EXHIBIT NO. ___(RWS-11) DOCKET NOS. UE-111048/UG-111049 2011 PSE GENERAL RATE CASE WITNESS: ROBERT W. STOLARSKI

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

Docket No. UE-111048 Docket No. UG-111049

PUGET SOUND ENERGY, INC.,

Respondent.

TENTH EXHIBIT (NONCONFIDENTIAL) TO THE PREFILED REBUTTAL TESTIMONY OF ROBERT W. STOLARSKI ON BEHALF OF PUGET SOUND ENERGY, INC.

JANUARY 17, 2012

Energy Efficiency Services

EM&V Framework

Attachment 4

Guidelines for Ensuring Accuracy of Electric and Gas Savings Claims

Policies and General Process Overviews

Version 4.5

July 2011



Exhibit No. (RWS-11) Page 1 of 35

Table of Contents

Document Scope	1
General Rules and Guidelines	2
1) Savings Values	2
Value Rounding	2
Rounding in Practice	3
Rounding Rules	
Special Circumstance	5
Rounding Measure Counts	6
2) Timing of Savings Claims	
3) EES Takes Conservative Values	8
4) Savings Claims for Retired Measures	9
5) Savings Claims from Vendors	
6) Prescriptive Measures	9
RTF UES Values	-
PSE UES Values	10
Calculating Savings for UES Measures	
7) Calculated Measures	
8) Custom Measures	11
9) Audits of EES Programs	
EES Audit Objectives	11
Program Audit Selection Criteria	
Audit Practice	12
10) Adjustments	
11) Specific Savings Types	
UES Measure Savings	15
Calculated Measures Savings	20
Custom Measures Savings	21
Glossary of Terms	22

Appendices

A: EES Implementation Vendors	25
B: EES Lighting Reporting Process	27
C: Custom Grant Process Flowchart	
D: Savings Adjustment Table	
D. Cavinge / ajacinon / abio	

Document Scope

This document focuses on and outlines EES policies associated with energy (both electric kilowatt hours "kWh" and gas therms) savings claims and provides overview narratives of processes associated with how the claim data is input into the various EES tracking systems. These process narratives are provided as illustrations only to show how compiled data result in those savings claims and are not intended to be used as step-by-step process guides.

Detailed process outlines for rebate processing, grant payments, measure analyses/source of savings, etc. are maintained by the applicable departments.

Unless otherwise specified within the below sections, all comments apply equally to Residential and Business sectors.

2010 Settlement Agreement conditions:

- K(3)(a)(i)(1): Establishment of an EM&V framework
- K(3)(a)(i)(2): Consult with the CRAG when there are revisions
- K(6)(b): PSE must use RTF Deemed savings where possible
- K(6)(c): If PSE doesn't use RTF Deemed, must have verifiable calculations
- K(6)(f)(i): Documented M&V protocols and processes

are addressed—in whole or in part—through the publication of this document.

The document is organized accordingly:

- Guidelines that Apply to all Savings Types
- Specific guidelines
 - o Deemed
 - o Calculated
 - o Custom.

General Rules and Guidelines

1) Savings Values

EES states savings values in terms of FIRST YEAR savings. Each measure (CFL lamps, natural gas furnaces, water heaters, etc.) has a standard measure life, expressed in years (for instance, residential windows typically have a measure life of 30 years). EES tracks both first year energy savings values as well as cumulative savings, which is represented by multiplying the first year savings by the life of the measure¹.

EES takes the full year savings value regardless of the measure installation/implementation or invoice date. For example, if a CFL lamp—with a 2010 value of 24 kWh per year—is purchased from Costco² in November, EES will claim 24 kWh for that lamp, rather than only two month's worth or 4 kWh.

Similarly, if EES is representing the total savings for that lamp (whose measure life is five years), one would multiply 24 kWh by 5 for a total savings of 120 kWh over the life of the lamp.

All formal EES reports (for example quarterly CRAG recaps, annual and semi-annual WUTC reports) express savings claims in terms of first-year savings.

Value Rounding

With the wide variety of measures, measure types and applications in use, the precision for EES measures, must be consistent for reporting of savings values. For this reason, EES has established the below rules for rounding savings and measure values. The application of these rules has been validated through actual savings measurement and reporting since 2008.

Savings and measure values are entered and recorded in several systems; Measure Metrics, the Residential Tracking Database, CSY, EES Tracking, the Annual Report, etc. Measure Metrics and the Residential Tracking Database record measure values with a high degree of precision, sometimes in thousandths of therms or kWh. Once monthly savings are assimilated and reported, the aggregated total is rounded to the nearest whole number. The rules governing that rounding are described below.

¹ Cumulative savings history for both gas and electric are recorded on an ongoing basis; since 1978 for electric programs and 1997 for gas programs.

² It is assumed that the Costco in somewhere in the PSE territory.

Rounding in Practice

Generally, rounding is applied to prescriptive measure kWh or therm savings values that are archived in Measure Metrics or CSY. This includes RTF deemed (now UES) measures, which are indicated by whole numbers³ or PSE deemed measure values, which may be expressed in whole numbers, two decimal places (Multifamily U-.22s windows; 23.97 kWh/ft²) or three decimal places (Multifamily New Construction Condensing boiler with external tank; 0.015 therms).

For example, if a measure value calculation indicates that the savings is estimated to be 0.0149036 therms/ft², EES will apply the rounding tenants described in this section to achieve a value that is consistent with the measure application and savings type expectations; in the above case, 0.015 therms per ft².

Measure Application and Savings Types

EES strives to estimate, track and report savings with the highest degree of accuracy. This includes refraining from introducing artificial precision. For example, a value of 0.015 therms per ft² would not be applied to a residential furnace. EES doesn't have the resources to install data loggers or have an EME evaluate every home in order to determine that level of gas conservation precision. This would cause the residential furnace measure to become non-cost effective. Therefore, based upon evaluation studies, EES claims a standard 89 (Single Family Existing, 2010 value) therms per residential furnace. Similarly, when a residential customer purchases a CFL lamp, it isn't possible for PSE to know precisely when that lamp is going to be installed. Nor could we learn where it is installed and how many hours per day it will burn. Therefore, the RTF makes several assumptions and estimations of those and other factors to calculate an estimated savings per lamp of 24 kWh/yr (2010 value). It would be conversely imprecise to round to one therm per ft² for a boiler serving a 200,000 ft² building.

Additionally, many EES gas values are conversions of RTF electric values. For instance, 20 kWh/yr for a three-foot length of water heater pipe wrap converts to 0.57 therms for the same length of pipe wrap. Measures that are installed on a square or linear foot basis are rarely stated in whole number values.

Therefore, each value is rounded to the figure that is considered to be the most accurate and justifiable.

Significant Digits versus Decimal Places

Due to the wide variety of measure types, it isn't possible to state that EES rounds measure values to a standard number of significant digits.

