RENEWABLE RESOURCE ADVISORY COUNCIL
Notes from meeting on March 11, 2009

Attending from the Council:
Doug Boleyn, Cascade Solar Consulting
Kyle Davis, PacifiCorp
Bill Eddie, Bonneville Environmental Foundation
Troy Gagliano, EnXco
Robert Grott, NW Environmental Business Council
Thor Hinckley, PGE
Jeff King, NWPCC
Suzanne Leta Liou, Renewable Northwest Project
Frank Vignola, University of Oregon
Sandra Walden, OSEIA

Attending from the Board:
John Reynolds

Others attending:
John Lund (by phone), Oregon Institute of Technology
Mark Talman, PacifiCorp
Bruce Wickson

Attending from the Trust:
Pete Catching
Erin Johnston
Jed Jorgensen
Betsy Kauffman
Elaine Prause
Thad Roth
Lizzie Rubado
Brian Thornton
Peter West

1. Welcome and Introductions

Betsy called the meeting to order at 9:35am. Everyone introduced themselves. The agenda was adopted without changes. The minutes from the December 2008 and February 2009 RAC meetings were adopted without changes.

There was a brief discussion about the overall level of detail involved in the RAC meeting notes. Betsy asked if it would be appropriate to reduce the level of detail to a more summary nature. Though several people admitted to not reading the minutes others specified that detailed minutes were preferred.

2. OIT Geothermal Electric Project (280kW)

Betsy introduced the Oregon Institute for Technology geothermal electricity project.

The Open Solicitation program is proposing to provide funding for its first geothermal electric project. The proposed level of funding is $475,000.

Background information: Klamath Falls is in a geothermal zone. Many homes and businesses in the area use geothermal heat for building heating, sidewalk melting, and other activities.

The OIT campus is proposing using a UTC unit to generate electricity. UTC has gotten a lot of attention for creating a device that can use geothermal resources that are lower temperature than typical geothermal power plants. The units themselves are also small and can be used modularly. OIT will be using one unit.

In the unit hot water enters an evaporator, heating a working fluid which is vaporized. The vapor drives a turbine to create electricity. The hot water is used again on campus and is then re-injected into the ground. The working fluid is sent to a cooling tower to be re-condensed.

The unit requires 500gpm of geothermal fluid. It will run almost all the time, except for normal downtime for maintenance and on extremely cold days, when all the heat may be needed on campus.

There is a sizeable parasitic load required to run the unit. The capacity of the unit is 280kW but after all the parasitic loads the capacity is closer to only 79kW. It will produce about 669,000 kWh per year, a very conservative estimate.

This is a big opportunity for OIT. It creates educational opportunities for training for these units, which are expected to enter the market more and more.

Up front costs for installation are $890,000

OIT is receiving a Blue Sky Grant worth $100,000.

The university will also be taking out a 15 year loan at 4.5% interest through the Oregon University System.

Yearly power revenues start at $43,000 in year one and go up to $63,000 in year 20.

The difficult part of the analysis is that the unit has high yearly expenses. There is a maintenance contract with UTC for $12,000 annually. The university's supervisory personal are another $12,000 annually**.** In addition disposing of cooling tower water will cost $5,000 annually and there is a $7,000 annual reserve for future maintenance. These costs make the project very challenging.

Energy Trust found the above market cost, including yearly costs, to be $582,000. Our incentive gets them a return of 4.5% which is the rate at which they are borrowing money.

Normally you would expect a geothermal project too get a very high percentage of return. Betsy attended a conference last fall where she asked investors what the average returns were. She learned 15-20% is average for a for-profit site, and slightly less for a public institution. Energy Trust can't get OIT to a 10% return, so we are proposing to give them 20% of the green tags from the project.

Energy Trust has money in the budget for this and we've been looking for an opportunity such as this one. It is interesting to us because the same technology may be of interest to the City of Klamath Falls and others in the region.

John Lund added that the university gets a lot of requests for tours to see how geothermal systems work. This will add the power side to the equation. There is also potential all over the state for similar projects. This will provide a good example to those potential sites.

