Energy Trust Renewable Energy Certificate Holdings
Issues and Costs related to Renewable Energy Standard Compliance

Purpose

In early discussions about its Renewable Energy Certificate policy, Energy Trust's board expressed an expectation that Energy Trust's renewable energy certificates (RECs or "green tags" as referenced historically in Energy Trust policies) would eventually be used to help utilities comply with Oregon's Renewable Energy Standard (RES). In the years since those discussions took place, Oregon's RES has taken effect and the state has developed specific compliance procedures.

This paper outlines the compliance procedures and explains the costs and administrative complexities of registering the RECs associated with Energy Trust-funded projects. Unless specific compliance procedures are followed, the RECs cannot, at this time, count toward the RES. Staff concludes it is cost prohibitive to register a certain class of projects and recommends an alternate path. For another class of projects, staff identifies some options for handling the costs and administrative duties for the associated RECs. Our purpose is to provide the board, the board policy committee and the Renewable Advisory Council with information as renewable energy investment policy options are considered and implemented.

Background

Energy Trust has a policy that establishes that it receives all or a portion of the Renewable Energy Certificates[1] (RECs) from a renewable energy project it funds. The policy requires all retained RECs be held for the benefit of the ratepayers of Pacific Power and PGE.

While the policy outlines multiple options for how ratepayers may benefit, the Energy Trust board has expressed a strong desire to have the RECs serve to help meet the utilities' compliance requirements under the Renewable Energy Standard (RES). For this to happen in Oregon, projects need to be registered with an independent entity, RECs recorded and ownership transferred from Energy Trust to the utilities for RES compliance.

The RES compliance tool which the Oregon Department of Energy (ODOE) has chosen to use to ensure that RECs are legitimate and are not double-counted is the Western Renewable Energy Generation Information System (WREGIS). WREGIS was developed by the Western Governors' Association, the Western Regional Air Partnership and the California Energy Commission to track RECs for RES compliance and other purposes in the Western US and Canada. California uses WREGIS for RES tracking and several other states are considering using it as their RPS requirements begin to take effect.

[1] US EPA defines a Renewable Energy Certificate (REC) as a tradable commodity representing the property rights to the environmental, social, and other nonpower qualities of renewable electricity generation. One REC is proof that one distinct megawatt hour (1 MWh) of electricity was generated from an eligible renewable energy resource. RECs can be used in different ways (e.g. by utilities for compliance purposes, or voluntarily by businesses interested in making environmental claims), but a single REC must never be "counted" more than once. It should also be noted that until a project is registered with WREGIS and its generation properly metered and reported, the project is not producing RECs. It is producing renewable power, but a legal REC must be created through WREGIS.

The WREGIS system and its requirements, as will be detailed later, are designed to track RECs from very large utility-scale projects. The system is cumbersome and costly for small projects, particularly when the project owner is not the entity interested in tracking the RECs.

In making the decision to use WREGIS as the RES compliance tool, ODOE fulfilled its objective for a single system with a common platform throughout the western states and interconnected electricity system. Because WREGIS is poorly suited for small projects, Energy Trust requested that ODOE develop a companion system for small and net-metered projects. Such a companion system was not developed.

WREGIS has improved its systems to better accommodate smaller projects, and for a variety of reasons the available solutions are only viable for RECs owned by the project owner. As will be discussed in this paper, at present there is no cost-effective solution for managing many of Energy Trust's REC holdings from smaller or net-metered projects within WREGIS.

As of March 8, 2011, Energy Trust provided incentives to 2,750 renewable energy projects. Through 2025, these projects will produce a total of just over 13 million RECs (Table 1).

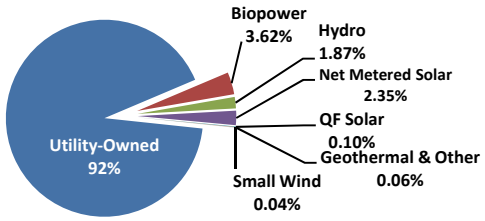
Table 1. Number of projects funded by Energy Trust in each technology and the number of RECs derived from each technology group.

Technology	Number of projects	Number of RECs through 2025
Utility-owned wind and solar	5	12,020,102
Biomass	4	473,558
Net-Metered Solar	2,708	307,567
Hydroelectric	6	244,183
QF Solar	1	12,729
Geothermal	1	8,051
Wind	24	4,896
Other*	1	9
TOTAL	**2,750**	**13,071,095**

*Oregon State University project generating energy on exercise equipment

The five large wind and solar projects, owned by PGE and Pacific Power, are responsible for 92% of Energy Trust's RECs (figure 1).

Figure 1. RECs in Energy Trust Portfolio from current projects, through 2025



PGE and Pacific Power handle the registration, metering, and reporting of the RECs from the projects they own as part of their cost of complying with the RES.

