

Agenda

Renewable Energy Advisory Council

Friday, November 17, 2017: 9:30 a.m. – 11:15 a.m.

<http://www.energytrust.org/about/public-meetings/renewable-energy-advisory-council-meetings/>

Energy Trust conference room Kilowatt
421 SW Oak St., Suite 300
Portland, Oregon 97204

9:30	Welcome, introductions, announcements	Information
9:35	Update on Community Solar	Information
9:45	Review of REC costs <ul style="list-style-type: none">Energy Trust's Renewable Energy Certificate (REC) policy directs staff to present an annual review of REC prices and implications for current REC management practices. Staff will present the 2017 review and recommend continuing the current practice of taking title to some RECs from all projects, but only registering RECs in WREGIS from certain larger projects.	Information
10:00	Diversity, Equity and Inclusion processes <ul style="list-style-type: none">Staff will provide a brief update on Energy Trust's Diversity, Equity and Inclusion strategy and process development including the amendment and expansion of the board's Equity Policy. Staff will seek feedback on the draft policy.	Information and feedback
10:15	Break	
10:25	Budget update <ul style="list-style-type: none">Staff will provide information on in-progress changes from the first draft of the budget presented in October.	Information and feedback
11:05	Public comment	
11:15	Adjourn	

You can view this agenda and meeting notes at: <http://www.energytrust.org/about/public-meetings/renewable-energy-advisory-council-meetings/>. If you have comments on meeting notes, please alert Jed Jorgensen at jed.jorgensen@energytrust.org.

Next RAC meeting (proposed):
Wednesday, February 7, 2018

Renewable Energy Advisory Council Meeting Notes

October 25, 2017

Attending from the council:

JP Batmale, Oregon Public Utility Commission
(by phone)
Michael O'Brien, Renewable Northwest
Frank Vignola, University of Oregon
Dick Wanderscheid, Bonneville Environmental
Foundation
Erik Anderson, Pacific Power

Les Perkins, Farmers Irrigation District
Suzanne Leta-Liou, SunPower
Kendra Hubbard, Oregon Solar Energy
Industries Association
Mark Bassett, Oregon Public Utility
Commission
Adam Shultz, Oregon Department of Energy

Attending from Energy Trust:

Jed Jorgensen
Joshua Reed
Rachel Wilson
Judge Kemp
Dave McClelland
Dave Moldal
Susan Badger-Jones
Hannah Cruz

Betsy Kauffman
Lily Xu
Zach Sippel
Amber Cole
Fred Gordon
Peter West
Jeni Hall
Matt Getchell

Others attending:

Alan Meyer, Energy Trust Board of Directors
John Reynolds, Energy Trust Board of
Directors

Jason Zappe, Portland General Electric
Marc Thalacker, Three Sisters Irrigation
District

1. Welcome, Introductions and Updates

Jed Jorgensen convened the meeting at 9:30 a.m. The agenda, notes and presentation materials are available on Energy Trust's website at: <https://www.energytrust.org/about/public-meetings/renewable-energy-advisory-council-meetings/>.

2. Opal Springs Hydro Project

Dave Moldal, renewables senior project manager, presented on a revised Opal Springs hydropower project. This project was presented to the Renewable Energy Advisory Council last summer. It is an existing 4.3 megawatt run of the river hydropower facility located in the lower reach of the Crooked River. The owner is the Deschutes Valley Water District. The project presented to Energy Trust a year and half ago called for the installation of Obermeyer weirs, which would have resulted in a six-foot increase in the height of the pool. The previous project would have yielded about 3,200 additional megawatt hours of generation annually. Energy Trust board of directors approved a \$750,000 incentive last October. Thereafter, the District received construction bids that were far higher than they budgeted.

Jed Jorgensen added that Energy Trust previously executed an agreement with the District; however, the District needed to revise the project's design and has now reapplied for an incentive.

The Opal Springs project is primarily a fish passage project. Raising the pool height by three feet to accommodate the fish ladder will increase the hydraulic head of the hydropower project and therefore increase annual average generation. Given anadromous fish in the Deschutes watershed and lack of fish passage at the existing Opal Springs dam, this project was designated as Oregon Department of Fish and Wildlife's number-two ranked fish passage project in Oregon.

The District has been very successful securing fish passage related grants including grants from the Oregon Department of Fish and Wildlife, Oregon Watershed Enhancement Board, and two weeks ago from the Oregon Water Resources Department. Almost 50 percent of their total capital cost is covered by external grants. Staff did not include those grants in the above market cost modeling because they were related to fish passage.

Staff is proposing an incentive of \$450,000 in two installments, one at commercial operation and one a year later given a generation threshold. In exchange, Energy Trust will request 100 percent of the renewable energy certificates, or about 20,200 delivered over two years. This project delivers renewable electricity to Pacific Power. The proposed incentive equates to about \$3.9 million per average megawatt.

John Reynolds: What are they actually doing to the dam?

Dave Moldal: They will not install the inflatable Obermeyer weirs across the face of the rock fill dam. They plan to install flashboards.

John Reynolds: Is the pool raise permanent?

Dave Moldal: Yes, it is permanent. New flashboards will span the crest of the dam. Most of the redesign work was related to the fish ladder. The three feet of additional pool height is to accommodate the geometry of the fish ladder.