John Reynolds asked if there is a backup heat source during extremely cold weather. John Lund replied that there is a third well for backup. The campus has three geothermal wells. They typically only use one, two if it's really cold.

Frank said the project sounds great but wanted to know if the yearly costs escalate over time and if we included that in our analysis. Betsy replied that our analysis accounts for escalation over time but looks at the whole project on a net present value basis.

Robert Grott asked about UTC. Where is the product in the development cycle? John Lund replied that there is an original module in Alaska that was a 225kW module. The unit has since been upgraded to 280kW and 100 of them have been purchased by Razor Technologies for installation in NV. It is a technology in full commercial production.

Robert expressed concern that the project might not be replicable at this cost structure. Peter West said that's true, but you have to start somewhere to find out.

Robert asked if there are any technical risk concerns…stuff in the water that could create maintenance issues over time. John Lund replied that there is a certain amount of cooling tower water that has to be put in the storm sewer for the city but there is a treatment package to deal with that.

Robert asked if there is any risk to the equipment and if UTC has looked at the water quality. John Lund said yes.

Sandra asked about the educational opportunities and if there is an expectation about jobs that could be created in the geothermal field.

John Lund replied that there is a new renewable energy engineering program. Those students will get to train on this piece of equipment. There will be jobs in servicing these kinds of machines as there is a lot of interest in these kinds of binary cycle units.

Betsy added that there were about 1,000 people at the conference she was at last fall and that the conference has nearly doubled in size for the last two years. There appear to be growing opportunities within the industry, particularly here in the West.

Sandra followed up by asking if there is any possibility for the program or this project to get access to any stimulus money or other monies due to the educational opportunities involved.

John Lund replied that they have put in a request for information for developing a geothermal training center that would educate students specifically in geothermal electricity, making their campus one of the principal centers for geothermal electric projects in the country.

Jeff King commented that he is pleased to see the project. He added that Energy Trust should be careful analyzing the financing but that the opportunity to piggyback on an existing geothermal well field is very good. He noted that the O&M does not appear to include well field expenses, since they are folded into the heating system.

John Lund said that is true.

Betsy said that is one of the things that kept the upfront costs low. The same is true in the towns of Lakeview and Klamath Falls.

John Reynolds asked if he is happy with the temperature and flow in the new well they just drilled. John Lund replied no, but it is still going to be usable. He thinks the new well will be able to provide all the electricity the campus will need.

John Reynolds predicted that the Board will be delighted with this project.

Frank asked how the BETC pass through credit is being counted. Frank said he wanted to see how that works in the calculations.

Elaine replied that it is used in the first year to reduce the amount of their loans.

Sandra asked if ODOE is placing the pass-through after the project is completed and if there is a partner identified.

John Lund replied that ODOE will find a partner for them after the project is commissioned.

Betsy noted that normally OSP provides money for feasibility analysis, but with this project we decided to provide them with the services of an engineer to help them think through the project development process. That went extremely well.

Jeff King asked if the net output is being sold as opposed to selling the gross output and using purchased power to provide the parasitic loads.

Betsy said that the project is only selling the net output.

There was a brief discussion that geothermal projects cannot be net metered under the RPS. Kyle and Suzanne said that this needs to be cleaned up in the legislature but it is not scheduled to be addressed in this session.

Suzanne said that someone could seek this change as an amendment to a bill this session.

The RAC indicated strong support for the project. John Lund said he is thankful to have the support of Energy Trust.

3. Federal and State Stimulus Money

Betsy gave an update on what Energy Trust is doing with regard to stimulus money. Betsy asked ODOE if they could make a presentation, but they declined saying they don't have enough information yet.

There are a lot of unanswered questions still, so information sharing will be very necessary.

There is a standard weekly meeting at Energy Trust discussing this.

Peter said that the management team is on top of this. The state stimulus package is $129 million there is ~$40 million for green upgrades to existing buildings. If you do the math on "standard" projects, all of Energy Trust's efficiency money would go to the state just based on the number of projects created through that funding.