Eighteen months ago, staff began exploring options for fulfilling the board's interest in having the remaining 8% of Energy Trust's RECs also count toward the RES. In exploring the options and pathways available, staff members met with PGE, Pacific Power, Oregon Department of Energy, Renewable Northwest Project, and the Citizens' Utility Board.

Because both utilities are already working with WREGIS for their own projects, our initial approach was to ask utility representatives to also complete the same tasks for any of Energy Trust's projects not registered with WREGIS. Although the utility representatives we spoke with would welcome the RECs that Energy Trust is holding, they also expressed concerns and reservations about the administrative tasks associated with this request. In some cases, taking on such costs would require utilities to treat one class of customers differently from another class, something the utilities have reported that they are not allowed to do. Further, the utilities expressed reluctance to assume the additional work and costs associated with project registration through WREGIS.

Seeking other options, Energy Trust staff examined participating directly in WREGIS in various ways. The options available at this time are complex and costly. This paper describes the options and proposes a potential compromise solution with the utilities on some of the larger projects (defined below) and an alternate solution for small and net-metered projects.

WREGIS Process and Costs

Before looking at the staff analysis, it is important to understand WREGIS' goals, processes, requirements, and fees.

First and foremost, WREGIS is interested in ensuring that the RECs on its system are created and tracked in a credible manner. A REC in WREGIS contains a great deal of project-specific information to make its authenticity virtually unassailable and to prevent double-counting. This is important as the RECs will be used as proof of meeting regulatory compliance targets for utilities with RES obligations.

The process of creating RECs involves a series of steps that include creating an account and registering the project with WREGIS, reporting its generation to WREGIS in an approved manner, and transferring the RECs into the appropriate utility RES sub-account. The steps are summarized in a flow chart in Appendix A.

The fees associated with working with WREGIS are summarized below.

- **Account creation and project registration:** WREGIS charges an annual fee for registering and maintaining an account. Accounts can be created by project owners, utilities, entities known as 'Aggregators', and others. Account holders can register multiple projects in their account. Annual account fees range from $200 to $1,500. Energy Trust would pay $1,500 annually as an account holder.

- **Metering generation:** WREGIS requires all projects to utilize revenue-grade meters (accurate to ±2%). Energy Trust also requires these meters. However, we do not require them to be automatically or remotely readable, as may be required to get the generation data to WREGIS. Exact costs for remotely readable meters vary with project size. We have received two cost estimates for the required equipment: $800 (estimate for a third party internet feed) and $15,000 (estimate from PGE that includes full telemetry and automation).

- **Reporting generation:** Reporting may be accomplished through a Qualified Reporting Entity (QRE), by the generating unit itself ("self-reporting"), or by a third-party meter reader. The method used and cost depends on the size of the project. Costs range from $60 - $708 annually per project.

After generation has been reported, WREGIS issues RECs into the appropriate account. Retiring, selling, or transferring the RECs carries additional, small transaction fees. Appendix B summarizes the costs of registering projects, metering and reporting generation, and transferring and retiring RECs for the types of projects in Energy Trust's current portfolio. It does not address the cost for the administrative time involved in registering a project or reporting generation. The chart in the appendix demonstrates that the larger the project, the more cost-effective it is to register the project with WREGIS and meter its generation.

For various reasons which will be explained below, the best way to consider WREGIS participation and costs is to categorize projects by size in terms of annual generation, by the contractual terms of Energy Trust's REC ownership, and by whether any RECs owned by the project owner are going to be sold or retired:

- Annual generation is important because the costs of participating in WREGIS effectively have a fixed upper limit. Therefore the larger a project is, the more cost-effective it is to work with WREGIS. Projects with an annual output greater than 750 MWh (0.086 aMW) will have REC creation costs around $1/REC or less. For the purposes of this paper, Energy Trust is defining a large project as one with annual generation greater than 0.086 aMW. Those with less generation are considered small.

- The contractual terms of Energy Trust's REC ownership are important from the utilities' point of view. The utilities' willingness to help in the creation of RECs from Energy Trust's portfolio in part hinges on Energy Trust owning 100% of the project's RECs over a contractual period. The utilities have conveyed that contracts where the REC ownership is split on a percentage basis over the period present other more challenging complications.

- Finally, the intended use of any RECs owned by the project owner is also a factor for consideration. From Energy Trust's perspective, if project owners intend to sell the RECs for monetary gain, they should be willing to shoulder most costs except for those related to the transfer of Energy Trust's RECs to the appropriate utility.

Staff recommendations

As mentioned above, the utility-owned projects have already been registered with WREGIS by the utilities. The utilities cover the costs and administrative work involved in metering and reporting the generation from those projects. One other large solar-project (Portland Habilitation Center) is also already registered and reporting within WREGIS. Together those projects represent 92% of the RECs resulting from Energy Trust funding.