To say that "EES rounds to two significant digits" would create considerable errors for new Manufactured Homes, whose values range from 3,000 to 5,000 kWh/yr each.

Energy Efficiency	/ Services
-------------------	------------

 $^{^3}$ In 2010, RTF began calculating therm savings for some measures. These values are expressed to a single decimal place; EG; MEF 2.46 clothes washers, gas water heat, electric dryer = 5.6 therms .

Rounding to four significant digits creates problems for residential CFL lamps (24 kWh/yr). If EES rounded to four significant digits, resulting in (hypothetically) 24.02 kWh/yr, we are again introducing artificial precision⁴.

EES therefore rounds to a number of decimal places, depending on if the measure is electric or gas and its application, versus significant digits.

Rounding to whole numbers occurs when the individual savings values are multiplied by the number of measures installed, the amount of square footage of the measure installed, horsepower applied, etc. For instance:

- 1. 2,000 CFL residential directly-installed lamps at 37 kWh each,
- 1,250 ft² of attic insulation installed in a residence heated by a forced air furnace at 3.41 kWh/ft²,
- 3. 7,250 ft² of multifamily corridor lighting at 0.07 kWh/ft²,
- 4. Etc.

Once the project/application total is rounded, further rounding is unnecessary at the Program/Channel/Sector/Portfolio level. For example:

Using case #2, 4,262.5 kWh for this specific project would round to 4,263 kWh. This total would be added to another (hypothetical) project which was rounded (2,341.37 actual kWh would be rounded to 2,341 kWh) and to another (3,004.6 actual kWh would be rounded to 3,005 kWh) and so on, until all projects completed for the particular month are accounted for. In the hypothetical example, the monthly total for the three enumerated projects would be reported as 9,069 kWh.

Rounding Rules

When aggregating total savings values for an applied measure, EES applies the generally held rule that a value that is equal to or greater than $\frac{1}{2}$ (*n*.5, *n*.53, *n*.58, *n*.521, etc., where *n* is some number) rounds up to the next highest whole value, regardless of the number of digits to the right of the decimal. Therefore:

- 116.5 rounds to 117
- 603.52 rounds to 604
- 7,232.607 rounds to 7,233
- 101.502 rounds to 102
- Etc.

⁴ While a value of 2 hundredths of a kWh may seem very small, it becomes significant when multiplying by 2,000,000 lamps.

Similarly, a value that is less than $\frac{1}{2}$ (*n*.4, *n*.49, *n*.42, *n*.481, etc., where *n* is some number) rounds down to the next lowest whole value, regardless of the number of digits to the right of the decimal. To illustrate:

- 116.4 rounds to 116
- 603.49 rounds to 603
- 7,232.407 rounds to 7,232
- 101.102 rounds to 101
- Etc.

There are some savings values that are negative. For instance, when a package terminal heat pump is installed in a Multifamily New Construction application, there is sometimes increased use of electricity. This results in a negative savings. Rounding rules for negative savings values are the same as those described above. Thus:

- -107.5 rounds to -108
- -60.52 rounds to -601
- -1,200.607 rounds to -1,201
- -10.502 rounds to -11
- Etc.

And:

- -116.4 rounds to -116
- -603.49 rounds to -603
- -7,232.407 rounds to -7,232
- -101.102 rounds to -101
- Etc.

Special Circumstance

When rounding an electric or gas savings figure may result in a zero value, EES will use the nearest leftmost decimal place conservative figure rather than claim a zero value.

For instance, when a savings calculation indicates that one or two decimal places are appropriate, using the above rules may result in a zero value:

- A. 0.004 kWh would round to 0.00 kWh,
 - If this particular measure savings value is archived to two decimal places; most probably a gas measure.
- B. 0.3 kWh would round to 0 kWh
 - If this measure savings value is archived to whole numbers; usually an electric measure.

When this circumstance presents itself, EES will round the above illustration to 0.01 kWh versus 0.00 kWh in case A. and 1 in case B^5 .

 $^{^5}$ Only if this was a measure that normally is stated in a whole number. If not, then the value would remain 0.3 kWh.

Rounding Measure Counts

The rules discussed in the above sections apply only to kWh or therm savings amounts. In this section, we will discuss the issue of rounding the number of a measure's units.

As discussed above, in most prescriptive and some calculated measures, the number of units is multiplied by the savings value to indicate the total savings. The majority of these measures are reported in whole numbers. An example would be an installation of 20 units⁶ of pipe wrap in a gas account. 0.7 therms x 20 units installed = 14 therms total savings for that installation. For this measure, there would not be an instance of 20.45 or some other odd number of units reported or claimed.

Some calculated measure totals (for measures such as insulation, windows, motors, etc.) can be odd numbers, however. These are rounded to the nearest first single decimal ("tenths") when there is a non-whole number quantity, whether the data is collected and compiled by PSE staff or PSE's vendor staff. This allows for standardized application of savings and payment of incentives. This rule applies only to the Residential Sector, as measures in the Sector are not evaluated on a case-by-case basis by an EME, as they are in the Business Sector.

For instance, assume on a particular project that the total square foot area of installed windows equals 421.75 ft², the incentive is \$4.00 per ft² and PSE claims 15 kWh per ft². The window square footage figure should first be rounded to 422 ft². The resulting incentive payment would then be \$1,688.00⁷ (assuming there is no payment limit) and PSE would claim 6,330 kWh/yr. A different hypothetical window installation, with a total of 65.45 ft² would first be rounded to 65 ft².

Similarly, if a 10.35 horsepower motor was installed and the incentive was \$100 per HP with a savings claim of 250 kWh/HP, PSE would first round the HP to 10.4. Horsepower ratings for motors are much more precise and have direct bearing on conservation and incentive payments. It is appropriate to round to a single decimal place (tenths) for this type of measure, versus building shell measures.

The motor incentive would then be \$1,040 (again, assuming no payment limit) and PSE would claim 2,600 kWh/yr.

It is apparent then, that the overarching guideline for measure claims (not savings claims) is:

- Shell measure counts will be rounded to the nearest whole number
- All other measure counts will be rounded to the nearest decimal point (tenths)

⁶ The RTF recognized units of three-foot pipe wrap and 10-foot pipe wrap as deemed savings values.

⁷ Residential Sector incentives are paid in whole dollar amounts.

2) Timing of Savings Claims

PSE claims savings only when an incentive is paid in both the Residential and Business Sectors. The value of savings that PSE claims at the time of incentive payment may be subject to various timing issues. For instance:

1. "<u>Payment lag</u>": If an application, grant, coupon or other form of remuneration request is received in one reporting period but paid in the subsequent period, savings and payment should be recognized for the period in which the request was received.

In this illustrative hypothetical circumstance, a rebate application is received in December of 2010 when a clothes washer savings is 159 kWh. Due to a high volume of applications received, though, EES cannot process the application until January (when the hypothetical savings is now 149 kWh). EES will claim 159 kWh for that clothes washer, as it is possible to prove that, given optimal workloads, the rebate would have been paid in December.