Energy Trust can't fully obligate its budget to the public sector and not leave any money for the private sector.

Peter reiterated that just at the state level, the amount of proposed upgrades for green buildings would eat the entire commercial energy efficiency budget.

Suzanne asked if the state stimulus is for state buildings only. Peter said yes.

Peter said that to remedy this issue Energy Trust is engaging with DAS, which runs buildings for the state. DAS also sees this as a problem. They do not want to use our entire budget and leave nothing for others. So we are negotiating with them about a smaller set of expectations about how we will participate with the state stimulus money. If would be pretty horrific if there was no money for private buildings as an unintended consequence of the state stimulus package. So there may be a cap or a rationing of our budget for those projects.

What we don't know from that list is what it could mean for solar or renewables. We don't know the state's intentions. It isn't in the data or thinking yet – not to the extent we can put a number on it and take the next step to negotiate something.

Sandra noted that solar thermal projects would still fall under energy efficiency.

Peter said that is true and that the solar thermal side is less worrisome at this point. If we can get some solar thermal that would be a plus. Right now they are only looking at traditional measures: windows, shells, HVAC, insulation, lighting, etc. The state has a vast variety of buildings of many ages in different states of disrepair, all over the state. Most of the money is being spent in "structural" ways. Energy Trust hopes the state will use efficient models to acquire these efficiencies, but the timeline is very short. The money has to be obligated within 90 days of the governor signing the bill.

Suzanne asked about the role of the RAC members in this process. Does Peter think any RAC members should be involved in these discussions of if they should be contacting the governor or agencies separately?

Peter hesitated in answering.

Betsy said that one of the reasons were talking about this is to figure out what we can and should all be doing. One of the problems is all the unknowns, which makes it hard to answer Suzanne's question. One thing we can do here is to figure out where this group's interests and desires are.

Peter agreed. He thinks things are under control on the state side for our stuff. But the federal side is still an unknown. At the state level we have to figure out if there is a different way to put our money in, or put in less than we have before.

Suzanne asked if we think it's okay that the state hasn't identified solar opportunities on their buildings. Peter said that the state is being vague about solar. Solar isn't off the table, it's just not clear yet which buildings it will be on.

Betsy added that she has put together a working group of six or seven state agencies that are interested in solar. The group has met twice. The next meeting will be the first one since the state stimulus package was passed. There may be updates following that meeting after she has learned what people are thinking.

Peter moved to talk about the federal stimulus.

Energy Trust's understanding is that there are multiple pots of money. From the EPA there is efficiency and renewables money for treatment plants.

Thad added that this money is coming through DEQ, $43 million total, $8.8 million for "green projects." It's not clear if you can have a capital investment to improve water quality and add a green component as well. That $8.8 million will also compete will projects that include improve water efficiency and habitat improvement. Those are the kinds of project that fit under the green component.

Peter said there are plenty of studies on the EE & RE sides about how you do green projects at these plants. Walt Mintkeski is pulling up old studies to see what can be done quickly.

Thad said that if you are approved for a loan through the state revolving fund, the stimulus will cover 50% of your loan as a grant and then waive your interest for the rest of the loan. The applications for this are going to be due at the end of March or early April.

Peter said that is what we know on that side, and it is basically done at this point due to the deadline.

On the housing agency side there is about $40 million that goes to the community action agencies for low income weatherization. That more than triples the state's budget for that program. The issue is the capacity for the community action agencies to respond.

Energy Trust typically doesn't serve that market. We have an agreement with the PUC that the state will serve those income brackets. The CAP agencies aren't sure they have the capacity to spend all that money.

Kyle said that is an issue they have identified. He wants to see if there is something that can be done to help them out, even if on a short term basis.

Peter said Energy Trust is engaged with housing and that we are willing to help if a role can be identified for us. We do have some pilots going for multifamily housing for "near low income" - people at 60-80% of median income. This is a big share of the market that is left on the table right now. The issue is that you have to start screening people on their income levels, which is not something Energy Trust has done before and something we are very sensitive to.

