

Energy Efficiency Implementation Manual

October 1, 2010



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October 2010 Changes Summary

This summary includes new changes only.
It does not include interim updates/revisions or changes resulting from a previously announced six-month notice.

Changes that will take effect in six months (or later) are shaded.

Title	Description	Page #
General		
High Water Mark	References to the conservation adjustment of the contract High Water Mark have been removed to reflect the cessation of this credit on October 1, 2010.	Not applicable
Manual v. PTR system	A clarification has been added - the Manual takes precedence if there is a discrepancy between it and the PTR system.	1
Busbar energy savings	The definition has been changed to reflect the fact that busbar energy savings are 9.056 percent above the site energy savings (based on the RTF decision stemming from updated analysis of marginal line losses).	4
ECA Implementation Budget and Energy Efficiency Incentive	A section has been added to clarify that post-2011 the ECA implementation budget will reflect the Energy Efficiency Incentive.	6
Funding Source Chart	A funding source chart has been added to clarify which funding sources to use in the PTR system. Specifically, now that the high water mark has been removed, customers are instructed to report under "Other Utility Funds."	10
Documentation Requirements	The documentation requirements have been clarified.	11
Agricultural		
Agricultural Sector Definition	The Agricultural Sector definition has been changed to reflect qualification based on the type of action rather than the geographic location of that action.	16
Irrigation System Upgrades	The RTF recently split irrigation system upgrade measures by state. This will result in changes to measure structure, savings and reimbursement on April 1, 2011.	18
Stock Water Tanks	Reimbursement is now available in heating zone one.	18
Irrigation System Motors	These measures will be removed from the Manual, effective April 1, 2011. (On December 19, 2010, the EISA standard for premium motors will take effect, resulting in NEMA premium motors as standard efficiency. Click here for more information.)	19
Irrigation Pump Testing and System Analysis	An irrigation pump testing measure has been added.	22
Variable Frequency Drives in Agricultural Hardware Applications	The name of this measure has been changed to Variable Frequency Drives in Agricultural Turbine Pump Applications.	23

Title	Description	Page #
Commercial		
Unitary Air-Conditioning	New BPA Qualified measures have been added that cover commercial roof-top air-conditioning systems.	29
Deemed Refrigeration Retrofit Measures	Strip curtains have been added as a provisionally deemed measure in certain applications.	31
Commercial Food Service Reach-in Refrigerators and Freezers (solid door, glass door and chest)	Reimbursements have been reduced by as much as 50% as a result of recent RTF updates to deemed savings estimates.	32
Pre-rinse Spray Wash Valves	Reimbursements will decrease to \$100 on April 1, 2011 due to recent RTF updates to deemed savings estimates.	37
Refrigerator and Freezer Early Retirement and Recycling	A \$100 reimbursement has been established for this measure, which was previously unavailable in the Commercial Sector.	37
Network Computer Power Management	This measure will become provisionally deemed effective April 1, 2011, and savings will be reduced due to a recent RTF decision.	38
Electric Storage Water Heaters	A new measure is available for both residential and commercial model water heaters in commercial buildings.	39
Energy Smart Design ® - Office	Pending changes to non-residential energy codes may affect Energy Smart Design ® - Office packages. These changes will be implemented in the April 1, 2011 Manual to more accurately reflect the new code baseline.	42
Industrial		
Reorganization	The Industrial Sector chapter has been reorganized to keep the components of each offering in one location. The revised structure should provide easier access to each offering's requirements and reimbursements.	45
Industrial Sector Definition	The Industrial Sector definition has been changed to capture activities that have shifted into the Industrial Sector because of the Agricultural Sector definition change.	45
Energy Project Manager	The funding request process has been clarified.	49
Track and Tune	The methodology for estimating projects has been clarified.	51
High Performance Energy Management	The methodology for estimating projects has been clarified.	54
Lighting	Changes to the industrial custom project lighting process will take effect on April 1, 2011.	57
VFDs in Spud and Onion Storage Facilities	This measure has been moved to the Industrial Sector.	59
ESUE	Clarifications have been added to this section.	59

Title	Description	Page #
Residential		
ENERGY STAR CFLs – specialty (retail mark-down)	The RTF recently reviewed specialty CFLs and modified the deemed savings value based on current research. Effective April 1, 2011, savings will be reduced from 37 kWh to 21 kWh per retail specialty CFL, and BPA’s reimbursement will decrease from \$3.00 to \$2.25.	65
ENERGY STAR CFLs – specialty (direct install)	The RTF recently reviewed specialty CFLs and modified the deemed savings value based on current research. Effective April 1, 2011, savings will be reduced from 37 kWh to 25 kWh per direct install specialty CFL. BPA’s reimbursement will not decrease at this time.	65
ENERGY STAR CFLs – standard twisters & specialty (direct mail)	The RTF recently reviewed standard twisters and specialty CFLs and modified the deemed savings value based on current research. <i>(Retail twister savings was reduced from 35-27 kWh April 1, 2010).</i> Effective April 1, 2011, unrequested direct mail twister savings will be reduced from 35 kWh to 27 kWh, and direct mail specialty CFL savings will be reduced from 37 kWh to 21 kWh. BPA’s reimbursement will not decrease at this time.	65
ENERGY STAR CFLs – standard twisters & specialty (direct mail)	The number of non-requested CFLs that may be mailed to a residential household is limited to four bulbs per household, per fiscal year. This limit is a result of research conducted on installation rates of non-requested direct mail CFLs in the region.	65
ENERGY STAR CFLs – measures by room type	Effective April 1, 2011, CFL measures in the PTR system will attribute savings by bulb type and no longer provide savings by room type. <i>(New savings values attributed to bulb type will account for room type.)</i>	65
ENERGY STAR clothes washers	The RTF recently reviewed clothes washers with a higher baseline resulting in modified deemed savings. In addition ENERGY STAR’s specification increases to MEF 2.0 January 1, 2011. Effective April 1, 2011, savings for clothes washers will be reduced, on average, about 50%. New measures will be enhanced to provide three tiers with reimbursement levels as follows: MEF 2.0-2.19 = \$30.00, 2.20-2.45 = \$50.00, 2.46+ = \$70.00. All ENERGY STAR clothes washers with gas water heat = \$20.00.	70
ENERGY STAR freezers	The RTF recently reviewed freezers and modified deemed savings. Effective April 1, 2011, freezer measures will be simplified to a single measure - “Any ENERGY STAR freezer” - for 46 kWh in savings. BPA’s reimbursement will decrease from \$25.00 to \$15.00 per unit.	70
ENERGY STAR refrigerators	The RTF recently reviewed refrigerators and modified deemed savings. Effective April 1, 2011, refrigerator savings will be reduced, on average, about 50%. BPA’s reimbursement will decrease from \$25.00 to \$15.00 per unit.	70
ENERGY STAR Dishwashers	The RTF recently revisited the potential for dishwashers and confirmed that they are no longer a cost effective measure. Effective October 1, 2010, dishwashers are no longer an eligible measure.	Not Applicable
Refrigerator Recycling	The RTF recently reviewed refrigerator and freezer decommissioning resulting in modified deemed savings. Effective April 1, 2011, refrigerator decommissioning savings	70