For the remaining projects that have received Energy Trust funds, representing 8% of our REC holdings, we looked at participating in WREGIS directly and sought to address three questions:

- How much will it cost to register the projects with WREGIS, report the generation, and issue RECs?
- Who will pay that cost?

- Who will complete the administrative tasks (data gathering and submission) involved with working with WREGIS?

Large projects, the most cost-effective to register, represent 69% of the remaining 8% of Energy Trust's REC holdings. There are few of these large projects (10 total) in Energy Trust's portfolio. We will look at recommendations for the RECs from these large projects first. The small projects will be discussed on page 7.

Recommendations for large projects

As noted above, for the larger, non-utility-owned projects the contractual terms of REC ownership create some complications. The easiest way to consider WREGIS costs for these 10 projects is to categorize them by whether Energy Trust owns all of the RECs or shares the RECs with the project owner. Shared RECs can be further subdivided by whether the project owners intend to sell or retire them (Table 2).

Table 2. Large projects funded by Energy Trust. Table shows contractual REC terms and the project owners' plans for his/her share of the RECs from each project.

Project	Annual RECs owned by Energy Trust	Energy Trust's RECs through 2025	Project owners' plans for their REC share
Gresham Wastewater Treatment Plant Biomass	100%	50,325	n/a
Portland Wastewater Treatment Plant Biomass	100%	181,860	n/a
Rough and Ready Biomass	100%	151,373	n/a
Albany Hydro	100%	41,850	n/a
Swalley Irrigation District Hydro	100%	41,280	n/a
Stahlbush Island Farms Biomass	1st 6,000	90,000	To be retired
Oregon Institute of Technology Geothermal	71%	8,051	To be retired
Farmers Irrigiation District Hydro 1	38%	7,442	To be sold
Farmers Irrigation District Hydro 2	35%	2,092	To be sold
Central Oregon Irrigation District Hydro	75%	151,144	To be sold
TOTAL		**725,417**	

For the three projects where the owner's portion of the RECs are going to be sold (all are irrigation district hydro projects), money is expected to be made from the REC sales. Staff recommends that the project owners who want to receive revenues from selling their RECs shoulder the costs of working with WREGIS to register the projects and meter their generation. In fact, these projects have already begun undertaking those steps on their own.

Staff also recommends that these project owners transfer Energy Trust's portion of the RECs directly into the appropriate utility subaccount, with Energy Trust covering the transaction fees ($.015 per REC or approximately $2,410 by 2025 for all three projects) and a pro-rated share of the annual WREGIS account holder fees.

That leaves seven large projects where the RECs are not going to be sold, listed in Table 3.

Table 3. A subset of large projects funded by Energy Trust. Table only includes projects where RECs will not be sold.

Project	Annual RECs owned by Energy Trust	Energy Trust's RECs through 2025	Project owners' plans for their RECs
Gresham Wastewater Treatment Plant Biomass	100%	50,325	n/a
Portland Wastewater Treatment Plant	100%	181,860	n/a
Rough and Ready Biomass	100%	151,373	n/a
Albany Hydro	100%	41,850	n/a
Swalley Irrigation District Hydro	100%	41,280	n/a
Stahlbush Island Farms Biomass	1st 6,000	90,000	To be retired
OIT Geothermal	71%	8,051	To be retired
TOTAL		**564,739**	

Working with WREGIS to make sure those RECs count toward the RPS would cost $189,890 through 2025 (Table 4)[2]. As shown in the column listing upfront costs, most of the $189,890 is incurred in the first year when a project is registered with WREGIS and metering and reporting services are set up. The total cost of $189,890 translates into a levelized rate of approximately $0.34 per REC through 2025.

Table 4. Costs for registering large projects with WREGIS and reporting generation. Only projects where RECs are not being sold are included.

Project	# of RECs through 2025	Upfront costs for metering and reporting set-up	Annual costs for reporting generation to WREGIS	Total costs through 2025
Gresham Wastewater Treatment Plant	50,325	$16,005	$758	$26,672
Portland Wastewater Treatment Plant	181,860	$16,005	$890	$28,645
Rough and Ready Biomass	151,373	$16,005	$859	$28,188
Albany Hydro	41,850	$16,005	$750	$26,545
Swalley Irrigation District	41,280	$16,005	$749	$26,536
Stahlbush Island Farms Biomass	90,000	$16,005	$798	$27,267
Oregon Institute of Technology Geothermal	8,051	$16,005	$716	$26,038
TOTAL	**564,739**	**$112,035**	**$5,521**	**$189,890**

It is important to put those numbers in context. The figure of $0.34 is less than the estimated price of a REC on the voluntary market today which ranges from $1 to $5. It is more than the value of a compliance REC which is effectively zero in Oregon because PGE and Pacific Power have already met current RES obligations. Not until 2019 do utilities foresee a need to add new renewables to meet their RES. The cost of $0.34 is substantially more than the cost of creating a REC in WREGIS from a large utility-scale wind project, which is about $0.00673 per REC.