Energy Trust wants to help where we can, and facilitate things as necessary. We don't need to be the driver, we need things to get done efficiency.

Betsy asked if the CAPs can't staff up efficiently. Kyle said yes, this is the problem. Betsy asked if they can get HR assistance. Kyle said he likes Peter's idea of focusing on 60-80% instead. He wonders if it's possible for the CAPs to leverage existing Energy Trust contracts.

Peter said there is some politics involved.

Betsy asked if the utilities could provide in-kind assistance in terms of hiring. Kyle and Thor said that's not possible due to regulatory constraints.

Peter said that the demographic is multifamily housing, so you have to go after the landlords. There isn't that much that happens for renewables in this sector without an extraordinary level of subsidy.

There are two other sets of monies. One is $40 million from USDOE to ODOE. Betty Merrill is trying to figure that out but they don't know what is going to happen yet. USDOE is trying to write some guidance. USDOE has asked CESA if they would be willing to provide guidance to the states that don't have any "Energy Trust like" programs.

Kyle said that Oregon is closer to $36 million. In other states they are out soliciting projects, including renewables. Maybe they are jumping the gun. The money comes to the SEP program but there may be strings that come with the money that dictate how it will be spent. They haven't been building projects lists because they don't want to get people's hopes up and then disappoint them.

Peter said it is good that PacifiCorp is doing a Blue Sky solicitation. Projects could be piggybacked on that potentially. But the lack of list building is starting to create a little bit of panic. People want to get on "the list" even though there isn't one. The smaller communities want to create a list in case they need one.

The other money is block grant money. It comes to the state but there are formulas for how it gets distributed to counties and agencies. Peter thinks it will be about $11 million. The smaller communities will need help prioritizing what they can do with any money they receive.

Peter wonders if we can help them do some sort of SWAT approach? Even if it isn't useful this time around we will help them learn something and we will learn something about the audience too. We're looking at hiring 4-5 people to get into the field to help these communities identify and prioritize potential projects.

Betsy added that the best summary she has seen on municipal opportunities is on the League of Oregon Cities website. According to LOC, Oregon's share of the block grants is $42 million. For cities over 35,000 in population they will have to go straight to the Feds to apply. The rest will be distributed through ODOE. There has also been discussion of convening some regional workshops.

Peter said we are looking for ways to take our money and drive it forward. If the stimulus money is going to make things happen we should look around and see if there are places stimulus isn't going to make things happen too.

Betsy added that the Association of Oregon Counties is planning to have a workshop for their members and they are going to take a survey to see what projects their members have planned. LOC did a survey in December, but it was unofficial and they are not planning to take any sort of organizing role with the cities.

Kyle said he appreciates Energy Trusts efforts. He wonders if Energy Trust can pull together examples of case studies around publicly owned facilities to have those materials available for any public workshops or forums that happen. Potentially we should do some direct mailings as well. He says they are getting asked how to prioritize as well. Which buildings should communities work on first? Are their criteria that Energy Trust uses for prioritizing?

Peter said there are several ways to choose from in terms of how to do things for energy efficiency. Should Energy Trust go to places where communities won't get as much money? Should it dedicate money to top performing projects? Only focus on below average buildings?

Kyle said it would also be useful to put together project schedules to give realistic time frames for project development.

Peter said that for renewables the only criteria we've talked about is that we will enter into projects where you are using the most efficient economic model. People that are leveraging all the federal tax credits, to the extent they can be taken, will be higher on the list.

Kyle said developers need to understand the time it will take to get into interconnection agreements. PacifiCorp can't staff up to meet additional demand.

Peter said there is no time for studies. These projects have to be shovel ready. They will likely be small projects, primarily solar. These are the things that can be completed in time to get the money. So net metered is going to be driven.

Thor said that they have a lot of experience with solar that they are happy to share.

John Reynolds said that he hopes people keep their optimism about this big influx of money. The last time something like this happened Timberline Lodge was the result.

Kyle requests that this become a standing item on the RAC for the time being.