Title	Description	Page #
	will be reduced from 974 kWh to 525 kWh. BPA's reimbursement will decrease from \$125.00 to \$100.00.	
Freezer Recycling	The RTF recently reviewed refrigerator and freezer decommissioning and modified deemed savings. Effective April 1, 2011, freezer decommissioning savings will be reduced from 995 kWh to 606 kWh. BPA's reimbursement will decrease from \$125.00 to \$100.00.	70
PTCS Heat Pump Conversions in Manufactured Homes	Reimbursement is available for PTCS Heat Pump Conversions in Manufactured Homes where PTCS Duct Sealing is not required.	77
NW ENERGY STAR Site-Built Homes	The ENERGY STAR definition of Single Family may be used for row houses, condos and town houses if dwelling units are separated by double party wall construction from ground to roof.	82
Multi-Sector		
COTR Request/Acknowledgement Procedure	A section has been added for the COTR Request/Acknowledgement procedure, the process whereby a customer requests enrollment in a particular offering and the COTR confirms this request. This section formalizes the processes used for Direct Acquisition and other offerings such as Energy Smart Industrial.	103
Custom Project Clarification	The custom project section has been clarified to indicate that customers should secure BPA funding (i.e., identify CRC funds or ensure the addition of bilateral funds to the ECA) before beginning a custom project.	107
Lighting	Changes to the industrial custom project lighting process will take effect on April 1, 2011. There have been and will be a number of changes to the reimbursements levels for retrofits to high-performance linear fluorescent technologies.	111

Implementation Manual Timeline

Action	Personnel on Point	Static Due Date	April 2011 Due Date ¹
Prepare Manual for publishing and send out for first round of revisions	BPA Energy Efficiency Implementation Manual Coordinator	9 weeks before Manual publication date	January 27, 2011
Complete first round of revisions and return to BPA Energy Efficiency Implementation Manual Coordinator	BPA Energy Efficiency Staff (Sector Leads, ² Contracts Manager, Programs Manager) and Renewables Managers	7 weeks before Manual publication date	February 10, 2011
Incorporate first round of revisions and send out for second round of review	BPA Energy Efficiency Implementation Manual Coordinator	5 1/2 weeks before Manual publication date	February 23, 2011
Complete second round of revisions and return to BPA Energy Efficiency Implementation Manual Coordinator	BPA Energy Efficiency staff, Renewables Managers, Utility Sounding Board Members	3 1/2 weeks before Manual publication date	March 9, 2011
Incorporate second round of revisions	BPA Energy Efficiency Implementation Manual Coordinator	2 weeks before Manual publication date	March 18, 2011
Convert Manual to PDF and create bookmarks and hyperlinks	BPA Energy Efficiency Implementation Manual Coordinator	7 days before Manual publication date	March 25, 2011
Send Manual to BPA information technology group for posting online, and coordinate with BPA Energy Efficiency Marketing to provide notice to customers and staff	BPA Energy Efficiency Implementation Manual Coordinator	3-5 days before Manual publication date	March 28, 2011
Submit Manual print requests to Implementation Manual Coordinator	BPA Energy Efficiency staff and other interested parties (e.g. customers)	15th day of month after Manual publication date	April 15, 2011
Send Manual print request to BPA Media Services and distribute to requesting parties upon completion	BPA Energy Efficiency Implementation Manual Coordinator	16th day of month after Manual publication date	April 18, 2011

¹ This column will be updated every six months to reflect the dates of the upcoming publication. If the static due date falls on a weekend or holiday, the actual due date will be the following business day.

² Sector Leads are expected to (1) engage customers on proposed Manual changes prior to submitting changes to the Implementation Manual Coordinator and (2) work with program managers in revising chapters (i.e., all revisions must funnel through the Sector Lead before going to the Implementation Manual Coordinator). Sector Leads must comply with all Energy Efficiency decision making policies.

Definitions

Definitions associated with the Renewables Option are provided in Section 9.

ACH	Air changes per hour, typically used in weatherization
aMW	Average megawatt of electricity or the average measure of the total energy delivered in one year - 8,760,000 kilowatt-hours per year
ARI	Air-Conditioning and Refrigeration Institute
B/C	Benefit/cost ratio
Bilateral Funding	A form of BPA energy efficiency funding; "Implementation Budget" as used in the Energy Conservation Agreement
BPA	Bonneville Power Administration
Busbar energy savings	Generally 9.056 percent above the site energy savings
CEC	California Energy Commission
CEE	Consortium for Energy Efficiency
Completed Unit	As used in the Energy Conservation Agreement includes "in-service date," "completion date" and other terms describing properly installed measures, operating and, when applicable, commissioned in accordance with the manufacturer's requirements and specifications for normal operations and, as applicable, having met specifications and requirements set forth in this Manual and the Planning, Tracking and Reporting system
Completion Report	A document submitted at the completion of a custom project that includes information on project costs, verified energy savings and information on changes to the approved M&V plan
Conditioned space (residential)	Any residential building cavity or space that is directly heated by a register or duct that provides conditioned air, typically a space inside the thermal shell of the residence
Conservation	Any reduction in electric energy consumption resulting from an increase in the efficiency of electric energy use, production or distribution
COTR	Contracting Officer's Technical Representative
Council	Northwest Power and Conservation Council
CRC	Conservation Rate Credit
Customer	A utility or other regional entity that purchases power from BPA
Custom Project	Energy savings work performed under the Manual's custom project section
Custom Project Proposal	A proposal for energy savings work made under the custom project section of this Manual
DA	Direct Acquisition
Deemed Measure	A measure for which energy savings per unit can be estimated because of a history of measured results and an ability to replicate energy savings
DHP	Ductless Heat Pump
ECA	Energy Conservation Agreement

EER	Energy Efficiency Representative
End user	Ultimate consumer of product
Energy Savings	Conservation in first year kilowatt-hours attributable to completed units; may include busbar energy savings and site energy savings
ENERGY STAR®	The registered name for a joint national energy efficiency program of the U.S. Environmental Protection Agency and the U.S. Department of Energy
ETO	Energy Trust of Oregon
Evaluation	The testing of the assumptions made in planning when measures are installed by real people and used by real people (generally not part of oversight, does not affect payments and is used to refine or confirm the planning assumptions for future use)
Fiscal Year (FY)	For BPA, from October 1 through September 30
Fuel Switching	As determined by BPA, the switching of one type of energy consumption to another (e.g., switching from electric heating to natural gas heating)
GPM	Gallons per minute, as in the flow-rate of showerheads
HP	Horsepower
HVAC	Heating, ventilation and air conditioning
HZ	Heating zone
Implementation Budget	The amount of money BPA makes available to a customer (through its Energy Conservation Agreement) to expend on implementation costs during the implementation period
Implementation Period	The period of time from the effective date of a customer's Energy Conservation Agreement through September 30, 2014
Incremental cost	Energy efficiency costs for work beyond that required by standard practice or code (may be the full cost of measures, especially in retrofit situations); "implementation cost" as used in the Energy Conservation Agreement
kW	Kilowatt – one thousand watts (units of electric power)
kWh	Kilowatt-hour – one kilowatt over the period of one hour (unit of energy)
LED	Light-emitting diode
Low-income	As defined for the Federal Weatherization Assistance Program , 200 percent of the poverty income levels (Approved statewide definitions substitute for federal low-income weatherization programs in the corresponding states.)
M&V	Measurement and Verification
Measure	Materials, equipment or activities that achieve energy efficiency
Measurement	Readings taken to establish energy use or improvements in energy use, such as testing duct leakage or measuring loading factors and run time in factories (It usually involves post and/or pre-post measurement. Large end users often measure to make sure that they are getting what they pay for or to better understand their system operations. The prevalence of required measurement for audits or for payment has varied in the field of energy efficiency, but the general rule is the more uncertainty, the greater the risk of performance, the greater the need for actual measurement. BPA requires