[2] Energy Trust's portion of the RECs would be transferred to the appropriate utility's sub-account for RES compliance. The project owner's share of the RECs would be retired on the project owner's behalf in a separate Energy Trust sub-account.

With the question of “how much” answered, the next question is “who” would be responsible for the costs. There are three options:

- The utilities
- The project owners
- Energy Trust

The first two options both have issues. Utility representatives have told Energy Trust they are prohibited from any special treatment for a set of customers by paying for metering and QRE fees for our projects while requiring other customers to pay their own way. The project owners have no incentive to pay these fees because they either do not own any RECs or are primarily interested in promoting their usage of renewable energy, elements that do not currently require WREGIS registration or reporting.

Therefore, if these RECs are to apply to the RES, it appears Energy Trust will have to budget for and pay these costs. Whether this makes sense for Energy Trust is a judgment call related to the value of the REC and other potential uses of Energy Trust funds. It should be noted that it is possible that the OPUC could, at some future time, determine that such costs are the responsibility of utilities related to complying with the RES. Such discussions with either utilities or the OPUC have not been initiated.

In addition to the WREGIS fees and costs, there is the question of who will complete the administrative tasks associated with working with WREGIS. Registering a project requires gathering and submitting a host of information, including extensive contact information and a list of details about the project and its expected generation. WREGIS may also require copies of power purchase agreements, interconnection agreements, substantial completion certificates, licenses, or copies of manufacturer’s specifications.

Energy Trust estimates it will take 40 hours to register a single project and one hour per month to report generation in subsequent months. That translates to 364 hours the first year for project registration and 84 hours a year thereafter to report generation.

Staff examined several options for the administrative work:

1. Energy Trust could hire internal staff to handle project registration and reporting tasks (0.5 FTE)
2. Energy Trust could contract with a third party to handle project registration and reporting tasks
3. Utilities could handle project registration and reporting tasks

All three options include costs. Of the three options, two would require Energy Trust to invest significant training and time in understanding how to successfully navigate WREGIS. The third leverages existing skills and systems currently in place at utilities:

- Utilities have some existing staff who regularly work with WREGIS. They are already familiar with projects through power purchase agreements.
- Energy Trust has neither internal experience with the WREGIS system nor trained staff.
- As noted on page 2, the utilities handle the REC reporting for the projects they own.

For this reason, Energy Trust staff believes it would be easiest and most cost-effective for utilities to assume project registration and REC reporting tasks for all RES related projects.

As we understand the utility perspective, the current market value of Energy Trust owned RECs is not significant enough for them to assume added WREGIS costs. Utilities also expressed

concerns about the registration of those Energy Trust RECS shared with the project owner because due to the complexity of multiple interested parties.

With these conditions in mind, a fourth option could be considered. Energy Trust could reimburse utilities for their administrative time associated with REC filing and tracking. This and other options involving utilities would require additional utility engagement along with the involvement of the Oregon Public Utility Commission.

Renewable Northwest Project and the Citizens Utility Board strongly identify WREGIS as an effective tool, despite the challenges of using it for those large projects smaller than utility scale. If using WREGIS for Energy Trust's REC holdings proves difficult to justify from a cost perspective, RNP and CUB expressed a willingness to wait for WREGIS to develop better tools for this project size.

Recommendations for small projects

Energy Trust has funded 2,735 net-metered projects, each of which produces just a few RECs per year. In aggregate these RECs represent about 2% of Energy Trust total REC holdings. Table 5 divides these small projects by technology.

Table 5. Small projects funded by Energy Trust broken out by technology.

Technology	Number of projects	Number of RECs by 2025
Solar	2,709	307,567
Wind	24	4,896
Hydro	1	375
Other*	1	9
TOTAL	**2,735**	**312,847**

*The Oregon State University project where we funded an energy generation project on exercise equipment.

Staff believes that registering each of these projects with WREGIS and monitoring generation individually would carry costs that far outweigh the value of the RECs. For a single 2 kW residential solar project, for example, an internet-based monitoring system would need to be installed with an upfront cost of $800 and an annual QRE fee of $60. The 39 RECs produced by this project through 2025 would cost a total of $1,700 to be metered and tracked through WREGIS. That translates to a cost of $43 per REC, more than eight times the REC's current maximum market value of $5.

When calculating this cost for all of the small projects in Energy Trust's portfolio, the total lifetime costs to install monitoring equipment and report annual generation would be just over $6.25 million (Table 6). About 1/3 of that cost would be incurred in the first year as monitoring equipment is installed. Please note that the $6.25 million only includes projects installed before March of 2011. It does not include the additional projects that will be installed each year, potentially as many as 1,000 per year as was the case in 2010.