Betsy agreed that it is very helpful to continue this discussion.

4. Changes to Open Solicitation program

Betsy explained that OSP was designed as the place for innovative technology. As such, the guidelines are very stringent for RAC and Board approval. The idea was to make sure that unusual ideas got close examination.

Since it was initially designed, the renewables focus at Energy Trust has become more clear. We are looking for fewer innovative projects and are more interested in replicable projects that can create markets.

What we are really using OSP for is to fund hydro. To reflect the reality of the program we want to make some changes.

1. We want to change the program's name. We are open to suggestions: one idea is the "Niche Markets program." This would reflect the fact that we are not seeking cutting edge projects.

2. We want to create a second approval track for projects that are utilizing established technologies. Instead of sending established technologies through a project track designed for innovative projects we would use the methodology created for small wind and biomass. The innovative track would still exist.

3. Hydro projects would use the established technology track.

4. We want to fold the Wind program into this program, keeping the budgets and guidelines established for that program, but allowing for budget flexibility when one area is doing better than another.

Peter clarified that under the standard programs the authority to approve a project under $500,000 is delegated to Margie Harris, under the authority of the board.

Kyle said that PacifiCorp is seeing a huge increase in the number of utility scale solar PV projects where developers are talking about 1-3 MW size range. These projects have above

market costs that PacifiCorp cannot help to buy down. Is there a way for projects in this scale to get access to Energy Trust funds? They are seeing drops in the price of solar pv. It would be good to try and lock up some of these resources while the prices are down. These would be contracted projects, not owned by the utility.

Kyle asked what the opportunity is for these projects to come in under current solar program. What about OSP? Can PacifiCorp try to take advantage of lower PV rates?

Peter said that Kyle's question is separate from Betsy's proposal. The only way it could relate is if large scale PV became a standard track under the newly named program.

Peter continued that the issue in PacifiCorp territory is the wealth of possibilities among all the technologies. We have tried to ration the funds in PacifiCorp's area as a result. In PGE territory we are able to look at large scale PV. There is interest in PacifiCorp territory, but not the money. The Open Solicitation program has about $1 million in PacifiCorp territory. The question becomes what don't you do? Do you push hydro and geothermal projects into 2010? The other issue is that the big scale solar projects are bigger than the OSP budget. Do you want to do large scale projects, or do you want to have on-going programs? We can identify what the trade offs would be if people are interested.

Kyle said that a temporary change might be good to lock in low prices. A blind solicitation might be a good idea, it doesn't have to be solar.

Peter said that there is a master agreement with both utilities that allows them to pitch us a project at any time. We have to compare that with what else we are getting at the time. If the projects are better that what we're getting, we'll do them.

Mark Talman said he has helped add 10 wind projects to PacifiCorp's wind system over the last few years. He thinks there is an immediate opportunity with the stimulus package for 2009. The bonus depreciation for 2009 is important. To define if you can capture that opportunity you have to make a decision within the next 2-4 weeks.

Mark continued that what is different about what the developers are portraying today, as opposed to a year ago, is the focus on utility scale projects. There is serious thought about how to scale this technology. They want to compartmentalize their designs in 1-2 MW chunks, to scale up to 50MW. They are sourcing at broader scales. They are looking at franchising. The reason you might want to consider this tradeoff is not too different from why we got into the wind business back in the 90's. Back then wind power was multiples above market in terms of cost. We have to do things now to get the benefits of price decreases in the future. Taking one project in 09 as an experimental utility scale solar project is the way to go. PacifiCorp's first wind project was viewed as an experiment. Wind projects now pass the economic tests, or are close enough to do them.

Sandra thanked Mark and seconded his view. She sees a lot of big projects being designed and planned and wants to see Energy Trust explore the costs per watt and efficiencies that could be gained. The costs are down right now because projects have fallen off the table and there is a glut of panels on the market.

Frank added that over the next 5 years there is going to be quite a bit of wind installed in the region. Solar balances the energy mix. Now is the time to do it. There is a lot of economic development in the state that would benefit by a project like this. It's worthwhile to invest in at least one.