	some level of measurement and verification for projects for which the reimbursement is established by the energy savings achieved.)
Multifamily	Five or more dwelling units within the same structure, no more than three stories
MW	Megawatt – one million watts (units of electric power)
MWh	Megawatt-hour – one megawatt over the period of one hour
NEEA	Northwest Energy Efficiency Alliance
NEEM	Northwest Energy Efficient Manufactured Home
NEMA	National Electrical Manufacturers Association
NFRC	National Fenestration Rating Council
NR	New Resource (rate schedule)
Oversight	A contract management activity, designed to assure the government that it is getting what it pays for with some level of certainty
Performance Payment	Application of funds to cover internal customer administrative costs incurred in support of energy savings activities described in this Manual
PF	Priority Firm (rate schedule)
PTCS™	Performance Tested Comfort Systems (certification for duct sealing and heat pump commissioning)
PTR system	Planning, Tracking and Reporting system
RD&D	Research, development and demonstration
Regional Technical Forum (RTF)	An advisory committee established in 1999 to develop standards to verify and evaluate energy conservation (Committee members are experienced in conservation program planning, implementation and evaluation and are appointed by the Northwest Power and Conservation Council.)
Reimbursement	A term representing monetary incentive levels for the installation of energy efficiency measures; includes monetary amounts allocated against a customer’s Conservation Rate Credit and reimbursements under a customer’s Energy Conservation Agreement
RO	Renewables Option
RS&L	Reimbursement Strategies and Levels
SEER	Seasonal Energy Efficiency Ratio
Single-family	Less than five dwelling units within the same structure or a site-built home
SIS	Scientific Irrigation Scheduling
TCO	Technical compliance option
Site energy savings	The ascribed, deemed, calculated, estimated, evaluated or verified conservation in first year kilowatt-hours attributable to completed units
TRC	Total Resource Cost
TRCs	Tradable Renewable Certificates
TSP	Technical Service Provider

TRX	Transformer de-energization
Unconditioned space (residential)	Any residential building cavity or space that is intentionally vented to the outside or is not heated directly by a register or duct
Utility	A public customer that purchases power from BPA
Verification	A process or procedure designed to produce evidence confirming accuracy or truth of claims made to BPA, which may minimally involve obtaining and retaining documentation or may require site inspection(s) of the measure(s)
VO	Voltage Optimization (formerly Conservation Voltage Regulation)
Willingness to Pay (WTP)	The amount BPA is willing to reimburse for measures installed in accordance with applicable specifications, manufacturer's requirements and, as applicable, commissioned to ensure proper operation
Working day	Monday, Tuesday, Wednesday, Thursday and Friday, excluding federal holidays or other days federally deemed to be non-working days

1. Introduction

The Bonneville Power Administration (BPA) Energy Efficiency Implementation Manual (Manual) is based on the “[Final Post-2006 Conservation Structure](#)” (June 28, 2005).

To achieve the conservation targets established in the Northwest Power and Conservation Council’s (Council) Power Plan, BPA offers customers a variety of options, including, but not limited to, the following:

1. A variety of deemed measures and a custom project process providing energy savings opportunities in all end-use sectors
2. Third party initiatives through Direct Acquisition (DA) approaches
3. Non-standard agreements (when benefits can be achieved for BPA and the customer)
4. A variety of reimbursement funding sources

The Manual, together with specifications in the Planning, Tracking and Reporting (PTR) system (or its successor) incorporated herein, provides the implementation requirements for projects reported to BPA/receiving BPA reimbursement. The Manual takes precedence if there are any discrepancies between it and the PTR system.

1.1 How Measures Become Eligible for BPA Reimbursement

Measures are eligible for reimbursement if (1) they are recommended by the Regional Technical Forum (RTF) and accepted by BPA or (2) they are BPA Qualified.

1.1.1 RTF Recommendations

The RTF is independent from BPA and makes recommendations regarding the following:

1. Cost-effective conservation and estimated energy savings and costs associated with deemed measures
2. Changes in technology and standard practices through which customers may demonstrate that different energy savings and value estimates apply
3. A set of protocols by which the energy savings and system value of measures/programs not on the RTF recommended list can be estimated, including protocols for complex commercial or industrial projects
4. Criteria for renewable resource projects
5. Protocols for measurement and evaluation of energy savings or production

Organization of the Manual

Section 1 contains general information about the Manual.

Section 2 contains information specific to funding.

Section 3 contains general requirements for customers using BPA funding.

Sections 4 through 8 contain information about specific sectors (Agricultural, Commercial, Industrial, Residential and Multi-Sector).

Section 9 contains information about the Renewables Option of the Conservation Rate Credit.

Section 10 contains updates and revisions made since the last publication of the Manual.

Customers may petition the RTF to review the eligibility of new measures or measures previously deemed as not regionally cost-effective. After review, the RTF may reject the change or recommend the change to BPA as cost-effective. The RTF recommendations to BPA are advisory only, and BPA decides whether to accept, reject or modify the recommendations of the RTF.

Parties may initiate the review process by contacting the chair of the RTF in writing and explaining the proposed change. Depending upon the nature of the proposal, certain items should be included, as follows.

- If a new measure is proposed, the proposal should cite the RTF criteria under which the measure qualifies for inclusion in the RTF list.
- If a change in evaluation methodology is proposed, the proposal should include the rationale for the change (e.g., a proposed change in protocol should explain why the change improves the protocol's analytical quality).
- If a changed assumption is proposed, the proposal should present evidence that the changed assumption more closely reflects the real world.

Customers should contact the RTF for data requirements needed to file the proposal. If the proposal includes all necessary information, the RTF staff will assess the validity of supporting arguments and evidence and make a recommendation to reject or recommend the change.