<u>Grace period for retired prescriptive measures</u>: payment requests (rebate applications, internal requests—such as CSY requests to Accounts Payable, etc.) for measures that were active during the period in which the payment request was made may be honored for up to 90 days⁸ following the retirement of that measure. The savings claims for these measures will be based on the value that was in effect at the time that the measure was retired.

As a case in point, when Single Family New Construction dishwasher measures were retired at the end of 2010, some builders were not able to mail their rebate paperwork in until late January 2011. In this circumstance, the applications were received within the grace period. Therefore, EES claimed the savings values that were in effect at the end of 2010.

- 3. <u>Exact measure match</u>: applies only if the same measure, with the same qualifications, changes its savings value or incentive level from one period to the next. In these cases, the savings will be claimed are those that are in effect at the time of payment, regardless of the value's savings amount revision date. There is some implementation variability. For instance:
 - a. When the RTF makes an annual adjustment to its savings calculations, PSE correspondingly adjusts its savings claims on the following January
 1. For instance, when the RTF adjusts the "Tier 2" clothes washer savings value for electric water heater/electric dryer from 159 kWh/yr to 149 kWh/yr in October of 2010, PSE makes a corresponding adjustment to 149 kWh/yr in January 2011.

⁸ Each program maintains different grace periods.

Therefore, if an eligible clothes washer was installed in December of 2010 (which equate to qualifying savings of 159 kWh/yr) but the rebate application was not mailed until January 2011 (when the savings are now 149 kWh/yr), PSE would claim 149 kWh/yr, rather than 159 kWh/yr, based upon the rebate payment date. (If, however, the customer mailed and PSE received the rebate application in December and it wasn't paid until January, then rule #1 above—Payment Lag—would apply.)

b. When RTF indicates in October 2010 that a "Tier 2" clothes washer is no longer cost effective and that the new minimum efficiency clothes washer is a "Tier 3" clothes washer (for instance, a 2.7 MEF with a <4.0 water factor), the "Tier 2" clothes washer is now retired on January 1, 2011 and will thus be governed by the "Retired Measures" rule, as outlined in Section 4 below.</p>

Thus, if an applicable clothes washer was installed in December 2010 but the rebate application was not mailed until January 2011, EES would first apply the Grace Period rule (Circumstance #2 above). If the rebate qualifies, EES would claim the savings value in effect at the time that the measure was retired.

3) EES Takes Conservative Values

When it isn't possible to determine from customer input or installation data whether a UES measure is eligible to claim the higher of two possible savings values, EES takes the more conservative amount.

It is extremely rare to encounter a case where it isn't possible to determine which measure value to apply to a particular incentive application. Today's application forms are designed to be easy for customers to complete. Additionally, when there is incomplete data provided, PSE staff or its vendors follow up with customers to ascertain the data necessary to apply the appropriate savings value to apply.

Additionally, when a Business Sector measure is based on an RTF savings value (2011 PC Power Management Software, for instance) and there is engineering data that indicates that a higher savings value is appropriate, PSE will take the lesser of the two values⁹.

⁹ In the 2011 PC Power Manager business case, a Cadmus Group impact evaluation indicated that an appropriate savings value would be 117 kWh per desktop unit. For the same time period, the RTF provisional value was 115 kWh per desktop. PSE elected to use the RTF value.

4) Savings Claims for Retired Measures

Please refer to the EES guideline: <u>Measure Retirement Guidelines:</u> H:\Budget & Administration\Measure Metrics\Processes\Measure retirement policy_V2.5_03042010.doc.

The savings value assigned to and reported for a retired measure will be the value that was in effect at the time that the measure was installed or committed to in a grant agreement.

In this hypothetical circumstance, a MEF 0.65 dishwasher (at 250 kWh/yr) was installed in December of 2009 and that particular dishwasher measure was retired December 31, 2009 because it was being replaced by a MEF 0.80 dishwasher (at 300 kWh/yr) on January 1, 2010 as the new minimum efficiency qualification.

In our illustration, the rebate application was received in late January 2010 for this dishwasher. Also for illustration, it's assumed that the grace period for dishwashers extends to February 15, 2010¹⁰.

The customer is still eligible to receive a rebate and 250 kWh/yr will be entered in the 2010 EES Residential Tracking database. This is because the dishwasher was installed in 2009 and met the qualifications for MEF 0.65 dishwashers.

5) Savings Claims from Vendors

PSE expects vendors to have documented policies and processes relative to accounting for rebates processed, measures installed, customer interaction and privacy as a requirement of doing business with PSE. EES program managers using vendors to collect savings information have this documentation (usually included in the contractual documents, such as the RFP, contract or Statement of Work) on hand. EES program managers are expected to verify vendor data prior to entering monthly summary savings data into the applicable tracking system.

6) Prescriptive Measures

"Prescriptive Measures" and "Deemed Measures" are terms that are often used interchangeably. Prescriptive Measures can include either RTF Deemed or PSE Deemed measures.

RTF UES Values

In compliance with the 2010 Settlement Agreement conditions K(6)(b), EES uses RTF UES measure savings values whenever possible. Reference to RTF values are maintained in the EES Measure Metrics archive in each measure's Source of Savings (SoS) folder. Prior to 2010, most EES program managers relied on RTF data reported in tables maintained in the BPA's Reporting Tracking and Reporting (PTR) system:

https://www.ptr.nwcouncil.org/apps/home.asp

¹⁰ Please note that in section 2.B, <u>Grace Period</u>, programs may extend application eligibility to 90 days. Single Family New Construction, in this illustration, set their grace period to 45 days.

Energy Efficiency Services			
Version: 4.5	Replacing Version: 4.2	Updated:	6/1/2011
			9
		Exhibit No	(RWS-11)
		Page 11 of 35	

Throughout 2010, however, EES transitioned to aligning savings values found in the RTF-specific website:

http://www.nwcouncil.org/energy/rtf/measures/Default.asp

Although the PTR site uses RTF data, the primary audience of the site are entities who may wish to avail themselves of BPA monetary credits. The RTF site tends to include the most current data. By January 1, 2012, all RTF deemed measures noted in the Measure Metrics source of savings files will only reference the RTF tables.

When necessary, measure savings value adjustments occur and are effective each January 1. Although the RTF may update certain measure savings values throughout the year, EES limits adjustments to align with RTF values to an annual basis. The only time that a value is adjusted mid-course (retroactively or on a going-forward basis) is when a savings value error is revealed. Complete process steps are outlined in the EES document <u>Measure Revision Guidelines</u>.

A step-by-step process outline of how to download values from the RTF website is located in Appendix A of the <u>Measure Revision Guidelines</u>.

PSE UES Values

Regional conditions may indicate that a modification of a certain RTF UES value¹¹ or the calculation of a new value is warranted¹². In compliance with the 2010 Settlement Terms condition K(6)(c), EES will initiate an evaluation study or conduct engineering analyses that are consistent with Northwest Power and Conservation Council methodologies to determine an appropriate savings value.