Jed Jorgensen: One other point in terms of process for this project and the next one is that for any project with an incentive less than \$500,000 staff has the ability to dedicate funds to the project using our internal process. Such projects are brought to the Renewable Energy Advisory Council on an information basis. The third project you will hear about today crosses the \$500,000 threshold and we are looking for feedback before we take that project to the Energy Trust board of directors for funding approval.

Frank Vignola: How does it compare to last year's incentives?

Jed Jorgensen: The incentive was \$750,000 as approved by our board of directors last October and this one is \$450,000.

John Reynolds: Is it less generation, too?

Dave Moldal: Yes. The expected incremental additional generation decreased from 3,200 megawatt hours per year to 1,010 megawatt hours per year.

John Reynolds: So what is the comparative cost per megawatt hour for our incentive?

Dave Moldal: It increased from \$2.0 to \$3.9 million per average megawatt.

Michael O'Brien: How does the incremental increase in average annual generation compare to its total average annual generation?

Dave Moldal: The range of generation from the Opal Springs hydropower project over the last 25 years is between about 26,000 to 36,000 megawatt hours per year. The project averages approximately 29,000 to 30,000 megawatt hours. This project is projected to add an additional 1,010 megawatt hours.

Les Perkins: I am curious about the incremental cost increase between the three-foot and six-foot pool raise. It is \$10.7 million now, and was \$12 million for the full six-foot pool raise.

Dave Moldal: The low bid for the original project was about \$12 million last year. They completely redesigned the project, lowered the pool raise to three feet, and the cost decreased to about \$10.7 million.

Jed Jorgensen: I think it was a bridge too far for the district to go out for the additional funding.

3. Three Sisters Irrigation District Watson Hydro Project

Dave Moldal presented on a proposed Watson hydropower project proposed by the Three Sisters Irrigation District. The project is a result of Energy Trust's irrigation modernization program. Dave introduced Marc Thalacker, general manager of the Three Sisters Irrigation District, who submitted this installation incentive application this past spring. The overall purpose of the project is to capture renewable energy from existing water flow and pressure and to serve as a demonstration project. The project will use up to 20 cubic feet of water per second and generate approximately 800 megawatt hours of renewable energy annually.

Jed Jorgensen: Three Sisters is one of the early adopters of irrigation modernization. They have been working on piping their canals and laterals for many years. The irrigation district has about 60 sites where additional on-farm hydropower is possible. They are the furthest along in the Deschutes watershed in terms of pressurizing their irrigation system. The 'demonstration' aspect of the project is to provide their members with the opportunity to see and touch four different on-farm scale turbines in operation, which can operate under different flow and head conditions. There is a lot of value in being able to show the hydropower equipment in operation.

The project has very little or no permitting risk. This project intends to sell generation to Portland General Electric. They are in Central Electric Co-op territory and will need to wheel the renewable electricity to Portland General Electric.

Alan Meyer: Since this is a demonstration project and other folks will be coming in and looking at it, are the turbine manufactures contributing financially since it will help them sell their product?

Marc Thalacker: When we first received turbine bids from everybody, they all came in at about \$100,000 to \$125,000 per turbine. I sent it back to them and pushed them down to the \$20,000 to \$40,000 range. We were able to get things down to a reasonable range in terms of costs. Bringing in Energy Trust allows us to go to high-efficiency turbines with HydroTek and really show the other districts there is an opportunity install and operate small turbines. There is significant potential throughout the state.

Dave Moldal: From our modeling, we determined this project needs about \$400,000 in additional revenue to reach a sub 20-year pay back. For Three Sisters Irrigation District, this is acceptable. This project has significant non-energy benefits.

John Reynolds: Is one of the advantages of having four turbines that in conditions of reduced flow, you can run one turbine efficiently and shut down the others?

Dave Moldal: Our understanding is that the HydroTek 150 kilowatt turbine will be the workforce in this project and will be generating most of the megawatt hours. There is sufficient flow and of pressure to operate all the turbines. They can be turned on and off as they wish.

Jed Jorgensen: Another aspect of the demonstration project is to assess the long-term operation and maintenance of those four turbines. Documenting this information will give farmers a sense of how the turbines will operate on their land; so there is some long-term learning that can come from that. There are not many relatively small nameplate turbines installed and operating in Oregon.

Les Perkins: Most irrigation districts tend to be pretty conservative how they approach similar projects. Having a facility where you can look at multiple types of turbines and sizes is invaluable.

We get irrigation district operators and managers from all over the western United States coming to our hydropower plant because they want to see and touch the turbine and gain a better understanding.

4. Three Sisters Irrigation District McKenzie Hydro Project

Lily Xu, renewable energy project manager, presented on the McKenzie hydropower project. Jed detailed the turbine efficiency estimates. Lily provided background on the project, including its water benefits, and pointed Renewable Energy Advisory Council members to the project briefing paper online. This project will wheel power to either Portland General Electric or Pacific Power, we should know within the next six weeks or so.

Michael O'Brien: Did the budget originally have a contingency built into it?

Jed Jorgensen: No.

Erik Anderson: Does the \$1.4 million include the 5.5 miles of piping?

Jed Jorgensen: No. The piping cost \$10 million and are already in the ground, funded by other grants.

Jed Jorgensen: Our incentive is spread out to help the project cash flow during the low years of the power purchase agreement. We are bringing this project to our board on November 8 following an internal review and your feedback.

Erik Anderson: Since you do not have a designated utility yet, what is the risk of additional changes to avoided cost prices? When does a power purchase agreement need to be in place?