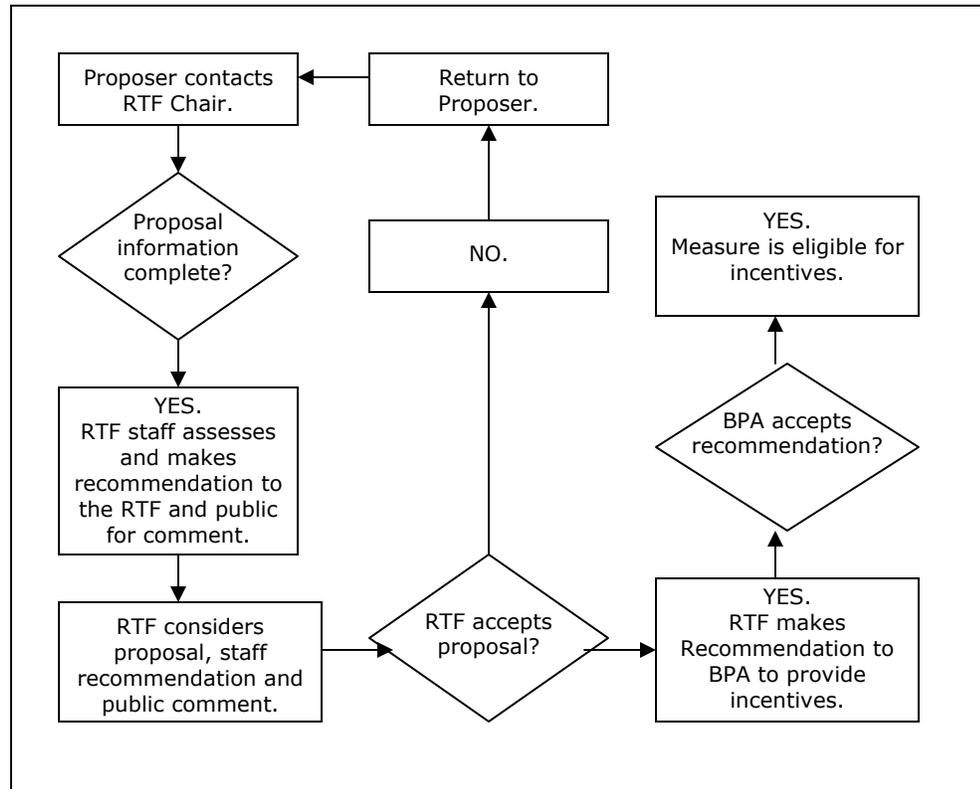
If the RTF staff recommends the proposal or believes that the proposal is sufficient to merit more discussion by the RTF, the proposal will be put on the agenda for discussion at the next RTF meeting. If the staff assessment is that the proposal has no merit, staff shall assign the proposal to a consent agenda for rejection. If any RTF member disagrees with the assignment, it will be moved from the consent agenda to the discussion agenda.

The RTF anticipates that it will make decisions on proposals no later than 90 days after receiving them, although complex issues could take longer and some issues (e.g., issues regarding health and safety) could take less time. Notice of pending actions on matters under appeal will be provided in the RTF meeting announcements and agendas. The figure on the following page depicts the flow of a proposal through the RTF process.

The RTF shall consider the proposal, staff's assessment and recommendation and any public comment and reject or recommend the proposal. Acceptance or rejection requires a majority vote by the RTF. The party making the proposal may make a presentation directly to the RTF and may contact individual RTF members prior to the meeting. Members are obligated to disclose such contacts when the proposal is under consideration.

The RTF will submit accepted proposals to BPA as RTF recommendations with advice for implementing the changes. BPA will generally respond within 30 days of the RTF recommendation, either by approving the request, denying the request or by requesting more information.

RTF Process Flow Chart



1.1.2 BPA Qualified Measures

BPA Qualified is a measure approval status that allows installation of non-RTF approved measures. Through these measures, BPA collects data and performs analysis, with the eventual goal of securing RTF approval. Measures that are either too small, or have insufficient data or time to gain full RTF approval are eligible to be BPA Qualified. Measures are more likely to be BPA Qualified if they fit within the following criteria:

- The measure's estimated achieved savings is less than 1 aMW of annual savings.
- The RTF rejected the measure because of a lack of RTF-level data.
- The measure has estimates and reliable sources of per-unit savings, incremental costs and lifetime.
- The measure is expected to have a TRC greater than 1.
- A thorough plan for data collection and evaluation has been established.

For all BPA Qualified measures, BPA first requires a full RTF review of the measure. After RTF's review, BPA assesses preliminary cost-effectiveness, develops an EM&V plan and generally evaluates the measure for BPA Qualified status. After evaluation, if BPA decides to proceed with the measure, BPA develops the measure design and presents evaluation results to the RTF for

review prior to program implementation. The RTF is expected to complete its review within two RTF meetings.

Once BPA Qualified, BPA enters the measure into the Manual and PTR system. BPA also sets expiration dates for claiming measure savings in order to ensure information is available to perform research and evaluation. In some instances, the customer may need to submit additional information in order to claim the measure (typically research data). If additional information is required, it will be noted in the Manual and/or PTR system.

During implementation, BPA counts the planned savings toward its conservation target, and after an evaluation has been conducted, savings are adjusted for BPA historic tracking, and BPA decides whether and how to continue the program. In the event of minimal uptake, BPA may elect to forego evaluation and count no savings toward the measure. Individual customer accomplishments are not adjusted.

It is at BPA's discretion whether and how to continue the measure.

1.2 Reimbursement Strategies and Levels

The BPA Reimbursement Strategies and Levels (RS&L) establish the BPA Willingness to Pay (WTP). The RS&L balance BPA's overall portfolio cost to acquire conservation at the lowest possible cost. BPA reimbursements made for energy savings reported are based on busbar energy savings, which are generally 9.056 percent above the site energy savings.

The reimbursement is also based on estimated or verified energy savings that persist over the life of the measure. The BPA WTP and the energy savings estimates are derived from program evaluations and research projects directly related to the standards and quality assurance processes of the programs.

There are two types of reimbursement:

1. Deemed Reimbursement: The deemed reimbursement level is determined by (1) multiplying the RTF deemed estimate of busbar energy savings by a set dollar amount or (2) BPA setting the reimbursement level based on the BPA WTP. The PTR system may require additional calculations to arrive at energy savings, and when this occurs, the measure is "calculated" but still deemed.
2. Custom Projects Reimbursement: The custom project reimbursement level is determined by multiplying the accepted, verified energy savings³ by the BPA WTP. Measures that use this method must meet the specification and funding source requirements of the sector.

1.3 Policy for Measure Changes/Additions

BPA updates the Manual every six months, on October 1 and April 1. BPA reserves the right to make changes to policies, procedures, measure eligibility, specifications and requirements.

³ Energy savings are included in the BPA accepted completion report in the custom project template available in the PTR system.

Customers will be given at least six months notice for changes that decrease a measure reimbursement, increase requirements or delete an existing measure.

Changes that increase a measure reimbursement, decrease requirements or add a new measure may be implemented any time of year without notice. In these cases, the [BPA Energy Efficiency Web site](#) acts as an extension to the Manual, allowing BPA to communicate positive changes to existing measures as well as requirements for new measures before publication of the next Manual. These changes are incorporated into the next published Manual.

1.4 Official Interpretations

Only the BPA Contract Administration Manager or Director of Energy Services may issue interpretations, determinations and findings related to the Manual that are binding and/or have implications across a program, unless delegated to other BPA staff (e.g., Contracting Officer's Representative (COTRs)). Such interpretations, determinations and findings will be provided to the customer in writing. Only written statements (including e-mail) by BPA officials acting within the scope of their authority are official BPA statements.

1.5 Federal Agency Program

BPA funds federal agency conservation projects and implements those funded by federal agencies (using interagency agreements). Energy savings achieved in directly and non-directly served federal agencies count toward BPA's share of the regional targets.

BPA funds are only used for installation of cost-effective conservation, as defined by the Total Resource Cost (TRC) test in the Council's most recent Power Plan. When BPA funds are used, the Manual requirements apply.

Post-2006 TRC Test Compliance

Before any new federal conservation acquisition capital budget request is prepared, the proposed project or measure must meet the TRC test using the same assumptions and test format for custom project proposals. If the present value total energy cost savings project cost benefit/cost (B/C) ratio is greater than 0.5, using the PTR system's TRC calculator, the funding request may be submitted for review and approval.