Values for each deemed measure type are classified and archived in the EES Measure Metrics system.

Calculating Savings for UES Measures

Regardless of the UES measure type (RTF, PSE), aggregate savings for these measures are calculated by systems within EES. The number of specific measure units (for example, the number of CFL bulbs, the number of clothes washers, etc.) is entered into the applicable system. The system then multiplies the savings value for that measure and produces the resultant savings value.

A general rule for prescriptive measures is: <u>(# of units</u> * <u>UES savings value per unit</u> = <u>total savings claimed</u>).

	Lifergy Liferency dervices		
Version: 4.5	Replacing Version: 4.2	Updated	: 6/1/2011
		-	10
		Exhibit No	(RWS-11)
		Page 12 of 35	5

¹¹ For instance, according to EES's "2008 Low-Flow Showerhead Installation Rate Survey Results evaluation study, in the Puget Sound area there are downstream electric waste treatment savings of 4 kWh per unit. Therefore, PSE adds 4 kWh to the established RTF values for showerheads. EES maintains a protocol for these instances in its Measure Revision Guidelines. ¹² For instance, certain structure types used for heat pumps warranted a savings value that wasn't used by RTF.

Thus:

(100 MEF 2.0 clothes washers at 100 kWh each = 10.000 kWh).

To a varying degree of steps and sequence, the systems will then aggregate the specific savings for each measure (eq. MEF 2.2 - 2.45, MEF 2.46 - 2.69) then sum the savings for all measures (clothes washers in this example)

Each month the responsible program manager validates the savings entries and affixes his or her initials, acknowledging the accuracy of savings claimed.

7) Calculated Measures

Applying primarily to the Business sector (an increasing number of residential programs also use calculated measures), a calculated measure uses a standard incentive value but includes an engineering calculation of site-specific savings. In the case of Small Business Lighting, for instance, the number of CFL fixtures is multiplied by the wattage use for those particular fixtures. The lighting engineer then applies the number of estimated hours of operation per fixture in order to calculate annual energy savings for the overall project.

8) Custom Measures

Savings estimates for custom measures are determined using strict engineering principles, many on-site observations and measurements and a series of verification reviews. Every project receives a QC review by a senior-level engineer. Savings are claimed only after the projected energy savings are validated when the project is completed. A complete flowchart of the custom grant process is attached to this guidelines document as Appendix C.

9) Audits of EES Programs

Formal savings and financial audits of selected EES programs are performed every quarter. Through this process, it is EES's goal to ensure that certain programs are audited at least once per year, typically based on the following criteria that are subject to change as suitable to business need.

EES Audit Objectives

The objectives of audits are to determine that EES programs have adequate controls; identify probable areas of improvement, and train and develop staff skills. In general, the following program areas are audited:

- Savings and source of savings are supported by proper documentation;
- Savings and source of savings are claimed in accordance with program guidelines;
- Dollars are spent in accordance with program guidelines;
- Program expenditures are supported by proper documentation;
- Program expenditures are approved and tracked;
- Program costs & savings are reported in a timely fashion and in accordance with regulatory policies and procedures.

Program Audit Selection Criteria

In addition to the overarching goal of review every EES programs that generates conservation savings, the Budget and Administration team uses the following criteria to determine audit priorities:

- Programs that contribute greater than 50% of annual EES savings;
- Programs whose expenditures are currently or projected to end the current year at 80% or 120% expenditures against their budget;
- Programs with multiple adjustments to their savings tracking with the year;
- Length of time between audits;
- New programs;
- Other reasons as determined by the Manager of EES Budget & Administration.

Audit Practice

The EES audit practice strives to be in keeping with GAAP, Federal Energy Regulatory Commission (FERC) and other imperative governance. As such, the Budget & Administration team—who conduct the audits—are independent of all program activities.

Randomly selected periods are audited. Selected program savings and financial information are studied by comparing program management's tracking with reported information. When possible, audits will trace all the way back to the individual customer record to validate savings and disbursement claims. If corrections are required for a particular period, all periods for that year will be reviewed by the audit team.

Peculiarity items are studied, but are not limited to the following:

- Negative units and costs (Vendor records, CSY and SAP).
- Duplicate customer names, rebates and jobs completed (CSY & SAP).
- Addresses beyond PSE service territory.
- Non-existence of customer records within PSE customer system (CLX).

It is EES's objective to ensure transparent and reliable savings and financial information. Additional preventative and detective procedures are in place throughout the year to offer internal and external parties reliable information. It is notable that improvements to existing procedures are an ongoing effort, namely:

- Program managers are held accountable for accuracy of their savings and expenditures. Program managers are required to review and provide signature of authorization for their program savings and expenses on a monthly basis. Program managers and/or implementers scrutinize all PSE contractor invoices and savings claim on a daily basis.
- Savings and financial tracking of all EES programs compared to budget & savings target are reported monthly. All staff, including management and VP of EES are kept abreast of all program activities.
- 3. Review of all EES expense by general ledger is conducted on a monthly basis. In addition to month by month expense comparison, prior year versus current year is also examined. Unusual items are researched and corrected as necessary in a timely manner while in compliance with all standards.

4. Quarterly CRAG updates, which provide actual versus target comparison program status comments.

Additionally, Business sector project records of grants greater than or equal to \$100,000 are further reviewed by the manager of Budget and Administration each quarter for accuracy and signature compliance, per Sarbanes-Oxley requirements. Other random business projects are also included in this review.

10) Adjustments

This section pertains specifically to counting errors and their associated corrections. Adjustments that are required as a result of evaluation studies or RTF revisions are addressed in the EES document "Measure Revision Guidelines".

Although rare, savings claims adjustments are periodically necessary. For example, a vendor may mistakenly miss some clothes washers from a previous month and add them into the next month's total. Data entry errors also occur infrequently and are corrected as soon as they are found (E.G.; a total of 69 refrigerators were entered in the Residential Savings Tracking System when there were actually 96).

The EES Budget team manages a formal adjustment process, which is comprehensively documented in the EES Budget department.

An adjustment to savings figures can only be made once the program manager answers the following questions in writing:

- What happened ("savings were overstated by 10,000 kWh last month", etc.)?
- How was the issue identified?
- Why it happened ("10 manufactured home rebates were counted twice", etc.)?
- How it is corrected ("10,000 kWh will be subtracted from this month's claims, with a corresponding note in the Residential Savings Tracking System", etc.)?
- What will be done to prevent future errors ("all rebate forms will be marshaled in areas specific to their corresponding programs and receive a check mark when processed", etc.)?

Additionally, the program manager must complete the Savings Adjustment Table. An example is included as Appendix D of this document.

The document is then approved in writing by the Manager, Budget and Administration.

This document is archived within the EES tracking month to which it pertains; both in electronic and hard copy form.