Jed Jorgensen: The district is trying to move forward as quickly as possible.

Marc Thalacker: We are in negotiation with Portland General Electric right now. We have a draft power purchase agreement. We are not that far from being able to execute it.

Erik Anderson: While it is sort of up in the air, it is looking like Portland General Electric will be the purchasing utility.

Marc Thalacker: Yes, it is complicated. This is a double wheel. Going through Central Electric Co-op and then Bonneville Power Administration up to Portland. This is not the best of all worlds but I will point out that Bonneville's monthly wheel per megawatt is \$1,800 and for Central Electric Co-op to go 20 miles is \$6,200.

Suzanne Leta-Liou: Could you compare the incentive cost per average megawatt to solar?

Jed Jorgensen: The previous hydro projects were \$3.9 million per average megawatt, this one is \$6.1 million.

Dave McClelland: Right now commercial and residential solar are approximately \$4.5 million per average megawatt. Next year the average will go up for residential to something more like seven or eight million per average megawatt on average. It is changing because the residential energy tax credits are going away.

Les Perkins: Is that cost figured as capacity or production?

Jed Jorgensen: It is production, generation value.

Frank Vignola: What are some of the additional benefits?

Jed Jorgensen: When you pipe an irrigation canal you pressurize the water which eliminates the need for farmers to pump water out of canals. You get an energy savings component. You also eliminate seepage and evaporation; typically, between 20 percent to 50 percent of water is lost on the way to delivery. That water has tremendous value. That is why Marc is able to get grant help in piping up that five miles. This project will put another seven cubic feet of water per second permanently back into Wychus creek. They will have restored 30 cubic feet per second for a stream

that previously went dry every summer, which has enabled them to reintroduce steelhead back into that watershed. The district will see operations and maintenance benefits as well in terms of not having to fish shopping carts out of the canal or use herbicides. What we have also seen in Marc's district is that there is a lot of economic reinvestment in the local community. With the pressurized water, farmers are saving money and starting to plant higher value crops.

Alan Meyer: There is also have benefit to the farmers themselves. It changes the economics in the region. It adds resilience so districts can get by with half as much water as they did previously.

Marc Thalacker: The water is also colder. From a temperature standpoint, we have been able to bring the temperature down from 22c to 18.5c. We are almost close to 303D compliant. From an endangered species point of view, Wychus creek historically was a key spawning stream for steelhead and Chinook salmon and is a key part of Portland General Electric's reintroduction program. The last time steelhead and salmon swam through Sisters was 1885. We expect to see them back in about five years. Historically, we had 2,000 steelhead spawners and now there will be an additional 18 miles of spawning and rearing habitat.

Suzanne Leta-Liou: I do not see the utilities' voluntary program fund being utilized here. Is there a reason for that?

Marc Thalacker: We did not apply for the program funding.

Jed Jorgensen: Sometimes timing is an issue.

Betsy Kauffman: It is a competitive process and it is a robust competition.

Suzanne Leta-Liou: But otherwise it would have been offered?

Jed: Yes, otherwise it could be utilized.

Michael O'Brien: Are there any milestones before the commercial operation date when they get that lump sum? After that, are the funding milestones purely based on generation targets?

Jed Jorgensen: There is not too much left. Marc, do you need to go your bank once you have the power purchase agreement to get a construction loan?

Marc Thalacker: No, we have clean water state loan funds for construction.

Lily Xu: They took out a loan from the clean water state revolving fund and that is a big chunk of where they will get their capital. Our incentives will help to pay back those loans and then for the five years after that, it will help their cash flow.

Jed Jorgensen asked for the sense of the Renewable Energy Advisory Council on the project. All RAC members were supportive.

5. Draft 2018 Budget

Peter West presented Energy Trust's draft 2018 annual budget. In 2017, Energy Trust expects to exceed energy savings for three electric utilities. A large megaproject will bolster savings in Portland General Electric territory. Shortfalls for two gas utilities are expected due to project delays and a strategy to delay savings per NW Natural's request. Energy Trust also expects to exceed its renewable energy generation goal, with strong standard solar demand and completion of two large-scale solar projects. We also expect Northwest Energy Efficiency Alliance to exceed its 2017 goal.

Peter noted that action plans for programs and support groups will be included in the draft budget available on November 1, 2017. Feedback is requested by November 17, 2017.

Dave McClelland mentioned that the August Renewable Energy Advisory Council session was helpful in guiding the Solar program budget. Staff will continue balancing residential and commercial solar incentives and communicating as often and as early as possible with stakeholders. We heard

we need to support the market in non-incentive ways and to support wider adoption of solar among moderate-income customers.

Dave McClelland noted that next year Energy Trust is taking a more custom path for commercial projects. That will give an opportunity to remove caps or restrictions and look at individual projects based on the additional benefits and values a project brings compared to the incentives. This will give staff more data to use for the standard program.

Suzanne Leta-Liou: While I think there are some exceptions, the utility voluntary programs are focused on projects that are for non-profit organizations. Can Energy Trust incentives provide a custom pathway for non-profit organization projects and a pathway for private entities?

Dave McClelland: Yes. We will use the custom process to pair with the voluntary programs because we need to do a custom look at those incentives, but it will not necessarily be restricted to non-profits or governmental entities. What we will likely be looking for is custom projects that bring additional benefits beyond the standard program: a resiliency benefit or a benefit for low- to moderate-income customers or other benefits. There will be more qualitative things we will be looking for with those projects.

