funding this project. All reaffirmed this. The project does not need to go to the Board, so we will recommend that Margie sign the agreement.

4. Solar Program Changes

Brian discussed the possibility of making some changes to commercial solar incentive offers in 2009. The goal is to keep a similar level of 2009 commitments relative to 2008. The 2009 budget for PGE is up about $500,000, meaning there is a little room to stimulate activity in PGE territory. By contrast, the PacifiCorp budget is down about $100,000, meaning activity will have to shrink a little bit there.

Energy Trust thinks some changes will be necessary because there will be less state tax credit appetite from the entities that participated in 2008. Since the credit is taken over 5 years, those that have already participated have largely exhausted their appetite for credits. In addition, the economic slowdown is a big issue. From past experience Energy Trust has determined that it takes about 25% more projects to achieve our installation targets because of cancellations and long delays.

Brian said that current incentive offers try to target an 8% IRR. There were four different incentives offered in 2008. These are split between PGE and PacifiCorp and between commercial and non-profit/government projects. Only one of our offers meets the goal of the target IRR, the rest fall below that level.

Carel asked why a government should get an 8% IRR. Brian responded that they aren't able to take advantage of federal tax incentives so the IRR is actually much less for PV systems they own directly. In addition, they are doing the projects for reasons that have nothing to do with IRR. The 8% IRR would be appropriate for third party owners for systems serving government sites.

Brian proposed several changes. The first is to extend the maximum system size on the standard offer from 100kW to 200kW. He expects that as projects go up a little in size efficiencies will be gained that mean Energy Trust can pay slightly less per watt.

Suzanne asked if that increase in system size would apply to both service territories. Brian said yes.

The next change would be to increase commercial for-profit rates by 25 cents per watt. Right now commercial for-profit rates are lower than government/non-profit incentives and are still below the 8% IRR target. For PGE the new incentive would go up to $1.75/watt. In PacifiCorp it would go up to $1.50 per watt.

The third change would be to eliminate the "custom incentive" entirely. Instead, the program would continue the commercial for-profit multi-site offer of 80 cents per watt and add a new multi-site offer for governments and non profit of $1.00 per watt.

Suzanne asked why we are not meeting our target IRR. Brian said we are rationing incentives to meet our current budget. To make things easier we would love to offer only one incentive but because our budget is limited we have to split things up in order to satisfy the market as much as we can.

Peter said there is more than a 50% difference in funding between PacifiCorp and PGE. In PacifiCorp territory there is greater competition for incentive dollars. Where we can grow an industry based on the money we have is not the same as where the resource is.

Peter said that there is a philosophical program choice. In PGE territory we have enough money to spread it around. In PacifiCorp we could either do a first come first serve basis or force the market to come in at as low a cost as possible. In the first scenario you allocate all your money quickly and shut your program down. The second scenario drives the market to the most cost-efficient installations.

Carel asked how we define multiple sites. Brian said it is where you have more than one site with only one owner, based on aggregate capacity. The dollar amount that you can get over time is limited by the site. We could also limit it by site owner but Brian doesn't think that is a good idea.

Dave Tooze asked if the incentives would continue at the same level over time. Brian said that is the goal at least for 2009 and 2010. Plus any project that comes in gets a 12 month reservation to complete.

Sandra said a stable incentive is very important to the industry. Most of the folks that she has talked to have said they would rather the ETO run out of money than change the incentive structure. She thinks that the efficiency of the money depends on goals: either getting more kilo watt hours or getting more total projects. Brian said that traditionally the programs goal has been to foster an industry that was just starting to take off. We're still trying to manage that goal while also trying to be as efficient as possible with our dollars. That means supporting larger projects at a smaller cost per watt.

Doug asked if the incentives include the difference between the cost of power and generation capacity between PGE and PacifiCorp service territories. Brian said yes.

Suzanne asked to clarify if Sandra meant for commercial or residential incentives. Sandra said that in the past, members were more concerned about running out of money, but that was for the residential program. For commercial, a small sample of members the members she talked to were more concerned about stability in the incentive offer.

Peter asked Sandra about her comment that the incentive levels shouldn't change from year to year at the risk of running out of money and asked for a clear written communication of OSEIAs position on that point. She responded that whatever the incentive is set at it should be the same for 2009 and 2010. Brian said that they don't want to change the incentive mid-stream as was done in 2008.

Dave asked about multiple site owners – what is the definition of a site owner? The City of Portland is made up of multiple bureaus, much like the state has multiple agencies, a university system, etc. Would those bureaus be different customers? Brian said it is a difficult problem and one they are still thinking about. The City of Portland could eat up the whole solar budget all by itself.

Brian also noted that due to this cost analysis Energy Trust thinks it can provide more green tags to solar projects since we are paying less of the above market costs than initially projected.

Suzanne asked to have Brian's slides emailed out to the group. They will be placed online with the other meeting materials.

5. Stahlbush Island Farms Biogas Project

Thad presented on the status of the Stahlbush project. The company is a farm and food processor. They process under two names: Famers Market Organic and Stahlbush Island Farms. The project is an

organic waste digester. The project is 1.6MW in capacity and will produce 11,500 MWh each year. The project is about ¾ of the way through construction. The extension of the production tax credit has allowed them to finish slightly more slowly than they originally planned.

Thad walked through a series of photos showing the progress of the construction. The slides will be made available online with the rest of the meeting's materials.

Debra asked about the two tank digester system and it works. Thad said that this kind of digester is called a complete mix system. This setup uses a pressure differential created by the anaerobic process to mix the material without any moving parts.

Debra asked about the cover crops. Usually those would be tilled into the ground for fertilizer. Thad said that is a tradeoff for the system, but that the digester also produces fertilizer as an output. Stahlbush processes some products that aren't grown on the farm, like pumpkins. So in that sense they are moving additional nutrients onto the farm.

6. Public Comments

There were no further public comments.

Peter adjourned the meeting at 11:58am.