Positive program TRC results do not assure that the proposed project funding request will be approved. All other due diligence review requirements must be fulfilled before determining that BPA Energy Efficiency should purchase the energy savings from the project.

2. Funding Sources

Funding for energy efficiency opportunities in this Manual may be provided by BPA (BPA funding) or the customer (self-funding).

2.1 BPA Funding

This section discusses BPA funding sources (bilateral funding, CRC funding and the Irrigation Rate Mitigation Discount) and rules for pooling organizations. BPA funds must be used for in-region projects.

2.1.1 Bilateral Funding

Bilateral funds may be used for all BPA-funded measures in the PTR system, unless otherwise specified in the Manual. Bilateral funding assures that projects receive reimbursement from BPA even if completed in a rate period without CRC funding. Bilateral funding is administered through the customer's Energy Conservation Agreement (ECA) (Exhibit A) and within this agreement is referred to as the implementation budget. Beginning October 1, 2011, implementation budgets in Exhibit A of the ECA will be based on the Tier One Cost Allocation for determination of the Energy Efficiency Incentive. Pursuant to Section 4(c) of the ECA, BPA shall not be liable for payment of any amount above the implementation budget. If the sum of the invoices for deemed or custom projects exceeds the implementation budget in Exhibit A, BPA shall not pay the excess amount.

ECAs with effective dates prior to October 1, 2009 incorporate CRC, CAA and self-funded work in progress projects started⁴ prior to October 1, 2009.

BPA offers bilateral funding through standard and non-standard ECAs.

Standard ECA

Customers may request a standard ECA by writing to their Energy Efficiency Representative (EER). BPA shall review the request and if accepted, develop a draft ECA, generally providing an opportunity for customer review. Once the ECA is in final form, two originals (signed by BPA) will be sent to the customer with a request that both be signed and one returned to BPA.

Non-standard ECA

Occasionally, BPA may negotiate a non-standard ECA (not to be confused with a custom project proposal) with a customer when there is a benefit to BPA (e.g., a reduction in the reimbursement or staff time spent administering the agreement).⁵

Non-standard ECAs result in a variation from requirements of the Manual, including, but not limited to, BPA's WTP and standardized processes and procedures. Non-standard ECAs are subject to the overarching principles of the BPA Final Record of Decision (February 2005) on the short term Regional Dialogue and the overarching requirements of the Manual in effect at negotiation.

⁴ "Started" means custom projects with a BPA custom project proposal approval date prior to October 1, 2009 and deemed measures not yet reported to BPA with in-service dates prior to October 1, 2009.

⁵ BPA expects customers entering non-standard agreements will benefit from such agreements as well.

To initiate a non-standard ECA, a customer must submit a proposal to its EER that includes the following:

1. Program descriptions and a process for implementation
2. M&V method to be used
3. Proposed reimbursement rate
4. Estimated measure installation cost and total implementation budget
5. Proposed measure delivery approach

BPA shall review the proposal submitted, may ask clarifying questions and, if acceptable, negotiate final terms of the non-standard ECA. Through the negotiations, BPA shall strive to:

1. Develop agreements providing flexibility and ease of administration.
2. Provide consistency among BPA and the customer self-funded projects to minimize complexity and ease PTR system reporting.
3. Develop smooth transitions from existing activities to new activities, as well as plan for transitions to subsequent agreements.

The final terms will address the customer's proposal as well as documentation, oversight and reporting. Customers may use their own avoided cost for custom projects, provided the methodology is equivalent to that used by the Council.

Non-standard ECA terms apply to all funding sources, not just bilateral funding.

2.1.2 CRC Funding

BPA does not guarantee availability of the CRC in any rate period. When CRC is available, the following requirements apply as they pertain to (a) general parameters, (b) calculation methods, (c) a final report (d) discontinuation requirements and (e) the CRC schedule.

a. General Parameters

1. The CRC is available to BPA Priority Firm Power (PF), Industrial Power (IP), and New Resource Firm Power (NR) customers who make investments in cost-effective conservation or renewable resource development to earn reimbursements of at least the rate period's CRC.
2. Each customer is eligible for a CRC set at a mills per kWh applied to its PF, IP and NR purchases. The CRC is included in the rate schedules.
3. The PTR system contains information about eligible measures and specific activities that can be implemented to satisfy CRC obligations.
4. The PTR system provides the specific dollar amount of eligibility for each measure or a means for calculating such amount.

b. Calculation Methods

The monthly CRC is a deduction on the customer's monthly total power bill, applied after BPA has determined all other charges and credits. BPA shall

provide the CRC even when the CRC amount is larger than the customer's total power bill amount. The following sources qualify as CRC load data:

1. For Block purchases and full or partial requirements customers, BPA shall use the monthly average, rounded to the nearest whole dollar, of the projected eligible purchases for the duration of the rate period from the BPA FY 2009 Wholesale Power Rate Case Sales Forecast.
2. For Slice purchases, BPA shall use the Slice Initial Critical Inventory Amount (7,070 average-megawatts) to determine the average monthly load, rounded to the nearest whole dollar.

c. Final Report

1. Within 30 calendar days of the end of the rate period, each customer shall submit a final report to BPA.
2. If a customer's final report shows that the total accumulated monthly CRC received from BPA exceeds the customer's total CRC qualifying expenditures, the customer may take an additional month (for a total of two months after the end of the rate period) to make the additional qualifying expenditures and prepare a final report.
3. The final report is due to BPA within two months of the end of the rate period. If the customer's total CRC qualifying expenditures still do not equal or exceed its total CRC accumulated monthly CRC, the customer must reimburse the difference to BPA.
4. Any payment received after the due date will be subject to a late payment charge as described in the customer's subscription contract.
5. Once BPA is satisfied that the customer has met all of the CRC program requirements, BPA shall notify the customer in writing.

d. Discontinuation Requirements

A customer may discontinue CRC participation by notifying its EER in writing. BPA shall remove the CRC from the customer's future power bills, and the customer must submit a final report as required at the end of the rate period.

e. CRC Schedule

Due Date	Description of Activity
4/30/10	CRC report for preceding October 1 to March 31
9/30/10	Year one of CRC rate period (October 1, 2009 to September 30, 2010) ends
10/31/10	CRC report for the preceding April 1 to September 30
4/30/11	CRC report for the preceding October 1 to March 31
9/30/11	Year two of CRC rate period ends (October 1, 2010, to September 30, 2011)
10/31/11	CRC report for preceding April 1 to September 30
11/30/11	Final true-up report summarizing CRC qualifying expenditures and accumulated CRC for previous rate period (If final true-up report shows accumulated CRC exceeds CRC-qualifying expenditures, customer may take an additional month to make qualifying expenditures and create a revised final true-up report.)
3/31/12	Reimbursement from customers whose qualifying activities or expenditures do not equal or exceed their cumulative CRC amount

2.1.3 Irrigation Rate Mitigation Product

Customers receiving the Irrigation Rate Mitigation Product must follow the requirements of this Manual.