It is important to note that once a reporting month is closed, it isn't possible to retroactively adjust its savings figure.

In the above example, assume that the "last month" noted was May 2009. Also assume that the adjustment document was completed July 21, 2009. Since the January through June period has now been reported to the CRAG and WUTC, it isn't possible to go back into May's report and subtract 10,000 kWh. If the actual savings figure for June 2009 is 20,000 kWh, then 10,000 kWh will be subtracted for a total of 10,000 kWh.

A note in the Residential Savings Tracking System will make it clear—when a future audit is performed and 20,000 kWh-worth of rebate forms are produced for June—where to look for the missing 10,000 kWh-worth of rebate forms.

Energy Efficiency Services

Replacing Version: 4.2

11) Specific Savings Types

UES Measure Savings

A) Savings Claims from Rebate Application Forms

Although it isn't possible to determine with complete confidence the actual installation of a measure that results from the processing of a rebate application form, EES assumes that the customer or entity sending the application form has indeed installed the associated measure (equipment, process, etc.). The representative financial outlay associated with many of the measures makes it unlikely that the customer or requesting entity would not install and use the measure after the purchase. Furthermore, RTF deemed values (for those measures whose savings are based on RTF values) take into account that a proportion will be kept in customer storage, some are taken to locations that are outside of the PSE service territory, a certain number fail upon installation, etc. It is an accepted RTF practice to count savings in this manner.

PSE-Processed Rebate Forms

Residential

Policy

It is EES's policy that energy savings will be documented and tracked only when they can be verified by reference to a completed and authenticated rebate application form. Savings are claimed only after the information from the rebate application is entered into CSY. Specific rebate application processing procedures are outlined elsewhere in EES department guidelines.

It is important to note that savings values that are effective in the year in which the application is paid are those which are claimed. Hence, if a customer installs a clothes washer in December 2010 and doesn't send their rebate application in until January 2011, PSE will not claim the 2010 savings value. Rather, PSE will claim the 2011 value¹³.

Process Overview

Rebate applications that are completed by customers, builders or any other eligible party (eligibility requirements are listed in the specific program documentation) are mailed into PSE for redemption. Rebate applications may be mailed, faxed, emailed or retrieved from a verifier's database.

¹³ In the case of a "Tier 2" clothes washer, using electric water heat and electric dryer, the 2010 savings value was 159 kWh/yr. The 2011 value for the same configuration is now 149 kWh/yr. **Energy Efficiency Services**

Typically, builder rebates are compiled, verified and input into a database by a thirdparty verifier. PSE accesses verified rebate information for builders from this system.

Once received, all rebate applications are verified, logged into CSY and payment is requested. Rebate applications are then archived. A monthly report from CSY is generated and number of units is compiled to calculate savings claims. Detailed rebate processing steps are available from the Residential System staff.

Rebate forms used by the Residential sector include, but are not limited to and may be subject to change:

- Windows
- Manufactured Homes
- Fuel Conversion (convert from electric to gas)
- WashWise (appliances)
- Heating
- Weatherization
- Ductless Heat Pump

Selected rebate application forms are processed by authorized EES vendors (2009 and 2010 noted in **Appendix A** of this document). Rebate applications processed by vendors are addressed in the below section.

Business

Policy

It is EES's policy that energy savings will be claimed and tracked only when they can be verified by reference to a completed and authenticated rebate application form. Savings are claimed only after the information from the rebate application is entered into CSY.

Process Overview

In rebate programs, the data from the applications are entered into a "Cover Sheet", created and managed by the program manager. The cover sheet calculates the savings and rebate amounts that will correspond to customer purchase/installation before the summary information is entered into CSY. Other information from the actual application is also entered into CSY (customer information, account information, contact information, etc). Specific rebate application processing procedures are available from the Business staff.

Rebate forms exist in both electronic and hard copy form and are received from customers, contractors or vendors by email, fax and postal mail. The forms are forwarded to the corresponding market manager, program manager, energy management engineer(s) or program implementer of the Business Rebates section of the Business Energy Management Department.

Rebate forms used by the Business sector include, but are not limited to and may be subject to change:

- Commercial CFLs
- Commercial Clothes Washers
- Commercial Kitchen Equipment

- Electronically Commutated Motors
- Gas Boiler Tune-ups
- High Efficiency Air Conditioning and Heat Pumps
- HVAC Variable Speed Drive
- Portable Classroom Controls
- Premium Efficiency Motors
- Programmable Thermostats
- Small Business Lighting
- Vending Machine Controllers

Vendor-Processed Rebate Application Forms

Policy

It is EES's policy that authorized vendors process rebate applications with the same diligence that EES personnel apply. Vendors receive comprehensive training by PSE and are to provide the same level of follow-up and customer service. Authorized vendors are required to adhere to PSE customer privacy policies. PSE may rescind a vendor's participation authorization if they show an inability to follow procedures or engage in any questionable practice.

Process Overview

Some customer rebate forms are mailed to PSE's authorized vendors for processing. The vendor is expected to apply the same eligibility validation process as is used when a rebate form is received by the PSE office. Depending on the written agreement between the Company and the vendor, he vendor will supply the appropriate EES program manager all of the necessary backup documents associated with the application. In some cases, the vendor keeps the necessary backup documentation on file at their location and they provide it upon request. The package contains a summary and some level of stipulated detail on rebates paid to customers. The vendor is expected to archive the actual completed rebate application forms for a period of seven years.

The rebate count processed by authorized vendors is entered into the corresponding departmental tracking and processing system only when the vendor's information is received and verified by the applicable program manager. The program manager validates the summary information in the Residential Savings Tracking System and archive the file package for future reference. Specific vendor rebate application processing procedures are outlined elsewhere in EES department guidelines.

Please see Appendix A of this document for a list of EES vendors.

B) Vendor Direct Installation Savings Claims

Policy

EES authorized vendors, Low Income Weatherization agencies, and other entities selected by the Company (collectively, "vendors") to install a select number of prescriptive measures on behalf of the Company.

Energy Efficiency Services

Replacing Version: 4.2

It is EES's policy that savings will only be claimed for those measures after a summary report of installed measures is received from the authorized vendor. It is clearly understood that all measures in this category are installed and being used.

Process Overview

Authorized vendors are required to maintain accurate records of measures installed, installation locations and customer information (they are required to adhere to PSE customer privacy policies). As a part of their invoicing process, vendors are expected to provide monthly activity reports, which include both summary and detail measure information to the EES program manager. When requested, vendors will provide specific measure detail for any given customer or customer account.

Residential

When the report is received, the program manager enters the summary information into the Residential Savings Tracking System and signs off on the entry, acknowledging that the information has been verified and is accurate. As an additional validation step, beginning in 2010, it is EES's goal to inspect, via random sampling, 10 percent of all weatherization jobs (weatherization services comprise a large part of contractor-installed measures) performed by PSE contractors per year.