Table 6. Small projects funded by Energy Trust broken out by technology.

Technology	Number of projects	Number of RECs by 2025	Up-front costs*	Annual costs (per year)**	Total costs through 2025
Solar	2,709	307,567	$2,238,885	$267,440	$6,174,699
Wind	24	4,896	$19,200	$4,240	$72,093
Hydro	1	375	$800	$60	$1,706
Other	1	9	$800	$60	$1,706
TOTAL	**2,735**	**312,847**	**$2,259,685**	**$271,800**	**$6,250,204**

*Upfront costs include an internet-based monitoring system at $800 per project
**Annual costs include annual QRE fees of at least $60 per project and WREGIS transaction costs of $0.015 per REC.

In addition to cash costs, there is administrative time and cost. The process of registering a small residential solar project with WREGIS is currently the same as the process for registering a large utility-scale project described on page 7. We estimate that registering all of our 2,735 net-metered projects would require the time of two FTEs for a year. It would be difficult to require each project owner to register his/her project, and doing so would require each project owner to open a WREGIS account at an additional cost of $200-$1,500 per project. It would still take significant staff time to assist customers and make sure the process is happening.

WREGIS offers alternatives that allow entities such as Energy Trust to bring groups of small projects into its system. Staff looked at those options and determined they are not viable paths for Energy Trust. Here is a quick summary:

- **Aggregation**
  WREGIS allows entities to report the generation from a group of small projects in one lump. This is the method used by the utilities to report generation from feed-in-tariff projects. If Energy Trust were to use this method, each of our more than 2,500 small projects would still need to be individually registered with WREGIS into aggregation groups, presenting the same administrative burden which we reject above. Aggregation is discussed in more detail in Appendix C.

- **Self-reporting**
  WREGIS allows projects below a certain size to self-report their generation, rather than using the more costly options involving meters and a QRE service. This would involve our finding a way to compel the owners of the more than 2,500 small projects to send us information about their generation every year (and for the larger projects, every month), starting typically five years[3] after the system has been installed. Policing this system would prove difficult if not impossible. Self-reporting is discussed in more detail in Appendix C.

- **Give projects meters like feed-in-tariff projects**
  Every feed-in-tariff project is metered, allowing the utility to pay the customer and report generation to WREGIS. One may ask why Energy Trust doesn't simply use a system like that. The answer is that each of the feed-in-tariff customers pays a $10 monthly fee that supports the costs of the meter reads. These costs work due to the high power rate for feed-in-tariff projects but are prohibitively expensive otherwise. A full explanation of the feed-in-tariff as it relates to working with WREGIS is in Appendix D.

[3] Owners of residential solar systems own the RECs produced by those systems for the first five years following installation. Businesses that install systems own the first five years of RECs. Energy Trust's REC ownership begins after that.

Because of the significant costs involved in registering each individual net-metered small project and the lack of viable options within the WREGIS system, staff looked for a different solution. Energy Trust recommends that rather than managing each project individually, the solar projects be dealt with as a group outside of WREGIS. The expected generation from these solar systems is highly predictable.[4] Instead of metering each individual system, we recommend the generation be "deemed" in aggregate and then subtracted from a utility's RES compliance requirements. Energy Trust would develop and use a sampling methodology to predict the generation on an aggregate basis.

Energy Trust has spoken to both utilities about this idea, along with staff at CUB and RNP. All have been supportive of it, under two conditions.

1. **A credible sampling methodology must be developed and agreed to.** An agreed upon, regularly tested, and statistically sound estimation methodology could provide the basis for the deemed values. We do not currently have a cost projection for the statistical estimation.

2. **This must be an interim solution.** The method of predicting aggregate solar generation would be a temporary policy solution that demonstrates that distributed generation is an important part of the overall energy mix in Oregon. It would only be utilized until the WREGIS system is made more accessible to small projects and a cost-effective method of counting and tracking RECs from these projects can be developed.

The deeming method described above would work well for solar because its generation is so predictable on an aggregate basis. The generation from the wind, hydro, and other project, however, is not as predictable. Table 7 details the number of RECs associated with these projects (0.04% of our REC holdings).

Table 7. Non-solar small projects funded by Energy Trust.