2.1.4 Rules for Pooling Organizations

A pooling organization is two or more customers combining BPA funds to implement cost-effective conservation. Pooling organizations are guided by the following requirements:

1. A customer may put all or a portion of its BPA funding toward a pool and withdraw under the terms and conditions agreed to by the pool, not under terms specified by BPA. Pool membership can expand or contract as determined by the pool, but pooling organizations must provide at least 30 days' written notice to BPA of membership formation, changes or dissolution.
2. Trading of the funds is allowed within the pool.
3. Pooling customers, regardless of the size of individual loads, may only claim a maximum of 20 percent of their qualifying claims as a performance payment.
4. Pooling customers must report individual CRC costs and savings or assign this responsibility to the pooling organization. In the latter instance, they are still responsible for what the pool reports on their behalf. For renewables, the customer must report the CRC allocated by the pool based on the output of the qualified renewable resource.
5. The pooling organization shall provide a summary report to BPA documenting the conservation costs and savings reported by each participant. The savings and pooled funds for both conservation and renewables are allocated as determined by the pool. Double counting of credits is not permitted.

2.2 Self-funding

A customer may self-fund any energy conservation activity and may report this activity to BPA if it meets BPA's requirements.

- Deemed measures with BPA funding available may be reported as self-funded.
- Cost-effective, deemed measures, without BPA funding available may be reported as self-funded.
- Measures without BPA funding available that are not cost-effective may not be reported to BPA and will not count toward achievement of the regional targets.
- Custom projects approved by BPA may be reported.

2.3 Funding Sources in the PTR System

Funding Source	When to Use*
Rate Credit 2010-2011	Use for CRC funded activities.
ECA Bilateral Budget	Use for ECA funded activities.
IRMP	Use for Irrigation Rate Mitigation Product funded activities.
Other Utility Funds	Use for self-funded, reportable activities (i.e., activities that are BPA-funded or cost-effective)
Non-reportable	Use for self-funded, non-reportable activities (i.e., activities that are not cost-effective or BPA-funded).

* See the specific sections, above, for further details about how specific funding can be used

3. General Requirements

The General Requirements section discusses reporting requirements, performance payment, and federal due diligence requirements. For measure requirements, please see the appropriate sector section.

3.1 Reporting Requirements

Customers self-funding or participating in the CRC must submit reports to BPA using the PTR system, at a minimum, twice per year. Reports are due no later than April 30 for the period of October 1 through March 31 and no later than October 31 for the period of April 1 through September 30. Customers may report more frequently but no more than once per month for reimbursement of bilateral funds.

Only measures that are properly installed and operating (i.e., completed units) may be included in reports. All other measures (e.g., measures unavailable, terminated or suspended) may be deleted from the PTR system.

Some measures require supporting documentation (e.g., wattage reduction spreadsheets, manufacturer specifications or cut sheets). Supporting documentation must be sent as an attachment or separate e-mail and include a unique identifier matching it to the corresponding report. If required supporting documentation is not submitted within three working days of the report submittal date, BPA may delete the corresponding measure(s) from the PTR system.

Should there be a disagreement regarding a submitted report, BPA will work with the customer to correct errors in the report and make agreed revisions.

For each submitted report, customers must establish and maintain files and supporting documentation. The files must clearly identify the corresponding report and meet the documentation requirements of the Manual.

3.1.1 PTR system

BPA will only reimburse customers for measures submitted in the PTR system. The PTR system will guide the customer through the submittal requirements, which include the following:

1. Confirmation that the customer implemented the items for which it is claiming reimbursement in compliance with the Manual and applicable contracts
2. Identification of the percentage of performance payment the customer claims for the reported items

3.1.2 Documentation Requirements

All customers must document claims to BPA in accordance with this section and any other requirements in the "Additional Documentation Requirements" section for that measure. Measures may be claimed in the first reporting period following the end of the eligibility period if documentation proves measures were purchased and in service (installed and operating) during the eligibility period.

The following information must be documented:

1. End user address/facility name and address

2. Contact name and telephone number for non-agricultural or residential custom projects
3. Unique identification number (e.g., address power meter number) for end users (for most measures)
4. Unique PTR system-generated number from the system report or invoice (i.e., CRC report or the report/invoice for bilateral funds)
5. Supporting documentation for performance payments (See the performance payment section.)
6. Invoice or other document showing measure documentation requirements have been met and the order/purchase date (relevant for eligibility period and validating that equipment is new (Note, rebuilt nozzles are considered new.))
7. Fuel source, if required
8. Below are generalized requirements for dates:
 - a. The order and purchase date of all measures and the certification date of ENERGY STAR and manufactured homes must be after the effective date of the contract under which the claim is made.
 - b. For custom projects, the order and purchase date must be after BPA approval of the M&V Plan, unless otherwise provided.
 - c. The pre-measurement date must occur before measure installation and the post-measurement date after measure installation.
 - d. Inspection and verification dates must be after equipment installation and before the report/invoice date.

In some situations, one document is sufficient for a category of measures. Customers are encouraged to periodically review and update these types of documents. Examples include the following:

1. High Performance Lighting Cut Sheet (when the same equipment is installed in several facilities)
2. List of ENERGY STAR appliances (may be printed from the [ENERGY STAR Web site](#) and kept in the file)

Customers must retain documentation when requesting reimbursement or reporting measures to BPA. All or some of measure information must be entered into the PTR system.

Customers must keep all program report records for no less than three years after the term of the ECA or through September 30, 2017, whichever is later. Records must be organized and available to BPA when requested.

3.2 Oversight Review Process

As a part of the oversight review process, BPA shall (1) perform end-user site and record reviews and (2) make program evaluations.

1. Site and Record Reviews

BPA may conduct oversight inspections of all measures, monitor or review the customer's procedures and records and conduct site visits to verify reported energy savings and oversee implementation. The number, timing and extent of inspections is decided by BPA and coordinated with the customer. BPA shall provide written notice not less than 30 days prior to an inspection, and inspections will occur at BPA expense. BPA may contact appropriate federal, state or local jurisdictions regarding health, safety or environmental matters related to any activity reimbursed under this Manual.

2. Program Evaluations

- a. BPA may conduct, and the customer shall cooperate with, evaluations of conservation impacts and project implementation processes to assess the amount, cost-effectiveness and reliability of conservation in the customer's service area or region. This includes provision of billing data for participating customers and contact information for participant surveys. After consultation with the customer, BPA shall determine the timing, frequency and type of such evaluations.
- b. BPA may collaborate on evaluations with other organizations to share costs and improve usefulness. In some cases, the evaluation will be managed by another party on behalf of BPA.
- c. BPA shall determine the specific requirements for evaluations with consideration of the schedules and reasonable needs of the customer and the customer's end users.
- d. Any project evaluation initiated by BPA will be conducted at BPA or shared regional expense. Customers or other entities that cooperate with the evaluation are recognized as providing some resource/cost, but the cost is not eligible for direct reimbursement by BPA.

3.3 Performance Payment

A customer's performance payment is as a percentage of its qualifying claims⁶ and invoiced measures,⁷ up to 20 percent (or up to 30 percent for customers with 7.5 or fewer aMW of net requirements load). Customers are allowed discretion on the amount and timing of performance payment claims. BPA is considering changing the performance payment to a payment made based on energy savings delivered.

The performance payment is intended to cover internal customer administrative costs incurred in support of energy savings activities described in this Manual. The performance payment is above and beyond the BPA WTP parameters.

