EnergyTrust of Oregon, Inc.

RENEWABLE RESOURCE ADVISORY COUNCIL
Notes from meeting on March 14, 2007.

Attending from the Council:
Frank Vignola, UOSRML
Angus Duncan, BEF
Thor Hinkley, PGE
Justin Klure, ODOE
Kyle Davis, Pacific Power
Doug Boleyn, Cascade Solar Consulting
Lisa Schwartz, OPUC*
Troy Gagliano, RNP

Attending from the Board:
Alan Meyer, Weyerhaeuser

Others attending:
Dave Robison, Stellar Processes
Jon Miller, OSEIA

** present via conference call*

Attending from the Trust:
Elizabeth Giles
Adam Serchuk
David McClelland
Alan Cowan
Betsy Kauffman
Peter West
John Reynolds
Tara Crookshank
Spencer Plumb
Debbie Menasche

1. Welcome and Introductions

Peter convened the meeting at 9:30 am. The January notes were adopted with no changes.

2. Budget Updates

At the end of 2006, renewables had $165,000 left over that was unbudgeted. We are planning to reinvest these funds into the programs that were affected by earlier cuts. $110,000 will go back to OSP for incentives, and $55,000 will go to solar program for marketing. The RAC was supportive.

3. Charter for Energy Trust Advisory Committees

In 2001, the board created two councils, the Conservation Advisory Council and the Renewable Advisory Council. Since then, the councils have operated under their own operating procedures without explicit charters. While council operations have operated well without a charter, currently both councils have a few members who have not attended meetings for long time periods (more than a year). Because the council positions are important, the board is being asked to approve a charter that would do the following:

a. provide that members who do not attend meetings for six months will be asked if they wish to continue membership; a year's non-attendance may be deemed withdrawal from the Council;

b. direct staff to appoint Council members after obtaining the consent of the board Policy Committee; and

c. establish that the councils should be composed of 10-18 members

Frank said that certain groups need to be represented, and if they are not represented for a year, or even 6 months, it is concerning. We should consider if there are groups absent that should be present. Peter replied that the purpose of the charter is to provide this guidance and flexibility.

4. Solar Impact Evaluation

Phil Degens presented the findings of the solar electric program impact evaluation. This study looked at residential participants that participated in the solar electric program between 2002 and May 2006. Dave Robison of Stellar Processes performed the research. The goals were to evaluate the accuracy of the kilowatt-hour generation estimates for each project and estimate the net power delivered to the grid. The question this study was addressing was whether installing a photovoltaic system leads to the consumer increasing their energy usage, commonly referred to as "take back."

There were 277 participants in the program in the period evaluated. Of these, 118 were deemed usable. Out of the 118, 83 had a system in place for at least one year and had provided Energy Trust with meter reading data, which indicates the cumulative electricity generated by the photovoltaics. The control group consisted of 26 individuals who had installed a solar electric system in the past year. The evaluation analyzed the expected and metered kWh production, pre- and post-installation billing data, and the energy consumption of comparable households.

Of the 83 homes that had meter readings, on average the PV systems operated as expected with measured data indicating 99% of the expected production. There were slight variations regionally, and the possible sources of this variation are being explored from a programmatic perspective. Dave Robison commented that this indicates that Frank Vignola's sun charts are working well and predicting performance accurately.

Angus added that a monitoring station in Medford may not be a good metric for the rest of Southern Oregon due to microclimate considerations.

The analysis looked at billing data for the year before and year after the solar installation was evaluated. The average daily kilowatt-hour, mean temperature and solar irradiation data was collected for the same periods and a regression to normalize the electricity consumption for weather was performed for each household. Prior to installation, the household's use averaged about 12,400 kWh/yr. Post-installation, they used about 10,000 kWh/yr. Thus, there was a change in energy consumption of about 2,400 kWh. The control group showed a 2% reduction in overall energy consumption (200 kWh/year) over the same time period, which was assumed to also true for the PV adopters and applied to them to calculate a net change. The overall net savings of the group who installed systems was about 2,200 kWh annually. Based solely on the output of the solar projects, the expected reduction in energy use would have been about 3,300 kWh/yr on average.

The systems on generated the electricity expected, but 73% of that expected production translated into lower energy use recorded on the bill. About 27% of the production was 'taken back' by the household in the form of higher, other energy use. While this difference is statistically significant, it is unclear why. This may represent inconsistent data reflecting partial occupancy prior to the solar installation or other factors.

The evaluation recommends that this topic be researched more fully to see if the engineering model should be revised. Additionally, since take back seems to be a factor, systems should continue to be monitored to see if this behavior persists. This may become a higher priority if the program plans significant market expansion.