Technology	Number of projects	Number of RECs by 2025
Wind	24	4,896
Hydro	1	375
Other	1	9
TOTAL	**26**	**5,280**

As with solar projects, at first glance, self-reporting might be an option, but it is not cost-effective when both fees and staff time are considered. Under this method, these projects would report their generation to us which we would in turn report to WREGIS. Two of these projects are large enough to be required to report monthly; the rest could report annually. In addition to the $1,500 annual WREGIS account fee, we would pay $.01 per REC that is retired ($52 per year). The

[4] Energy Trust research suggests that the energy generation from its net-metered solar PV projects can be forecast within a few percent of the reported generation. Since 2003, Energy Trust staff have requested that the owners of incented, net-metered solar PV projects report system production in kWh from the first full year of operation. Energy Trust compares the reported generation with an estimate of what was expected based on system capacity, the solar resource available to the project after shading, tilt, and orientation losses, and the local production capacity (developed in conjunction with the University of Oregon's Solar Radiation Monitoring Laboratory).

As of summer 2009, 496 separate facilities representing 1,687kW of capacity have reported their first-year generation. While production from individual solar systems may vary as much as 19% from expected generation, aggregate generation across Energy Trust's solar portfolio is very predictable. When taken in aggregate, the total reported generation is very close to expected, exceeding the estimated generation by 1.7%. Further research is underway to provide similar validation of energy production at the fifth anniversary of system commissioning.

total through 2025 would be approximately $23,000. That translates to $4.35 per REC, slightly less than the REC's estimated value on the voluntary market of $5.

For staff time, we estimate approximately 40 hours[5] per project to gather the necessary information and register each project with WREGIS (0.5 FTE). After that initial work, staff estimates reporting to take two hours per year for each of the 24 projects that would report annually and two hours a month for the two projects that report monthly for a total of 96 hours per year.

Because of the administrative time and cost, staff recommends using a route outside of WREGIS. Staff would require projects to annually submit signed attestations of readings from their generators' production meters. The generation would then be subtracted from a utility's RES compliance requirements as we are recommending for solar projects. The PUC would need to approve reducing the utility's compliance requirements by the amount of the generation from these projects each year. The utilities would then use projects tracked through WREGIS to fulfill their slightly-reduced RES obligation. We are unsure of the approval steps involved here, but it would likely be a regulatory proceeding by the PUC.

Summary of the cost effective paths for applying RECs to utility Renewable Energy Standard

1. For larger projects where REC ownership is shared and the project owner is planning to sell his/her RECs, staff finds that the best path is for the project owner to register the project, handle metering and reporting, and transfer Energy Trust's portion of the RECs to the corresponding utility to apply to their RES requirements. Energy Trust would have a minor financial role by paying transfer fees.

2. For larger projects where RECs are not going to be sold, Energy Trust is not in a position to require any other entity to pay the costs of registering projects and reporting generation to WREGIS. Staff has determined that if RECs from these projects are to count toward the RPS, Energy Trust would need to pay for registering and reporting. If this is desired by the board, staff recommends working with the OPUC and utilities regarding utilities assuming responsibility for the WREGIS administrative work. This assumes that barriers identified by the utilities can be addressed and that Energy Trust would be sanctioned by the OPUC and board to reimburse the utilities for costs associated with this work.

3. For net-metered solar projects, staff recommends the generation be predicted using a sampling method and subtracted in aggregate from the utilities' RES compliance requirements.

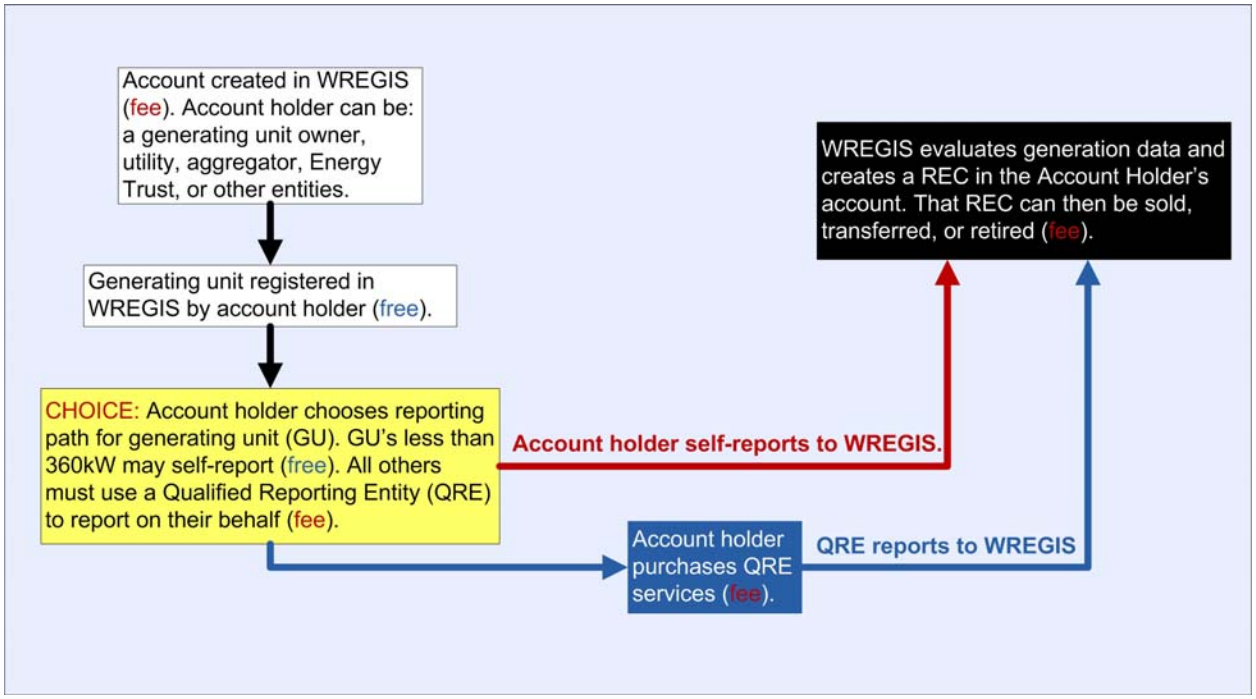
4. For other remaining net-metered projects, including wind, a micro-hydro, and an exercise equipment project, staff recommends gathering attestations of generation from project owners and subtracting them from the utility's RES requirements as in recommendation #3.