Dave McClelland continued with the presentation and provided information on the budget and the number of potential solar projects that may move forward.

Alan Meyer: Have we used up the surplus for both utilities? Are we at a place where income coming in equals income going out now?

Jed Jorgensen: Yes, it is very close to the annual revenues. We may still roll funds forward but it will only be for revenues that went unspent in the current year as opposed to multiple years as it was in the past. This year we are rolling forward some funds for Portland General Electric. Pacific Power is pretty close to just revenues.

Erik Anderson: I have one question back to the hydro project. The average per megawatt cost is going up. As more of these hydro projects are rolling in, is there something driving the higher cost? Is it strictly the lower avoided costs or is that something unique to these projects being more grandiose and requiring more capital costs? Are we going to see more irrigation projects come in? Are there cheaper irrigation projects, or is this the new standard we should have in mind when we evaluate these projects?

Jed Jorgensen: There are multiple answers here. The context is everything when it comes to incentive costs on a per average megawatt basis. The low avoided cost prices reduce revenues for any QF project, be it hydro or another technology. We have lost most federal and state subsidies or tax credits for non-solar renewable energy projects. These factors drive above market costs way up. The low avoided costs are the main driver in why we target biogas projects that can net-meter their generation at a higher rate. We target irrigation hydro because these projects are able to leverage their additional benefits for additional revenues or grants. So you can't really compare what the cost per average megawatt was for an older project without understanding the context of the avoided cost prices it was able to get or other tax incentives that were available at the time. This is a long way of saying that we should expect higher incentive costs for the foreseeable future.

6. Public Comment

There was no public comment.

7. Meeting Adjournment

Jed Jorgensen adjourned the meeting at 12:00 p.m. The next scheduled meeting of the Renewable Energy Advisory Council is on November 17, 2017.

Annual REC Value and Cost Review

November 10, 2017

In November 2015, Energy Trust's board amended Energy Trust's Renewable Energy Certificate (REC) Policy. In summary, the policy requires Energy Trust staff to:

1. Ascertain market values and future prices for relevant RECs in consultation with utilities and the Oregon Public Utility Commission (OPUC);
2. Consider state and federal policies that may affect REC values and future prices;
3. Track the cost and effort involved in registering RECs [in the Western Renewable Energy Generation Information System (WREGIS)] and report annually to the RAC and board;
4. Recommend whether to continue to register RECs [in WREGIS] if their cost is less than the cost of registering them; then,
5. Following a RAC review of the market value of RECS and the cost of registering [in WREGIS], the Board may authorize staff, through a board resolution, to take title to RECs without registering them in WREGIS.

This memo is prepared in accordance with the policy and will be shared with the RAC at its November 2017 meeting and the Board at its December 2017 meeting.

The conclusions of this memo are identical to the 2016 report to the RAC and Board. **In accordance with Policy 4.15.000-P, staff are not recommending any changes to current REC management practices.**

REC Value

From the utility perspective, REC value is driven by compliance with Oregon's Renewable Portfolio Standard (RPS) mandate. Presently, Portland General Electric (PGE) and PacifiCorp (PAC) are in compliance: for approximately four years in the case of PGE, and approximately 11 years for PAC. **As RPS compliance mandates grow, especially with required increases from SB 1547, Energy Trust's REC portfolio becomes a smaller portion of the total the utility needs to deliver.**

The OPUC concluded that PAC and PGE met their RPS compliance targets and RPS reporting requirements. In October 2017, OPUC staff filed comments on *PGE's 2016 RPS Compliance Report*:

RPS Compliance and Renewable Energy Credits RPS compliance must be demonstrated through the retirement of RECs that are maintained through the Western Renewable Energy Generation Information system (WREGIS). RECs may be either bundled with energy or exchanged separately (unbundled). One REC is issued per megawatt-hour of generation produced.

As a result of SB 1547, only certain RECs can be banked indefinitely while others can be banked for a maximum of five years. RECs procured before March 31, 2017 may be used for 2016 RPS compliance. In addition, only 20 percent of a regulated utility's RPS compliance obligation may be satisfied using unbundled RECs in any given compliance year.

There are two mechanisms that serve as cost protections for Oregon consumers – an alternative compliance payment (ACP) mechanism and a cost cap on RPS expenditures equal to four percent of annual revenue requirement....

...PGE's 2016 RPS Compliance Report demonstrates compliance with the RPS through the use of 2,035,290 bundled RECs and 508,822 unbundled RECs. PGE's unbundled REC retirement amount falls under the 20 percent limit allowed by ORS 469A.145(1).¹

In October 2017, OPUC staff filed comments on PAC's 2016 RPS Compliance Report, and concluded:

...PacifiCorp's 2016 RPS Compliance Report demonstrates compliance with the RPS through the use of 1,685,228 bundled RECs and 245,118 unbundled RECs. PacifiCorp's unbundled REC retirement amount falls under the 20 percent limit allowed by ORS 469A.145(1)...²

In September 2016, the OPUC adopted Order 16362³ regarding Alternative Compliance Payment value under the RPS. That order also provides data regarding the value of RECs to the utilities:

Regional REC wholesale prices: PGE's 2015 RPS Compliance Report reports the average weighted cost of unbundled renewable energy certificates (REC) at about \$3.30 per MWh. (An unbundled REC represents the environmental attributes of the underlying power that is generated but is purchased separately from the power).