Doug Boleyn asked if there were any surveys of the families to see if their lifestyles or homes had changed. For example, if the solar was installed as part of a larger remodeling project, energy use may have increased. Phil said that he plans to add an optional survey on the web for participants and ask additional questions on the meter reading postcards. Peter added that the size of the possible take back effect indicates that it is an issue that needs to be better characterized. Whether it is the 27% indicated by this study is yet to be determined.

Dave said that new construction projects without any data prior to the solar installation were easily identified and eliminated, but he has concerns that some of the data may have come from new construction projects with artificially lower energy consumption prior to occupation.

Adam asked if there was insight into how other states have looked at the take back issue. Phil said there have been a number of studies in CA, but most were evaluating new homes or time of use (TOU) studies and were not directly applicable.

David McClelland explained the meter reading evaluation he has been performing. Energy Trust contacts all solar electric program participants a year after their system is inspected to request a meter reading. This is done via a direct-mail postcard, and participants are given the option to submit the reading on the pre-postage paid card, by phone or online. The program has had over 80% response rate to the cards.

While photovoltaic systems are on average performing as expected, the solar program is most interested in identifying those systems that are performing abnormally. The process has been to directly contact the trade allies who installed the underperforming systems and ask them to follow-up with their customer and respond to us with any resolutions.

Thus far, this has been a very positive process. The trade allies are very interested in learning about underperforming systems and are more than willing to follow up with their customers. Next steps will be to collect data at the two and three-year mark to add further reference points and continue to track performance over time. A new intern, Eric Youngson, will be investigating the regional differences in performance to see if the solar irradiation data provided by Energy Trust does not contain enough regional specificity. The solar program plans to publicize the information, but wants to ensure that the results are characterized appropriately.

5. PMC & Process Evaluation

Phil provided background on the program contracting and delivery model evaluation that is currently underway. Energy Trust currently uses a variety of models to deliver and contract for energy efficiency and renewable energy programs. For some programs, the majority of work is outsourced; for others the majority of work is performed in-house, while other programs rely upon a combination of staff and contracted program functions. As Energy Trust reaches its five-year anniversary, it is time to revisit these models and see how they are serving the organization's needs as it grows and expands into new markets and sectors.

The goals of the evaluation are to assess the strengths and weaknesses of the various program contracting and delivery structures and to obtain recommendations to improve customer service and satisfaction, communications, and long-term cost-effectiveness. Research Into Action was selected as the contractor in response to a RFQ issued in November 2006. They hope to

have preliminary results for the evaluation committee on April 14. The final results will be presented to the RAC April 18 and the Board on May 9.

6. Green Tag Policy

Green tags, also called Renewable Energy Certificates (RECs), are generally known as the environmental benefits from electricity generated by a renewable resource. Typically, these benefits are defined as the avoided air pollution from an alternative, fossil-fueled source of generation. A green tag is measured as a MWh of generation. In compliance markets under Renewable Portfolio Standards (RPS), or Renewable Energy Standards (RES), they are the mechanism to indicate compliance with the standard. Green tags are recognized financial instruments that are sold and traded internationally. They are also present in CO_2 cap and trade markets.

The value of a tag is determined in a market, and the market depends on the standards of an RPS and what is accepted in the voluntary markets. For example, if a market deems Black Liquor unacceptable, from a Black Liquor project it will not have value in the compliance market. It is not a function of the cost of a renewable resource. This is rapidly evolving as the market expands. Under SB1149, the public purpose funds for renewable energy are intended to defray the above-market cost of certain renewable resources. Nowhere does the bill mention green tags.

The current Energy Trust policy is to own green tags in proportion to its share of the above market costs. It is not based on the total cost of the project or the market price of tags. It is an add-on to the goal of developing new renewable resources. This policy worked when the green tag market was not much of an option and the above-market costs of projects far exceeded the value of tags on the market.

However, the markets have changed and the policy as it is written has become a source of friction for mid-sized projects, particularly in biomass and community wind. Our offer is disconnected from market values, provides no sharing in upside potential and does not leverage a positive inducement to perform.

Competition for tags has increased and will continue to grow, particularly as RPSs (also know as the RES in Oregon) are instituted. This impacts not only what projects come our way, but the availability and ability to obtain resources to meet Oregon's expected requirements. It also impacts how Energy Trust's renewable programs are organized. Connecting above market costs to the green tag value is no longer realistic. It is arbitrary and out of step with how a green tag value is calculated.