[5] This time includes having each project sign an agreement assigning its registration and account management rights to Energy Trust.

Next steps

This document and the issues it raises were reviewed by the Energy Trust management team and are slated for review and discussion by the RAC on Wednesday, May 18, 2011. With feedback from the RAC included, the matter will then be shared with the Energy Trust board policy committee to determine whether or not Energy Trust should further pursue registering RECs for utility RES compliance. The board policy committee will recommend next steps and actions to the full board, including engagement of utilities and the OPUC as appropriate.

Appendix A. Flow chart showing the process for registering a project in WREGIS and reporting its generation



Appendix B. Costs to Generate WREGIS RECs

Solar PV

(capacity only shown up to the limits of Energy Trust's standard solar PV program)

kW Installed	2	25	100	360	800
Capacity Factor	0.15	0.15	0.15	0.15	0.15
MWh / RECs Annually	2.6	33	131	473	1,051
Up front costs (metering, QRE setup)	$ 800.00	$ 800.00	$ 800.00	$ 15,297.00	$ 15,297.00
QRE Fees Annually	$ 60.00	$ 300.00	$ 1,000.00	$ 708.00	$ 708.00
WREGIS Transaction Fees Annually	$ 0.04	$ 0.49	$ 1.97	$ 7.10	$ 15.77
Total 1st Year Cost	$ 860.04	$ 1,100.49	$ 1,801.97	$ 16,012.10	$ 16,020.77
Total Cost through 2025	$ 1,700.59	$ 5,307.39	$ 15,829.57	$ 26,023.43	$ 26,153.52
Nominal REC Cost	**$ 43.14**	**$ 10.77**	**$ 8.03**	**$ 3.67**	**$ 1.66**

Wind

kW Installed	25	360	1,500	3,500
Capacity Factor	0.30	0.30	0.30	0.30
MWh / RECs Annually	66	946	3,942	9,198
Up front costs (metering, QRE setup)	$ 800.00	$ 15,297.00	$ 15,297.00	$ 15,297.00
QRE Fees Annually	$ 300.00	$ 708.00	$ 708.00	$ 708.00
WREGIS Transaction Fees Annually	$ 0.99	$ 14.19	$ 59.13	$ 137.97
Total 1st Year Cost	$ 1,100.99	$ 16,019.19	$ 16,064.13	$ 16,142.97
Total Cost through 2025	$ 5,314.78	$ 26,129.87	$ 26,803.95	$ 27,986.55
Nominal REC Cost	**$ 5.39**	**$ 1.84**	**$ 0.45**	**$ 0.20**

Hydro

kW Installed	25	360	1,500	3,500
Capacity Factor	0.44	0.44	0.44	0.44
MWh / RECs Annually	96	1,388	5,782	13,490
Up front costs (metering, QRE setup)	$ 800.00	$ 15,297.00	$ 15,297.00	$ 15,297.00
QRE Fees Annually	$ 300.00	$ 708.00	$ 708.00	$ 708.00
WREGIS Transaction Fees Annually	$ 1.45	$ 20.81	$ 86.72	$ 202.36
Total 1st Year Cost	$ 1,101.45	$ 16,025.81	$ 16,091.72	$ 16,207.36
Total Cost through 2025	$ 5,321.68	$ 26,229.21	$ 27,217.86	$ 28,952.34
Nominal REC Cost	**$ 3.68**	**$ 1.26**	**$ 0.31**	**$ 0.14**