Business

The program manager or program implementer enters the summary information into a tracking system very much like the prescriptive rebate measures, enumerated above. For many programs, there is a Cover Sheet created and managed by the program manager (or the staff member who created the measure). The summary numbers from the vendor are entered into this sheet which then calculates the necessary savings that are to be manually entered into CSY. The payment request is created by CSY at this time.

On a monthly basis, the Budget department business analyst extracts a summary report from CSY and enters that summary information into the EES tracking system. A certain percentage of prescriptive programs are audited and reviewed by subject matter experts. For instance, a licensed plumber inspects a percentage of pre-rinse spray heads replaced by a vendor's installer.

C) Retailers / Reseller Savings Claims

Policy

It is EES's policy that savings claims will be made only for those measures enumerated in retailers' or resellers' summary reports which are received and validated by EES program managers.

Process Overview

EES has steadily reduced rebate forms for high-volume/low value items (such as CFL bulbs). Instead, many retailers/resellers—such as McClendon or Costco—now provide an "instant rebate" to the customer; taking a specified dollar value off of the price at the register. They then provide an intermediary vendor a summary report, who then forwards this to EES.

Energy Efficiency Services				
Version: 4.5	Replacing Version: 4.2	Updated	: 6/1/2011	
		-	18	
		Exhibit No.	(RWS-11)	
		Page 20 of 35	5	

On a routine basis, an EES vendor verifies Point of Sales (POS) data against manufacturer's invoices to validate sell-through of product for which mark-down claims are made. In many cases, the retailer/reseller will report a specific number of a particular part number; "CFLT01204", where the "4" in the part number indicates that this unit is a four-pack of CFL lamps, therefore requiring the total to be multiplied by four.

These reports vary in the degree of detail and rarely provide customer-level specifics; large chains that are networked will report sales by week/by store and then summarize those figures into one monthly grand total.

Several lighting showrooms provide incentives to their sales staff (commonly referred to as "spiffs"). This activity is often associated with new construction (both Residential and Business) contractors. Reports from these entities will typically include the sales person's name, number of units sold, the contractor name and the "spiff" amount to which they earned.

The retailer (or the retailer-appointed vendor) will create a monthly summary report as a part of their invoice for the associated amount (for instance, 2.00 per CFL bulb X 10,000 bulbs = 20,000 invoiced to EES). An EES program manager will validate the information and then initiate a payment request to the retailer through CSY.

Although it isn't possible to say with certainty that all measures purchased in this manner are installed, RTF deemed values take into account that a proportion will be kept in customer storage, some are taken to locations that are outside of the PSE service territory, and a certain number fail upon installation. However, it is an accepted RTF practice to count savings in this manner.

Unit counts for these measures are only entered in the Residential Savings Tracking System after the program implementer or program manager for the applicable program reviews the retailer/reseller report to ensure consistency of the totals.

An example of Residential Retail lighting vendor assignments is also illustrated in **Appendix B** of this document.

Calculated Measures Savings

Policy

It is EES's policy to claim savings for calculated measure only when the installation of the applicable measure(s) is confirmed by an EME.

Process Overview

Rebate applications are typically received from contractors and are normally associated with small business or Multi-family projects. Applications are reviewed by EES staff for eligibility and to validate savings calculations. Upon verification, approval is provided to the contractor to proceed with the installation of the applicable measures. When the measure installation is verified by the EME, payment of the incentive is made via the standard CSY payment request process.

Upon verification, the payment is authorized and processed in CSY. This operation triggers an entry of the savings values (either a deemed value or a savings value entered by the EME). On a monthly basis, CSY summary savings reports are generated and their contents are entered into the EES Tracking System.

The complete custom grant process flowchart is attached to this guidelines document as Appendix C.

Custom Measures Savings

The majority of Business measures are of a custom nature. There are also some Residential programs, primarily Multi-family, that use custom measures.

Policy

It is EES's policy to claim savings for custom measures only when the installation of the applicable measure(s) and validation of the savings are confirmed by an EME, or in the case of Residential Multi-family projects, an authorized vendor and program manager.

Process Overview

Business

When a developer or contractor wishes to install conservation measures into a Commercial or Industrial structure, an EME is engaged to provide a savings estimate and a corresponding amount of remuneration (in Business terms, a "grant".) The estimate is then reviewed by a senior-level EME. This operation is called a QC Review.

A grant agreement is then generated and the construction proceeds. When the contractor notifies the EME that the project is complete, a review is made of the project to ensure that the agreed-to equipment or measures are installed and to validate savings assumptions.

In some cases, the savings value is adjusted to reflect actual savings achieved due to scope, equipment or other changes to the original plan. If this is the case, an additional QC review is required. EES will use billing history, among other methods, to confirm savings. When the project is completed and verified against the original grant agreement, the grant is then approved. In the case of prescriptive measures included as a part of the grant, the savings value in effect at the time that the grant was signed will be used.

Grant approval triggers a payment request to PSE Accounts Payable. This activity also triggers entry of the final savings value in CSY. On a monthly basis, CSY summary savings reports are generated and their contents are entered into the EES Tracking System.

Residential

There are typically several large Multi-family projects throughout the year which follow, to a great extent, the Business custom grant process. Many of these projects include prescriptive and custom measures.

Similar to the Business sector, it is EES's policy to claim savings for these projects only when the installation of the applicable measure(s) and validation of the savings are confirmed. Rather than confirmation by an EME, though, the Multi-family channel engages an authorized vendor to conduct a review of each project to validate measure installation. The Multi-family program manager then conducts an additional validation review, with the goal of reviewing ten percent of the completed projects per year.

Version:	4.5

Glossary of Terms

Unless otherwise noted in a specific Conservation Schedule, the following commonlyused terms, used throughout and applicable only to this document¹⁴ have the below noted meanings. Definitions or glossaries contained in other EES documents, policies or guidelines referring to specific processes or unique functions shall have the meanings noted in those documents, policies or guidelines.

"The Company", "PSE", "EES"	All references herein apply to Energy Efficiency Services, a division of Puget Sound Energy
CMS	(Customer Management System) – EES Customer Management System is the primary interface for fulfilling and tracking customers' interactions with EES residential programs and services. Modules include: Literature & Rebate Fulfillment, Contractor Referrals, Rebate qualifying and processing and EES Inventory Management.
CSY	(Customer SYstems solutions) – A PSE-created system with two distinct functional areas: Custom Grant Programs and Customer Rebate Programs. The system is used to track the status of Custom Grant Projects (from initial estimates to Grant Agreement to Final Payment) and to send payment request information to SAP. Payment information includes custom grants and rebates; both prescriptive and calculated for both EES sectors (Residential and Business).
Custom Measure	These are specific to an individual project and require the analysis of an energy management engineer. The Business sector, and a very few number of residential programs – primarily Multi-family, employ custom measures.
EES Tracking	The compilation of EES savings and expenditures for both Residential and Business sectors.
EME	Energy Management Engineer

¹⁴ Some acronyms, such as "ECM" have a different connotation outside the purview of PSE or conservation activities. Outside of EES, "ECM" may mean "Electric Conservation Measure". Within PSE, though, it means "Electronically Commutated Motor".