This value is greater than national voluntary REC prices as tracked by the U.S. Dept. of Energy. **In March 2016, nationally sourced RECs were trading at ~\$0.34 per MWh, consistent with prices observed in 2017.** The graph from the National Renewable Energy Lab below⁴ shows REC prices nationally steadily declining from ~\$1 / MWh in 2010 to about \$0.035 / MWh and dropping slowly since then. This reinforces reports from *Bloomberg* that RPS driven supply in the west precludes any upward pressure in the REC market.

¹ <http://edocs.puc.state.or.us/efdocs/HAC/um1847hac95037.pdf>

² <http://edocs.puc.state.or.us/efdocs/HAC/um1846hac94820.pdf>

³ <http://apps.puc.state.or.us/orders/2016ords/16-362.pdf>

⁴ <https://www.nrel.gov/docs/fy18osti/70174.pdf>

REC Pricing Trends

REC prices continued to remain low throughout 2016, after peaking at around \$1.13/MWh⁹ in January 2014 (Figure 19). 2016 REC prices averaged around \$0.35/MWh. The continuation of low REC prices likely explains the increase in much of the unbundled RECs market from 2015 to 2016. Purchasers with a set budget for purchasing renewable energy can purchase more RECs at lower prices.

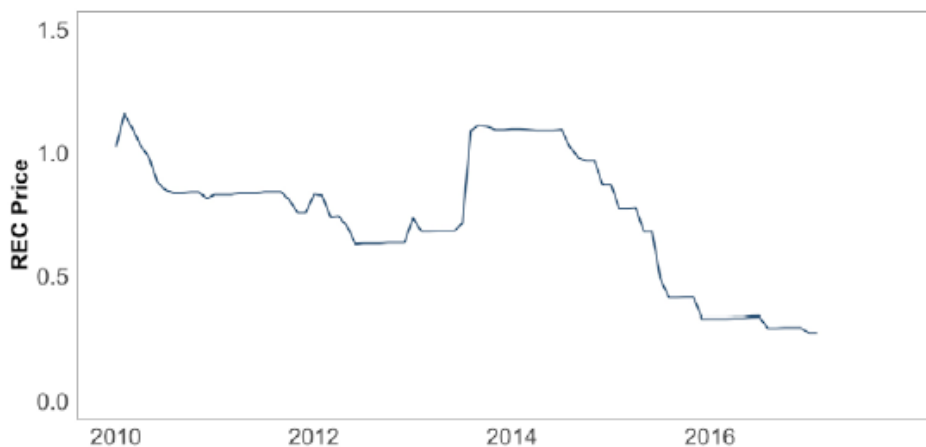


Figure 19. Voluntary national REC prices

Sources: SNL Energy 2017, Marex Spectron 2016

⁹ A REC represents the clean energy attributes of one megawatt-hour of renewable energy generation. Hence, REC prices are commonly stated in terms of \$/MWh, though the terminology is interchangeable with \$/REC.

As reported in the 2016 report, and again for 2017, most renewable energy project owners are not able to get more than \$1 - \$2 for RECs. The voluntary market remains illiquid and the Oregon compliance market is essentially nonexistent for the projects that Energy Trust supports.

Cost / Effort Registering RECs

Energy Trust tracks the cost and effort involved in registering RECs for projects independently by program, separating 'Other Renewables' projects and Solar projects. The main cost drivers are the same, however to meet WREGIS registration standards project generation has to be metered and monitored according to approved standards.

The following analysis mirrors what staff reported in the 2016 Annual REC Value and Cost Review.

⁵ <https://www.nrel.gov/docs/fy18osti/70174.pdf>

Other Renewables

Utility grade metering increases cost for larger renewable energy generation projects, especially those where power is used on site⁶. The recent biopower projects at the water resource recovery facilities owned by the City of Gresham and Clean Water Services required meters and associated infrastructure, which added approximately \$15,000 in costs to each project.

REC registration efforts by Energy Trust staff are focused in two areas: project incentive negotiations and registration activities. The amount of effort required by Energy Trust staff in negotiation varies according to the interest the project owner has in retaining and registering their share of RECs. On average 5-10 hours of staff time is spent on internal and external REC negotiations per project.

The amount of effort related to REC registration activities varies based on the registration methodology being employed by the project. For projects undertaking registration activities themselves, annual tracking by staff requires 2-6 hours of time annually, per project. If the utility is going to register the project 2-6 hours of Energy Trust staff time is required for the initial setup but less than an hour is required annually moving forward.

A problem area exists for projects where neither the owner nor the utility is interested in registering RECs in WREGIS. Energy Trust has encountered this situation in small to medium projects for which WREGIS registration or utility transaction costs are considered prohibitive.

For example, PAC declined to pursue metering and WREGIS registration activities for the City of Medford's biogas project at its water resource recovery facility. Energy Trust's contract claims 45,000 RECs from the project over 20 years.

As in 2016, Energy Trust staff recommend not requiring WREGIS REC registration in project funding agreements for projects where neither the project owner nor the utility want to register their share of RECs. Energy Trust would still take contractual ownership of the RECs in these situations, but not pursue registration activities. By taking contractual ownership Energy Trust preserves its ability to register RECs in the future if the utilities desire.

Staff recommendation: Continue the current practice of retaining contractual title to project RECs, and not requiring WREGIS registration for 'Other Renewables' program projects where neither the project owner nor the utility are willing to pay REC registration costs.