⁶ A qualifying claim is one that qualifies for the performance payment and is defined as a cost-effective electric measure installed in compliance with the Manual. Claims that do not qualify for performance payments include, but are not limited to, the following: renewables claims, Direct Acquisition claims and third party contributions.

⁷ On each invoice submitted, the customer may elect up to the maximum percentage for that invoice.

Documentation may include invoices, annual reports or other audited statements documenting expenses. In general, allowable expenses include, but are not limited to, staff costs, marketing costs and other operating costs, each of which is described below.

Staff Costs:

Staff costs include direct labor costs (customer program staff and subcontractor costs) incurred in the implementation and management of conservation activities and related indirect overhead costs. Direct labor includes, but is not limited to, program administration (e.g., secretarial support, PTR system data entry, reimbursement administration, installation verification) and the supervision of program staff and contractors.

Marketing Costs:

1. Market research costs
2. Development costs for advertisements and promotional materials
3. Materials production costs
4. Marketing material distribution costs
5. Airtime costs for radio or television

Other Operating Costs: Technical equipment costs (e.g., metering equipment, software programs and computer hardware)

1. Marketing and technical training costs
2. Transportation/travel costs capped by the [Federal Travel Regulations](#)

3.4 Fundamental Requirements Related to Federal Due Diligence

3.4.1 Purchase of Energy Savings

Pursuant to section 3(a) of the ECA, BPA agrees to provide reimbursement for the costs of energy savings using bilateral funds, or when available, CRC funds.

3.4.2 Other Sources of Funding

1. If requested in writing and approved by BPA, BPA and the customer may agree to allocate costs among various funding sources.
2. BPA Energy Efficiency shall not fund in whole or part the cost of a project that has been or will be funded by another BPA funding source.

3.4.3 Other Requirements

BPA shall remove or change any project, measure or completed unit or make when necessitated by other requirements.

3.4.4 Suspension and Withholding Payment

1. BPA and the customer agree to an immediate suspension of any measure with a significant environmental, health or safety threat.
2. The customer shall take actions agreed to by BPA to correct the environmental, health or safety threat and shall bear the costs of

compliance. The customer shall have a number of days, as agreed to in writing by BPA, to complete the corrective actions and notify BPA.

3. If BPA determines the customer is not in compliance with an environmental, technical or record-keeping requirement of this Manual, BPA shall provide written notice to the customer suspending implementation of all or specific activities and identifying the specific nature of the noncompliance. BPA shall provide comments on what activities are required to bring the activity into compliance. The customer shall have a number of days, as agreed to in writing by BPA, to correct the noncompliance identified and notify BPA when the corrective actions have been completed. BPA shall not accept measures that include suspended activity.
4. BPA shall review the corrective actions upon completion and shall notify the customer of its determination on lifting or maintaining the suspension. If BPA lifts the suspension, the customer may begin implementation of the activity with the changes required by BPA.
5. BPA shall not reimburse the customer for any suspended measure during the suspension period, and if the customer does not complete the corrective actions required, BPA may terminate funding.

3.4.5 Environmental Provisions

The customer shall perform the following:

1. Comply fully with all applicable environmental laws and regulations.
2. Assist and cooperate with meeting all environmental obligations to the fullest extent economically and technically practical.
3. Provide, upon request, pollution abatement plans required by the Clean Air Act, Clean Water Act and other federal statutes, or by an agency having jurisdiction; and, within a reasonable time, submit evidence such plans have not been objected to by agencies with jurisdiction.

3.4.6 Liability

1. Except for Direct Acquisition initiatives, BPA and the customer assert that neither is the agent or principal for the other; nor are they partners or joint venturers, and BPA and the customer agree that they shall not represent to any other party that they act in the capacity of agent or principal for the other.
2. In no event will either BPA or the customer be liable to each other for any special, punitive, exemplary, consequential, incidental or indirect losses/damages from any failure of performance howsoever caused, whether or not arising from a party's sole, joint or concurrent negligence.
3. The reference to specific products or manufacturers does not represent a BPA endorsement or warranty, and BPA is not liable for any damages that may result from the installation or use of such products.

4. Agricultural Sector

Please check the key changes summary on page i of this document to see if significant changes were made to any of the measures in this sector.

This section contains general information about the Agricultural Sector and measure-specific requirements and specifications, additional documentation requirements and reimbursement strategies and levels.

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The Agricultural Sector includes electrical energy used by a farm or business of which the primary purpose is applying water for food production or vegetation growth (e.g., pumping and irrigation) and by a ranch or aquaculture (aquafarming) business where the primary business is breeding or raising of domestic live stock, poultry, game animals, fish, oysters, etc.

The storage and processing of farm products is not agricultural and rather it is industrial with the exception of dairies and the storage of milk at the milking facility (note that homogenizing, dehydrating and bottling of milk and its derivatives are industrial). A facility may have a mix of both agricultural and industrial measures at the same location (e.g., winery operation with processing facility where the vineyard irrigation is considered agricultural and the grape processing facility is considered industrial).

Reimbursement Summary*

Program Component or Measure	Reimbursement
Freeze Resistant Stock Water Tanks/Fountains	\$140.00 - \$225.00/tank or fountain
Irrigation	
o <i>Irrigation System Upgrades</i>	\$0.75 - \$175.00/sprinkler equipment
o <i>Irrigation System Motors</i>	\$75.00 - \$7,500.00/unit
o <i>Scientific Irrigation Scheduling</i>	\$0.15/kWh or 70% of project cost
o <i>Scientific Irrigation Scheduling Light</i>	\$6.00/acre
o <i>Irrigation Pump Testing and System Analysis</i>	\$50.00 - \$300.00/pump test or pump test and system analysis
Variable Frequency Drives	
o <i>Small Milking Machines in Dairies and Other Approved Applications</i>	\$2,200.00/verified installation
o <i>Agricultural Turbine Pump Applications</i>	\$80.00/horsepower
Transformer De-energization	\$0.15/kWh or 70% of project cost
New Agricultural Construction	\$0.27/kWh or 70% of project cost
Other Agricultural Measures	\$0.25/kWh or 70% of project cost

*The reimbursement levels described in this table provide a summary only. Complete details of the reimbursement levels and associated requirements may be found in the corresponding text of the Manual. Please see the Table of Contents for the text location.

Freeze Resistant Stock Water Tanks/Fountains

Requirements and Specifications

Freeze resistant stock water tanks/fountains are available as a measure in heating zones (HZ) 1, 2 and 3. Electric resistance stock water tank heater(s) must be removed or permanently disabled, and the new freeze resistant stock water tanks/fountains must meet the RTF specifications available in the PTR system.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

HZ 1: \$140.00 per freeze resistant stock water tank/fountain

HZ 2: \$165.00 per freeze resistant stock water tank/fountain

HZ 3: \$225.00 per freeze resistant stock water tank/fountain

Irrigation-Related Measures

Irrigation System Upgrades

Requirements and Specifications

Energy efficiency upgrades to new or existing irrigation systems and water management must be designed, constructed and verified in compliance with the most recent specifications available in the PTR system, under Downloads.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

The RTF has separated irrigation sprinkler equipment measures by state, which will result in changes on April 1, 2011.