Value for the ratepayer is also an issue. Energy Trust is foregoing relatively cheap opportunities to acquire tags and allowing them to leave the state to satisfy other RPSs. In Biomass, this was exemplified by our negotiations with three projects in 2006. Two of the projects were offered 100% of their above-market costs, but Energy Trust required 100% of the tags in return. Both projects requested to share the tags, which did not comply with Energy Trust policy and ended the negotiations. Instead, Energy Trust went to the third project, where the effective price for the tag was $16/MWh. The tags from the two projects that walked away could have been $8/MWh.

If the policy remains in its present form, project development will be narrowed to smaller, more expensive projects that are further from market. This will make Energy Trust less relevant to the market and leave fewer opportunities and/or less flexibility.

This said, staff have identified three options: to do nothing, to minimize or to define a new approach. By doing nothing, Energy Trust would let the green tag market fund what it will and become provider of last resort for more expensive technologies and applications.

Energy Trust could minimize the concerns by basing its share on the proportion of the entire project cost and take far fewer tags to lower the point of friction. In the case of solar, Energy Trust would go from taking 75-80% of the green tags to 20-30% of the tags. Peter indicated that staff believes this to be simple short-term avoidance and not addressing the critical issues. Staff also doubt this is in the best long-term interest of the ratepayer under a RPS.

The last option is to define a new approach. The policy committee has been iterating with renewable program staff for six months on a new policy. This option under consideration now consists first of de-linking above market costs and green tag ownership. It uses green tags as a tool when cheaper tags are obtainable. It allows Energy Trust to continue to support market development while securing tags for the long-term benefit of ratepayers. And finally, it allows developers to own a greater share of tags, if the levelized market value exceeds the value of the above-market offer.

There are three advantages to this new approach: the better projects get built, Energy Trust secures tags early at a reasonable price for ratepayers, and the projects have long-term positive incentives to perform.

The first step would be to establish a set of referent prices for green tags, which would require periodic surveys of the market and involve an independent third party or broker. These would be varied by technology, application and/or market classifications, and calculated at a net present value.

Second, where a project's above-market cost is less than the value of the tags based on the referent price, Energy Trust would claim only as many green tags as its financial incentive would buy on the market. In practice, there may need to be controls on minimum share for the ratepayers or other safety valves.

Consider, for example, a 10 MW wind project that will generate 400,000 MWh over its 20 year operating life. Not counting any value for green tags, the project has an above-market cost of $1 million. The referent price for this kind of tag indicates a market value of $4/MWh, or $1.6 million over the life of the project. Energy Trust would offer to pay the full above-market cost of $1 million in return for 250,000 green tags over the life of the project, or 62.5% of the tags in any given year. The project would retain the remaining tags.

The key difference between this example and the current policy is that the current policy requires direct equivalence between the fraction of the project's above-market cost covered by Energy Trust and the proportion of the project's tags received by Energy Trust. This method would require Energy Trust to reevaluate the referent prices annually. However, this is no different than what is done in solar on an annual basis. While this will be more challenging for staff, it will be better for the market and makes Energy Trust's offer simpler and more compelling.

Lisa agreed that there is a problem with the current policy. She asked whether the revenue the developer acquires from the market is taken into account when calculating above-market costs in this model. Peter replied the revenues are not taken into account. If you were to do so, you would run into a circular calculation. This policy allows the developer to potentially achieve a

higher rate of return than the industry average we assume for the estimates of above-market costs. We do not take the risk that the project returns less than expected and this may be a better balance by allowing a potential for an upside. The policy provides a benefit to both parties; the developer has more potential revenue to maintain the project, and Energy Trust's tags are more assured.

Lisa asked that we check whether under SB 1149 the above-market model needs to take into account the developer's revenues from the tags. Lisa noted that this may be different (or not) in an RES (RPS) environment. It is unknown whether the RES will pass and/or in what form. Since Energy Trust is retiring tags on behalf of ratepayers, there may be more leeway available. Jon Miller agreed that the result of including tag values in the above-market test creates a circular calculation, which leaves you back with today's problematic policy.

Adam added that this policy is mimicking the stance financial markets are taking on green tags. Currently, a bank will ignore any revenue coming from tags because the fluctuation in the markets is too great for them to be comfortable considering tags a revenue stream on the project.

Lisa asked what the timeline is for going to the board with this policy. Peter responded that the policy committee has reviewed the current recommendation and feels comfortable with moving to this stage. If the RAC feels similarly, the issue can be brought forward for discussion at the March 28 board meeting. However, we are interested in hearing reactions and are expecting to identify further issues.

Several RAC members ask what would be done to avoid funding a project that does not need you. Peter replied that the current above-market test does that and would help in the same way with this policy, but we will need to clarify how. Peter responded that he appreciated the point and staff will need to develop a clear review to ensure against free-riders.

Alan Meyer said that if there is a renewable mandate, Energy Trust will need to acquire and retire tags and verify that the only output counted is that for which we have tags. In the end, Energy Trust is buying tags for PGE and Pacific Power ratepayers.