Glossary, Continued

GAAP	Generally Accepted Accounting Principles	
Measure Value	Measure Value is typically associated with prescriptive measures, such as CFL lamps, windows, insulation, etc. In some instances, such as windows or insulation, it may be necessary to apply rounding rules, as these measures are usually not installed in whole number units. ¹⁵ The Measure Value is different from the Savings Value.	
MEF	Manufacturer's Efficiency Factor	
NWPPC	Northwest Power Planning Council	
POS	Point Of Sale	
PSE UES Measure	Similar to the RTF UES Measure, a PSE UES Measure has a specific per-unit savings value, although the source of that savings value has been developed, analyzed and vetted by engineers, evaluation staff or other experts within EES.	
QC	Quality Control	
Residential Savings Tracking System	The system; either in the form of an electronic spreadsheet, workbook or other electronic form that collects, compiles and summarizes all residential program savings data.	
RTF	Region Technical Forum, a body of conservation experts, with a focus on the Idaho, Oregon, Wyoming and Washington region.	
RTF Deemed Measure	An electric measure that has a specific per-unit energy savings value which has been analyzed and vetted by the RTF. RTF has re-designated this type of measure as UES; Unit Energy Savings. UES measure savings are stated in terms of customer meter kWh, rather than busbar kWh ¹⁶ .	
SAP	(Systems, Applications, and Products in Data Processing) – SAP is a large multinational software development and consulting corporation located in Germany. The PSE SAP system is used mainly for HR, Contracting, and General Accounting. EES interacts with the system thru timesheets, contract/invoicing, and by assigning costs against order numbers.	

 ¹⁵ For instance, it is unusual that a contractor would install 200 ft² of attic insulation. A more likely total might be 200.5 ft²
¹⁶ The RTF publishes both Busbar and Customer Meter kWh savings.

Glossary, Continued

Savings Value	The total number of units; either kWh or therms, applied to a specific measure or group of measure types that represent energy conserved by the installation or use of the noted measure. The Savings Value is different from the Measure Value.
UES	Unit Energy Savings. Formerly "deemed", but updated by the RTF.

EES Implementation Vendors

2009 - 2010 EES Vendors

Vendor	Program	Order
ENERGY FEDERATION INC	Lighting	18230440
FEIT ELECTRIC COMPANY	Lighting	18230440
ECOLIGHTS NORTHWEST LLC	Lighting	18230440
TECHNICAL CONSUMER PRODUCTS INC	Lighting	18230440
PORTLAND ENERGY CONSERVATION INC	Lighting	18230440
COLEHOUR & COHEN INC	Lighting	18230440
FLUID MARKET STRATEGIES INC	Lighting	18230440
ECOS IQ INC	Lighting	18230440
PORTLAND ENERGY CONSERVATION INC	Washers	18230434
FEIT ELECTRIC COMPANY	Washers	18230434
PORTLAND ENERGY CONSERVATION INC	Washers	18230434
ECOS IQ INC	Washers	18230434
CSY	Washers	18230434
JACO ENVIRONMENTAL INC	Refrigerator	18230432
APPLIANCE RECYCLING CENTERS OF	Refrigerator	18230432
ENERGY FEDERATION INC	Showerheads	18230435
LACY & PAR INC	Showerheads	18230435
UCONS LLC	Weatherization	18230627
ECOS IQ INC	Weatherization	18230627
CSY	Weatherization	18230627
ECOS IQ INC	MF Retrofit	18230407
OPOWER INC	Home Energy Reports	18230461
SBW	Spray Heads	18230457/18230449
AUTONETIC	LIW	18230611

EES Savings Claims Guidelines

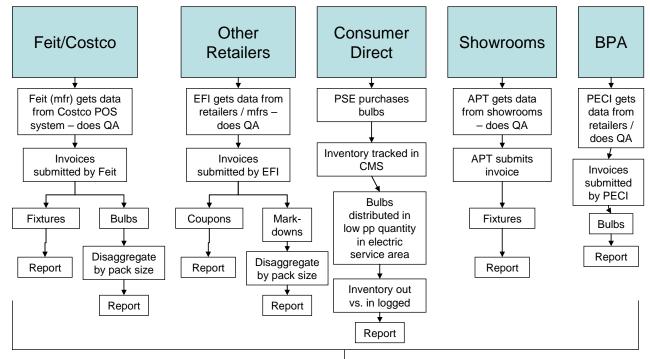
Please note that EES engages far more vendors than the above list. Most, however, do not manage implementation of programs that directly result in energy savings.