Biomass

kW Installed	200	360	1,500	3,500
Capacity Factor	0.90	0.90	0.90	0.90
MWh / RECs Annually	1,577	2,838	11,826	27,594
Up front costs (metering, QRE setup)	$ 15,297.00	$ 15,297.00	$ 15,297.00	$ 15,297.00
QRE Fees Annually	$ 708.00	$ 708.00	$ 708.00	$ 708.00
WREGIS Transaction Fees Annually	$ 23.65	$ 42.57	$ 177.39	$ 413.91
Total 1st Year Cost	$ 16,028.65	$ 16,047.57	$ 16,182.39	$ 16,418.91
Total Cost through 2025	$ 26,271.78	$ 26,555.60	$ 28,577.85	$ 32,125.65
Nominal REC Cost	**$ 1.11**	**$ 0.62**	**$ 0.16**	**$ 0.08**

Special Considerations:

* "Up front costs" depend on QRE selection:
  For projects < 200kW, internet-feed type device is assumed as QRE
  For projects > 200kW, Utility is assumed as QRE

* All costs are calculated on a nominal basis and are not escalated for inflation.

* Total REC cost does not include administrative time or overhead related to WREGIS administration (total cost unknown) or annual WREGIS fees ($1,500). These costs are spread across all projects.

Appendix C. Aggregation and Self-Reporting

Aggregation allows an entity – an "aggregator" -- to total up small projects and report their generation together in one lump. The real idea of aggregation, from the WREGIS point of view, is to sum generation from facilities that do not individually generate one MWh in a month. Self-reporting allows small projects with certain generation characteristics to forgo the costs of additional metering and QRE services and report generation directly to WREGIS or through an Agent. The utilities act as aggregators and, to some extent, self-reporters for feed-in-tariff projects, making it seem like this might be a path for Energy Trust. Unfortunately, this is not the case. Aggregated projects must still be individually registered with WREGIS and generation must still be metered individually. This incurs costs. The utilities address these costs by requiring project owners to pay $10 a month for meter reading, rather than attempting to get individual project owners to report their own generation.

Under the aggregation and self-reporting method Energy Trust *could* eliminate QRE and additional metering costs. Making the system work would not be easy or cheap, however.

Energy Trust, or a hired third-party contractor, would register projects on behalf of project owners and ask the project owner to report generation to Energy Trust or the contractor on a monthly or annual basis (depending on the capacity of the project). Energy Trust or the contractor would then report the generation to WREGIS on behalf of the project owner. Pursuing this route would require Energy Trust or the third party to execute agreements with each project owner designating Energy Trust or the contractor as the "Agent" for the project and assigning the project's registration rights to Energy Trust or the contractor. At present, Energy Trust does not have any contractual ability to compel project owners to report generation on a monthly or annual basis. It is unknown how many project owners would voluntarily comply but it is very likely that over a 15 year REC ownership period, some RECs would go unreported. The administrative burden of such an undertaking would be very high and staff do not see this as a workable alternative.

Appendix D. Feed-in-tariff methodology analysis

The advent of Oregon's solar feed-in-tariff (the "Oregon Solar Incentive Program" to PacifiCorp customers and the "Solar Payment Option" for Portland General Electric customers) provides another potential pathway for Energy Trust's contractual RECs.

Under the feed-in-tariff, the utilities own the REC output from installed systems. Systems are installed to utility specified standards and system owners pay a $10 monthly fee for meter reads. The system standards require a separate PV production meter to be located next to the owner's home or business meter. The uniform standards allow the systems to be more easily aggregated in WREGIS while paid meter reads cover costs, allowing the RECs to be created cost-effectively for the utility. The high price paid for the power covers the additional costs to the system owner.

Energy Trust staff explored the idea of utilizing feed-in-tariff style installation standards and monitoring fees to see if this system would provide a cost-effective avenue for REC creation.

Energy Trust approved contractors estimate that the changes to installation standards will add approximately $500 to the cost of each installed PV system. The $10 monthly meter-read payments will cost $1,800 over the typical 15-year period that Energy Trust owns RECs for solar projects. Energy Trust assumes its above market cost calculations and incentive payments would include and cover these costs.

For this method to be cost effective, a PV system must generate enough RECs during Energy Trust's REC ownership period to offset the additional costs, and bring the cost per REC below the market value for RECs. In today's market, assuming a price of $8 for a solar REC, a system would need to generate at least 275 RECs during Energy Trust's ownership period in order to be cost effective. In the Willamette Valley, a PV system of ~17kW capacity will generate at approximately that level. The average system installation size of 3kW would cost $47/REC. Importantly, these estimates do not include administrative costs.

To cost-effectively use this method, systems need to be larger than 17kW. At present, less than 8% of the PV systems supported by Energy Trust are greater than 17kW in capacity. For the bulk of the PV systems supported by Energy Trust, the costs of utilizing feed-in-tariff style installation standards and paid meter reads are too high to create cost-effective RECs.