Solar Program

Solar projects are subject to the same WREGIS metering and reporting requirements as 'Other Renewable' energy projects and cannot be cost efficiently registered in WREGIS. Staff expended significant time and energy between 2010-2015 working with the utilities, OPUC, Oregon Department of Energy, and others to effect new pathways both within and outside of WREGIS to make solar program RECs count in a cost-efficient manner. That work was not successful.

At the end of 2015 the Energy Trust board agreed that contractual title to project RECs should be retained, but not require WREGIS registration for Solar program projects until a cost-efficient solution for their registration is created by a third party or REC values make registration cost-efficient.

⁶ For qualifying facilities, additional metering cost is not usually necessary as a utility meter will already be required and included in the above-market cost.

Despite the continuing inability to register solar RECs cost-efficiently, the utilities do get an RPS benefit from net-metered solar projects, among the other benefits these systems provide. This RPS benefit is realized as a reduction in load, which directly reduces a utility's RPS requirement. Were RECs able to be registered cost efficiently, they would be in addition to the load-reduction benefit.

Staff recommendation: Continue the current policy of retaining contractual title to project RECs, but do not require WREGIS registration for Solar program projects until a cost-efficient solution for their registration is created by a third party or REC values make registration cost-efficient.

Annual Renewable Energy Certificate Value and Cost Review

11/17/2017



Topics

- Short background on REC policy
- Staff recommendation
- Factors analyzed in making recommendation



REC Policy Requirement:

- 1. Ascertain REC market values and future prices*
- 2. Consider policy that may affect REC prices*
- 3. Track cost of registering RECs in WREGIS*
- 4. Recommend whether to continue registering RECs if value below registering cost*
- 5. Then... Board may authorize staff to take title to RECs without registering.*



Recommendation: Continue current practices

Recommendation: *WREGIS registration not be required in the follow situations:*

- (1) For Other Renewables program and large, custom solar projects where neither the project owner nor the utility is willing to pay for WREGIS registration; and
- (2) For Solar program projects, where there continues to be no cost-effective way to register them.



Considerations

- RPS obligations have grown, our contractual holdings have not
- Utilities remain REC sufficient
- REC prices remain very low, small transactions are not valued



REC Pricing Trends

REC prices continued to remain low throughout 2016, after peaking at around \$1.13/MWh⁹ in January 2014 (Figure 19). 2016 REC prices averaged around \$0.35/MWh. The continuation of low REC prices likely explains the increase in much of the unbundled RECs market from 2015 to 2016. Purchasers with a set budget for purchasing renewable energy can purchase more RECs at lower prices.