Alan asked why we would buy only a portion of the tags in the instances when they appeared relatively cheap. Shouldn't we be buying them all? Peter said that Energy Trust could buy all the tags. This would be an option, if they wanted to sell all the tags. The downside is that you take money away from another project. Not necessarily getting them all in order to foster another project fits with the mandate to develop the market, which is better served by more, varied projects. This policy is trying to sit between this mandate and still acquiring tags.

Angus Duncan said that Energy Trust needs to be positioned somewhere between the expensive, hard to do projects and those that can be built based on the developer's belief in the value of the tags. Energy Trust won't know which projects those are until it sees them. The proposed policy would allow this, but the issue will be how the dollars leverage the optimum amount of new resource. This you will not know until you go forward.

Peter agreed that the new policy sits squarely within the two scenarios described. Currently, we are in the green tag and market development business, and we are not proposing to change this. There is a need to articulate a threshold to identify projects that are market.

Angus asked why Energy Trust would not offer x-dollars for a project from which we claim no tags, or x-dollar plus some money for the tags at some referent price. Peter replied that based

on current policy, we cannot assist a project without taking some tags. Angus responded that Energy Trust's mandate isn't to claim tags, but to make projects happen. Alan Meyer noted it is broader than that and with an RES acquiring tags to help satisfy the RES is even more important.

Kyle Davis asked whether the referent price would be different for different technologies. Peter said they would be different, which Kyle approved of, adding that this would give a lower tag price for a riskier project. Kyle felt a high referent price means a project is already attractive in the marketplace, and is another way of differentiating projects. Pacific Power believes there needs to be a transfer of some green tags that can be retired on behalf of the ratepayer, but the current policy will not function in a RES environment because Energy Trust will be forced to deal only with risky, high-cost projects.

Thor said PGE and Pacific Power are in agreement on this issue. Energy Trust needs the flexibility to negotiate the best deal amongst different technologies.

Lisa said that the utilities are already in the tag buying and selling business at the wholesale level, so their input should be taken into consideration when determining referent prices. Peter agreed that this policy must have Energy Trust coordinating closely with utilities on the referent price and the next iteration will make that clear.

Justin said that tracking with the RES is important, which is addressed by this temporary policy.

Frank said that Energy Trust's goal should not be acquiring cheap tags. Why develop projects at all when you can get the tags more inexpensively by buying them? There are a number of intangibles in the true cost of a project, and the above-market cost analysis should do its best to take these into consideration. In particular, it should be noted that projects won't happen unless certain steps are taken to reduce the associated risks. Thus, there is great value in sharing the tags.

Troy asked how often Energy Trust imagines having to change the referent price. Peter said at least once a year and potentially more frequent than that. However, you do not want to do it too frequently. Lisa asked how long-term the levelized price will be. Peter responded that the aim will be for 10-20 years. We will need to evaluate as we go along to see if this is something we can.

Jon Miller said that things will definitely change with a RES. It is important that Energy Trust is re-evaluating this policy at this time. Soon, Washington may begin buying tags from Oregon. Thus, the risk of doing nothing may be higher than we believe. Wherever outside dollars can be leveraged to make projects go in a budget restricted environment, they should be.

Kyle asked what the project pipeline looks like and how urgent the need is to change the policy. Peter replied that the pipeline is drying up, and will continue to do so if we do not revise the policy. Biomass has lost three projects totaling 20 MW which have potentially gone out of state. Community wind is also stalling out on its three projects.

Angus said that fundamentally he doesn't care whether Energy Trust takes the tags or not. What is most important is that the programs have the flexibility to negotiate freely. When Energy Trust determines the referent price, technology and geographic should be considered. Reserve the flexibility to front- or back-load the offer. Provide a variety of prices and tag options. Ultimately, you want a policy that leaves as much flexibility within a set of principles as possible. Say you will fund the above-market difference, whether it is in tags or dollars.

Alan asked if we are front-ending payments or paying on production. Peter said that we typically front-end the offers to address up-front capital issues, but we also look at the situation and technology to determine what is most appropriate given the risks for the project. Adam added that early on Energy Trust saw its ability to buy the long-term tags as an asset. Now, we are seeing the reverse, where projects want to sell us the short-term tags and hold the long-term ones.

Lisa recommended that we tell the board this is an interim policy that needs immediate consideration. Peter said that he would do so. Given the agreement, we will bring this to the board on March 28 for preliminary consideration.

There were no public comments. Peter asked RAC members to direct questions or comments about the program updates included in the meeting packet to Peter or the program manager.

Peter adjourned the meeting at 12:00 pm.