Suzanne said that the Open Solicitation suggestion seems like a good approach. Following up on the current conversation, solar is a standard technology so it could be part of that mix in OSP.

Betsy said there was a decision last year to get solar through its own program, but that doesn't capture large scale projects.

Suzanne said this scale of project doesn't fit there, so a larger scale solar project could be thought of as a niche technology. It is concerning that there is only $1 million in 2009 for OSP in PacifiCorp. She would be curious to see what $1 million would get.

Brian asked what the RAC thought would happen to first costs by going to 2MW projects. Is there a substantial difference? What incentive is needed?

Sandra said that scalability is the thing. If you target an installation that is focusing on scalability as a factor in their project, that is where the savings will be. There will be a reduction in buying panels in bulk.

Peter said that when we looked at a project last summer and said no, the RAC was divided. There were two issues of concern. One: at that time, the incentive needed for the project was more than the rate for smaller projects. Two, we never resolved the tradeoffs. We presented the things that would not happen and we got strong reaction to not cut programs. A $2 million deal is a 25% budget shift. You can't get there without gutting biomass, small wind, or hydro. Where we ended up last time was that the tradeoffs were too big for something that is too expensive and that we can't demonstrate will get less expensive. We now have some new information from Mark that the costs may be different. But for us to be able to do this with speed we would need PacifiCorp to pitch us a project and we would present the tradeoffs directly to our board.

Kyle said that we should revisit the issue. They would prefer a good chunk of the public purpose charge dollars to be allocated on cost effectiveness. Solar appears to be more replicable than biomass or hydro, but they haven't studied that.

Suzanne mentioned that one of the issues was that we are only looking back at one proposal. We need to see the range of costs to see what has changed.

Brian mentioned that a dozen people have come by mentioning that they would like 2, 5, or 10 MW projects. We've said no because of the budget.

Peter said a set of comparative projects would be appropriate. That would be like PGE's competitive RFP.

Kyle said that his only goal was to provide this for feedback. Ideally he would like Energy Trust to think about this to see if they have ideas about how to address this issue.

Betsy said that seems reasonable.

John said that given the time pressure the RAC could communicate via email over the next month as necessary.

Peter said he thinks the sense of the group is to entertain something that appears competitive and to be re-approached with the tradeoffs. Staff and PacifiCorp need to get together to do what we need to do on the confidentiality and review side to bring back a proposal. We need to find out how much money we are talking about.

Doug wants to see how the financials have changed over the past year. Demonstrate the improvement.

Jeff said he can't see spending money just because there are lots of developers knocking at the door. There have to be some criteria. Is this a good deal? Are you getting something now you can't get later? What is being sacrificed? One way of getting value is to demonstrate if it is truly a pilot. Is there expansion potential? We also need to learn something. It needs to be transparent in terms of costs and performance so we can evaluate it later.

Robert said that the original OSP presentation is very good, especially by providing budget flexibility.

Brian said his sense of the trend in the prices on solar is that there is still a way to go. He thinks this could be premature for a pilot.

Peter said we can't prejudge that until we see what is presented.

Suzanne asked staff to give a sense of timing once we proceed.

Kyle said the timing issue is the developer's risk to bear. What PAC has heard from developers shouldn't be the only thing driving things forward.

Sandra said that to take advantage of bonus depreciation you have to move very quickly.

Mark asked to talk to the person who is the most knowledgeable to see if the costs have gone down appreciably. He thinks there is a threshold decision. The amount of money is $1-3 million. That causes the tradeoff discussion. If the philosophy is not to allocate towards this scale until the costs efficiencies hit maturity, then this is not going to get there. The industry hasn't matured. His perspective is that if utilities hadn't stepped in 10 years ago with wind, where would we be today? He thinks that is where we are at today with solar. Things are maturing from installer development to the developer perspective. These are the things to think about as a policy maker.

5. Public Comments

There were no further public comments.

6. Adjournment

Betsy adjourned the meeting at 12:20pm.