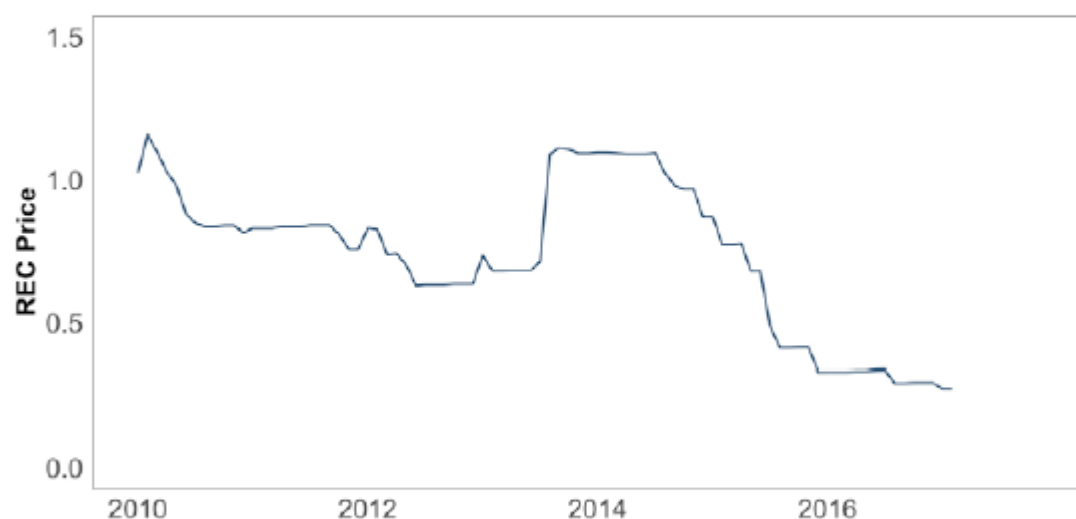


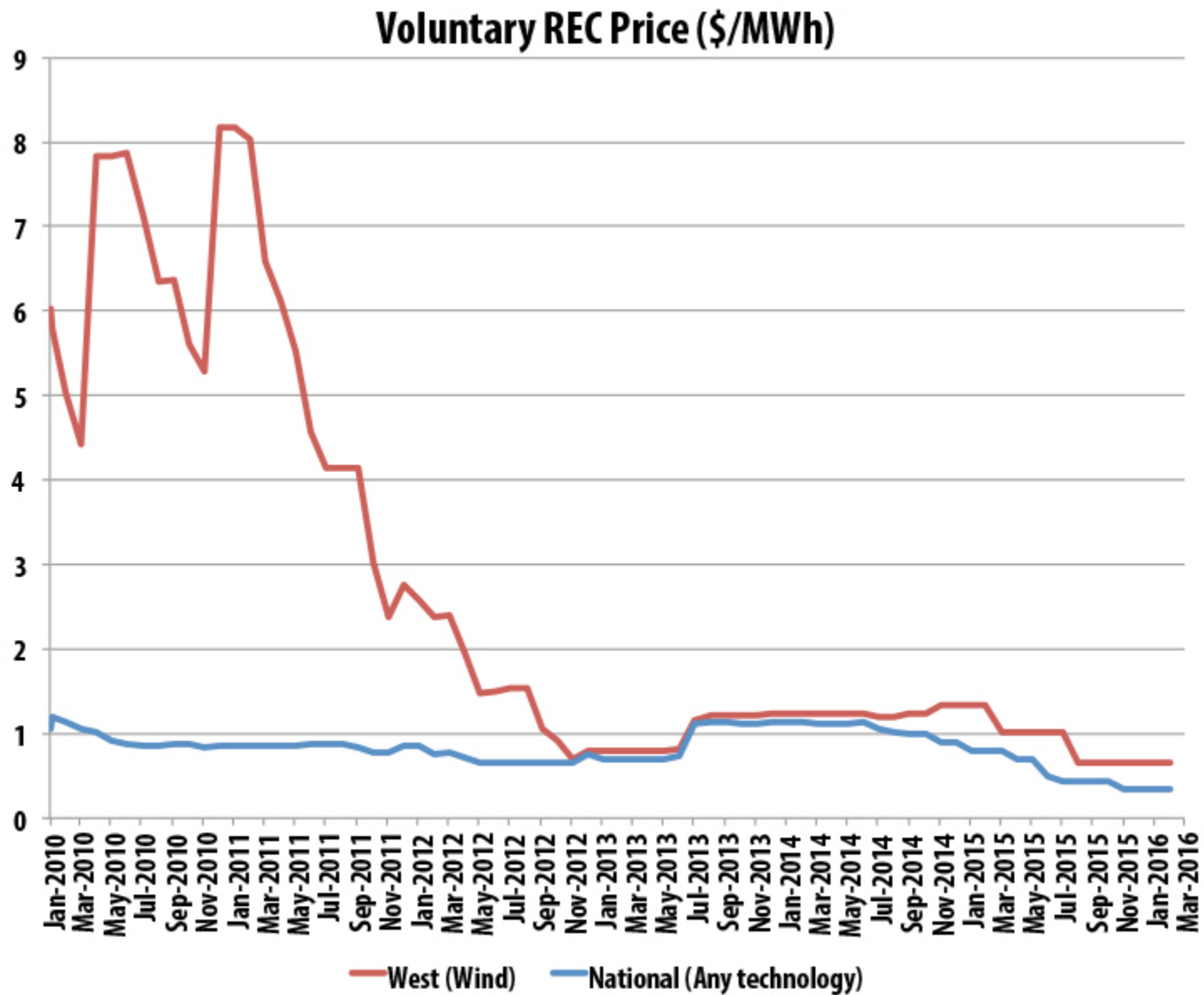
Figure 19. Voluntary national REC prices

Sources: SNL Energy 2017, Marex Spectron 2016

⁹ A REC represents the clean energy attributes of one megawatt-hour of renewable energy generation. Hence, REC prices are commonly stated in terms of \$/MWh, though the terminology is interchangeable with \$/REC.



Thank You



National Voluntary REC prices and western wind REC price, January 2010 to March 2016. Source: [Marex Spectron](#) (2016).

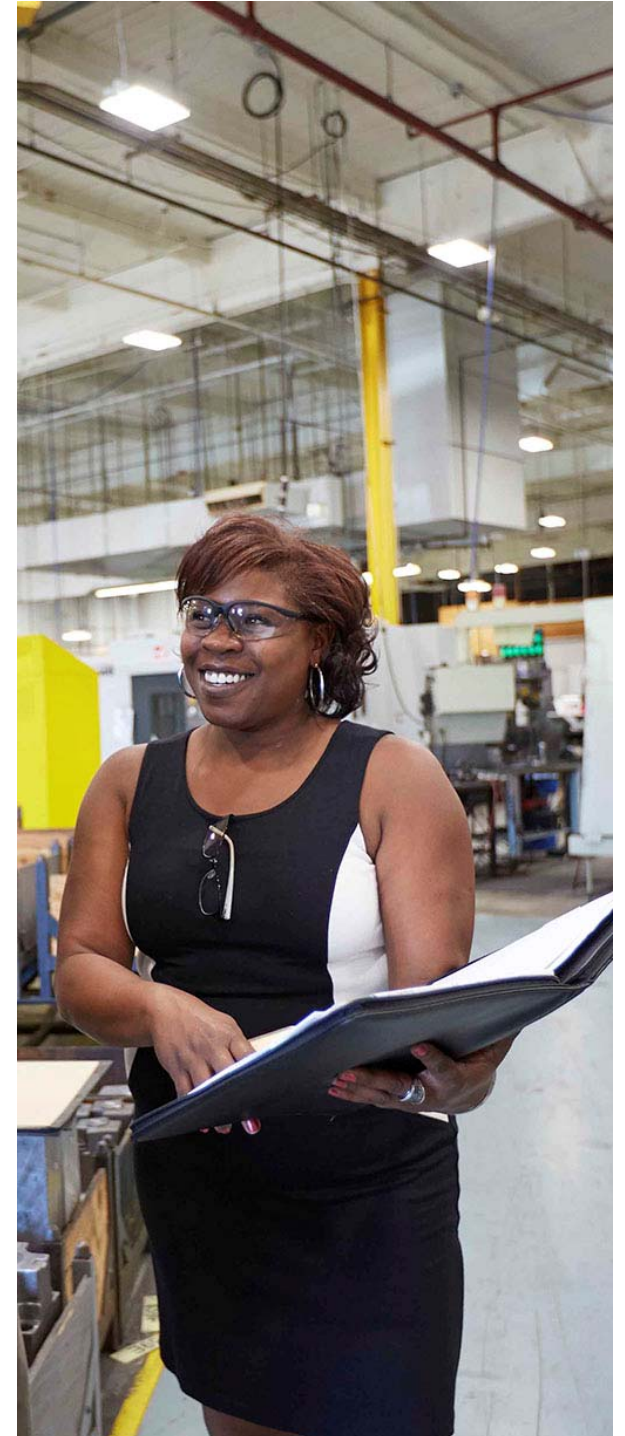
Diversity, equity and inclusion strategies