EES Savings Claims Guidelines

Appendix B: EES Lighting Reporting Process

2009 - 2010 Residential Lighting Reporting Process

2009 Retail Lighting Savings Reporting



Self-check, admin team review, annual internal audit

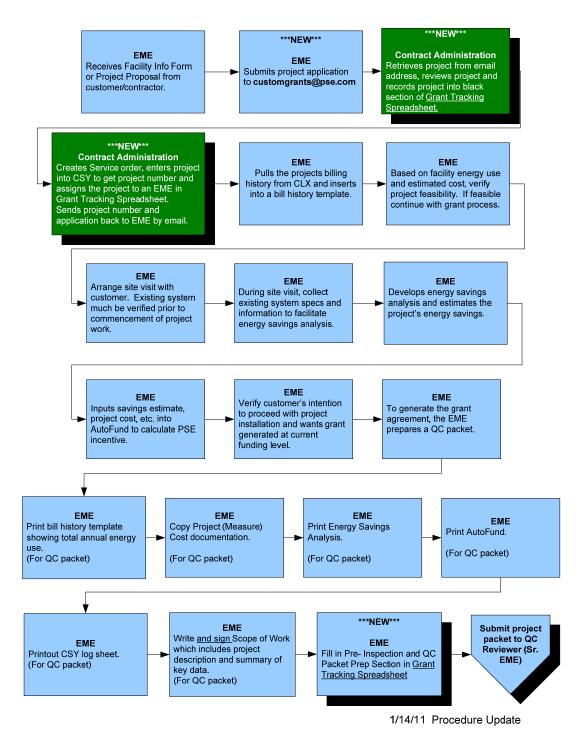
EES Savings Claims Guidelines

Updated: 6/1/2011 27

Appendix C: Custom Grant Process Flow

Revised C&I Grant Procedure

EME Receives Grant Request

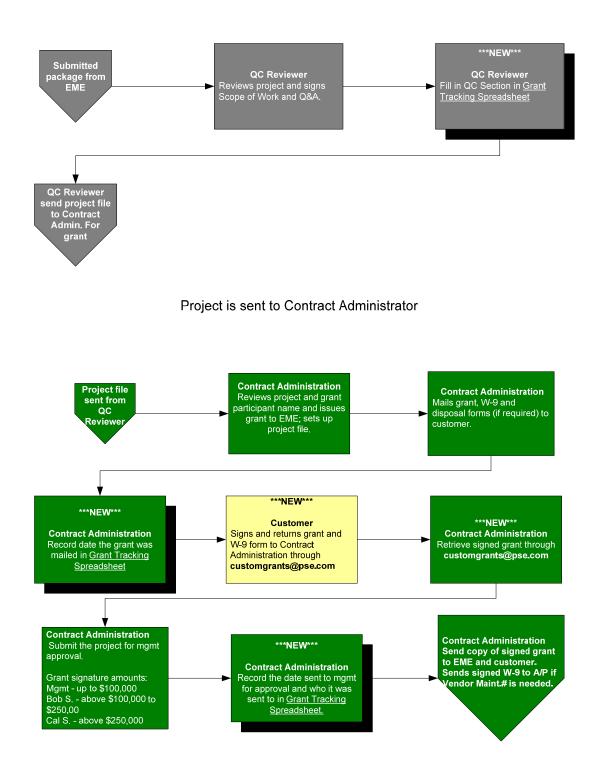


EES Savings Claims Guidelines

Replacing Version: 2.0

Updated: 6/1/2011 28 Exhibit No. ___(RWS-11) Page 30 of 35

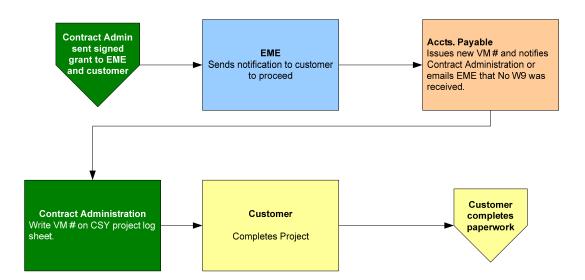
QC Review



EES Savings Claims Guidelines

Replacing Version: 2.0

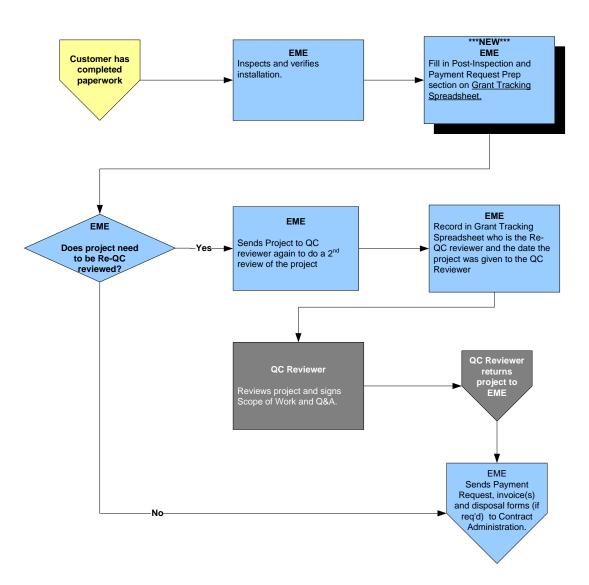
Signed Grant is Returned and Project Commences



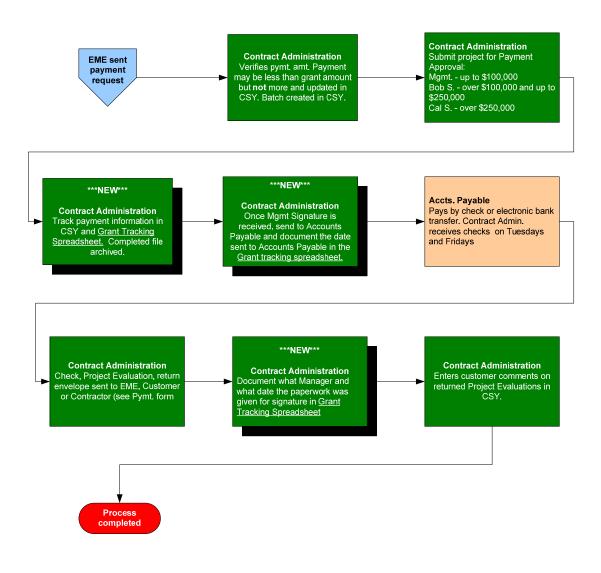
EES Savings Claims Guidelines

Replacing Version: 2.0

Project is Verified and Payment Requested



EES Savings Claims Guidelines



EES Savings Claims Guidelines

Appendix D: Savings Adjustment Table



Savings Adjustment Reconciliation Detail (Required for each adjustment request)

•••••	
CSY Link:	

Please enter either the statement acct#, project#, etc. that would allow for cross-reference to CSY. (Please indicate which the number is.)

→Please double-click anywhere in the following tables to access Excel to enter adjustment figures.

+ Use field with blue headers only if an incentive amount requires adjustment. If the count of a measure is the only adjustment required, these fields are not necessary.

Originally Reported Month

Corrected Month, Savings

(The month in which the need for adjustment is discovered. The unit count noted here [in column E] will almost certainly include some number of correctly-counted units. The adjusted amount from the original month is to be added to the correctly-counted unit total for the result in column F.)

		Savings	Incentive Incentive Amount per unit		Units		Savings			Incentive		Units			Savings			Incentive	
Customer Name	Measure Name	Savings per unit (kWh or Therm)		Month Originally Reported	Originally Reported Units	Should Have Reported	Difference	Original Savings	Should	Difference	Incentive Discrepancy per unit	Month Corrected	Original Total in Corrected Month	Adjusted Total Corrected Month Total	Difference	Original Savings, Corrected Month	Corrected Savings	Difference	Adjusted Incentive Amount
Hemstreet	Heat Pump - Tier 1	408	\$ 200.00	March	1	0	-1	408	0	-408	\$ (200.00)	August	0	-1	-1	0	-408	-408	\$-
	Electric FAF to HP conversion	5,176	\$1,000.00	March	0	1	1	0	5,176	5,176	\$ 1,000.00	August	0	1	1	0	5,176	5,176	\$ 800.0
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
								0	0		#VALUE!					0	0		
	received the higher amount, \$1,000 for th pay Hemstreet an additional \$800 throug equal the total due.										amount for the noted measure, multiplied by the amount in		the month in which the	noted in column C plus the total in column E.					field. This it accommoda the cases in

EES Savings Claims Guidelines

ted tive

the

Resulting Adjustment & # Savings Incentive -408 \$ -1 5,176 \$ 800.00 4,768 \$ 800.00

This is the This is the amount of the amount of incentive per adjustment unit that is noted multiplied by on the cover the total in page of the column G. adjustment request form.

Total Reconciliation						
Units	Savings					
0	0					
0	0					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
#VALUE!	#VALUE!					
М	N					

Sum of column (I, S) and (L, V) should each be zero.

Exhibit No. (RWS-11) Page 35 of 35