November 17, 2017



Diversifying Participation

- Increase outreach to small/medium businesses and agriculture
- Identify and prioritize strategies to increase access to solar in low-income communities
- Contract with community-based organizations to reach under-served communities in residential sector
- Drive forward organizational diversity, equity and inclusion strategies and activities



Drive forward organizational diversity, equity and inclusion strategies and activities

- Adopt organizational diversity, equity and inclusion operations plan
- Propose board-level policy
- Establish specific goals across the organization
- Apply diversity, equity and inclusion lens to our internal operations and how we deliver programs
- Develop and deepen relationships with organizations that serve diverse customer groups
- Develop systems and process for demographic data collection and use

3



Thank You

Debbie Menashe, general counsel
debbie.menashe@energytrust.org



4.08.000-P Equity Policy

History			
Source	Date	Action/Notes	Next Review Date
Board Decision	May 22, 2002	Approved (R104)	May 2005
Policy Committee	March 5, 2005	Postpone review	11/05
Board Decision	September 7, 2005	Revised (R352)	September 2008
Policy Committee	December 2, 2008	Replaced references to numerical electric and gas goals	September 2011
Board Decision	October 5, 2011	Revised (R595)	October 2014
Board Decision	October 1, 2014	Revised (R714)	October 2017

Introduction

Recognizing the Energy Trust's long-term goals to save electricity and natural gas, and that other public purpose funds have been earmarked for schools and low income housing needs, the Energy Trust of Oregon, Inc., Board of Directors hereby adopts as policy using the following principles in designing energy efficiency programs and allocating funding among various electricity and gas customer classes:

Policy

- Make programs available to all eligible electricity and gas customer classes by implementing programs in the residential, commercial, and industrial sectors.
- Design and implement programs for private utility electricity and gas customers that have not had access to prior conservation programs and/or where penetration rates have been historically low, such as rural customers.
- Monitor penetration rates for all programs and adjust them as needed to ensure that all private utility electricity and gas customer classes are being served. Energy Trust will pay particular attention to programs for underserved customers.

4.08.000-P Diversity, Equity, and Inclusion Policy

History			
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Board Decision	May 22, 2002	Approved (R104)	May 2005
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Introduction

Energy Trust envisions a high quality of life, a vibrant economy and a healthy environment and climate for generations to come, built with renewable energy, efficient energy use and conservation. Energy Trust recognizes that to achieve this vision, all utility customers must benefit from our programs, but certain customers may be underserved by our programs such as communities of color, rural communities, and low income customers.

Energy Trust commits to enhancing diversity, equity and inclusion in our programs and in internal operations in order to work to serve all communities and reach critical Energy Trust goals. We will advance diversity, equity and inclusion in our programs and internal operations through meaningful collaboration with our utility funders, trade allies, program allies, and customers and with geographic and culturally specific communities, organizations and businesses.

Policy

1. Energy Trust will make programs available to all eligible electricity and gas customer classes by implementing programs in the residential, commercial, and industrial sectors.
2. Energy Trust will monitor participation rates for all programs and adjust them as needed to ensure that all investor-owned utility electricity and gas customer classes in Energy Trust territory are being served.
3. In addition to providing programs to reach all customer groups, Energy Trust will design and implement programs strategies specifically to reach customers who have been underserved by Energy Trust programs and/or where penetration rates have been historically low, such as rural customers, communities of color, and low-income communities in Energy Trust service territory.
4. Energy Trust will use a diversity, equity and inclusion lens through which to:
 - a. Internally, use a diversity, equity and inclusion lens through which to:
 - b. strategize and plan for Energy Trust program delivery
 - c. deliver programs and services
 - d. partner and collaborate
 - e. allocate resources
 - f. communicate and market

- g. build our workforce
 - h. evaluate our work
- 5. Energy Trust will develop an diversity, equity and inclusion operations plan that:
 - a. includes goals, strategies and tactics
 - b. assesses and measures progress
 - c. learns from mistakes and successes
 - d. shares progress publicly on no less than an annual basis
- 6. Energy Trust will establish a Diversity Advisory Council to provide advice and resources to the board of directors to support Energy Trust's diversity, equity and inclusion action plan and to advise the board of directors on assessing and measuring progress toward goals of such plan.
- 7. Energy Trust will enhance diversity and inclusivity on the board of directors.
- 8. For the first three years after adoption of these 2017 changes, the Energy Trust Policy Committee will review this policy annually to take account of new information and experience.

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