Sprinkler Equipment	Rebate	Est. Busbar Energy Savings
New flow controlling type nozzle for impact sprinklers	\$4.00/nozzle ¹	27 kWh/yr
Rebuilt or new impact sprinklers	3.75/sprinkler ¹	27 kWh/yr
New nozzle for impact sprinkler replacing existing worn nozzle of same flow rate or less ²	\$1.50/nozzle ¹	37 kWh/yr
New rotating type sprinklers that replace impact sprinklers (Entire pivot ² must be upgraded. Flow may not be increased.)	\$4.00/sprinkler ¹	24 kWh/yr
New gasket for wheel lines, hand lines or portable main line	\$2.75/gasket	22 kWh/yr
New low-pressure regulators (Entire pivot ³ must be upgraded.)	\$5.00/regulator ¹	37 kWh/yr
New rotating type sprinklers that replace low-pressure sprinklers (Entire pivot ³ must be upgraded. Flow may not be increased.) ⁴	\$4.00/sprinkler ¹	24 kWh/yr

Sprinkler Equipment	Rebate	Est. Busbar Energy Savings
New multiple configuration nozzles for low-pressure pivot ³ sprinklers	\$3.00/sprinkler ¹	48 kWh/yr
New multi-trajectory sprays that replace impact sprinklers (Entire pivot ³ must be upgraded. Flow may not be increased.)	\$4.00/sprinkler ¹	36 kWh/yr
New multi-trajectory sprays that replace low pressure sprinklers (Entire pivot ³ must be upgraded. Flow may not be increased.)	\$1.00/sprinkler ¹	12 kWh/yr
New drain gaskets for wheel lines, hand lines, or pivots ³ (Entire line must be upgraded.)	\$1.00/drain	22 kWh/yr
New hubs for wheel-lines (Entire wheel line must be upgraded.)	\$14.50/hub	63 kWh/yr
New goose-neck elbow for new drop tubes	\$1.65/goose neck	7 kWh/yr
New drop tube for low-pressure pivot ³ sprinklers (minimum three feet length)	\$3.00/drop tube	7 kWh/yr
New center pivot base boot gasket	\$175.00/pivot	1367 kWh/yr
Cut and pipe press repair of leaking hand lines, wheel lines, and portable mainline	\$10.00/pipe section	44 kWh/yr
Rebuilt or new wheel-line leveler (self leveler which automatically keeps the sprinkler heads on an Irrigation wheel line in a steady upright position)	\$0.75/leveler	2 kWh/yr

¹ Rebate is limited to two units per sprinkled acre.

² The division of the equipment to sprinkler and nozzle allows the nozzle to be replaced separately from the sprinkler.

³ Lateral moves are also included.

⁴ The separation of the equipment allows upgrade of the regulators if new rotating sprinklers are already in place or the installation of new rotating sprinklers if low-flow regulators are already in place.

Irrigation System Motors

Requirements and Specifications

The motor must be new (and replace an older rewind motor), open drip proof or totally enclosed, fan cooled, operate at 1,200 or 1,800 rotations per minute, use three-phase alternating current induction, be 5-500 horsepower (hp), be National Electrical Manufacturers Association (NEMA) design A, B, or C and meet or exceed the NEMA premium efficiency standard shown in the tables below in Reimbursement Strategies and Levels. Other motors qualify only as custom projects.

Additional Documentation Requirements

Customer must retain a specification sheet or model number of installed equipment.

Reimbursement Strategies and Levels

The incremental cost (and busbar energy savings) is calculated based on NEMA standard efficiency motors of the same size and application. Note, Irrigation System Motors will be removed from the Manual, effective April 1, 2011. (On December 19, 2010, the EISA standard for premium motors will take effect, resulting in NEMA premium motors as standard efficiency. Click [here](#) for more information.) The reimbursements are found in the tables below.

Reimbursements for Low Voltage Irrigation System Motors (Under 600v)

Horsepower (hp)	Existing Motor Efficiency	NEMA Premium Efficiency	Rebate Per Unit	Estimated Busbar Energy Savings Per Unit (kWh/yr.)
5 hp	83.0%	89.5%	\$75.00	352
7.5 hp	84.0%	91.0%	\$112.50	569
10 hp	85.0%	91.7%	\$150.00	726
15 hp	87.3%	92.4%	\$225.00	829
20 hp	88.0%	93.0%	\$300.00	1,084
25 hp	88.0%	93.6%	\$375.00	1,518
30 hp	88.8%	93.6%	\$450.00	2,290
40 hp	89.3%	94.1%	\$525.00	3,053
50 hp	89.3%	94.5%	\$750.00	4,134
60 hp	89.5%	95.0%	\$900.00	5,247
75 hp	89.5%	95.0%	\$1,125.00	6,559
100 hp	90.0%	95.4%	\$1,500.00	8,586
125 hp	90.3%	95.4%	\$1,875.00	10,137
150 hp	90.8%	95.8%	\$2,250.00	11,926
200 hp	91.0%	95.8%	\$3,000.00	15,265
250 hp	91.0%	95.8%	\$3,750.00	19,081
300 hp	91.0%	95.8%	\$4,500.00	22,897
350 hp	91.0%	95.8%	\$5,250.00	26,713
400 hp	91.0%	95.8%	\$6,000.00	27,349
450 hp	91.0%	96.2%	\$6,750.00	33,630
500 hp	91.0%	96.2%	\$7,500.00	37,367

Reimbursements for Medium Voltage Irrigation System Motors (600v to 5,000v)

Measure Description Horsepower (hp)	NEMA Premium Efficiency	Rebate Per Unit	Estimated Busbar Energy Savings Per Unit (kWh/yr.)
250 hp	95.0%	\$3,750.00	15,901
300 hp	95.0%	\$4,500.00	19,081
350 hp	95.0%	\$5,250.00	22,261
400 hp	95.0%	\$6,000.00	22,261
450 hp	95.0%	\$6,750.00	25,044
500 hp	95.0%	\$7,500.00	27,826

Scientific Irrigation Scheduling

Requirements and Specifications

Scientific Irrigation Scheduling applies to agricultural irrigation systems (1) with a pumping capacity beyond that required to meet normal crop needs, as defined by the United States Department of Agriculture (USDA), and (2) that irrigate crops that benefit from improved irrigation practices.

Customers must collect and use weekly hydro application data including all water applied, evapo-transpiration needs and soil moisture tables. Energy savings are based on the actual on-farm energy savings determined by the BPA approved SIS M&V calculator spreadsheet. Off-farm savings, such as potential savings on other irrigation systems, other utility systems, or other irrigation districts cannot be reported, but adjustments of site savings to busbar savings can be claimed.

Additional Documentation Requirements

The BPA-supplied SIS M&V calculator spreadsheet and data on measure costs, crop type and acreage and energy savings must be submitted to BPA at the end of each irrigation season.

Reimbursement Strategies and Levels

BPA shall reimburse customers \$5.20 per acre per year.

Scientific Irrigation Scheduling Light (BPA Qualified)

Requirements and Specifications

Scientific Irrigation Scheduling Light (SIS Light) applies to agricultural systems with (1) a pumping capacity exceeding that needed to meet normal crop needs and (2) less than 1,000 qualifying acres. Qualifying acres are those that benefit from SIS controls and are not currently under an SIS or irrigation management plan. Customers must collect and use weekly hydro application data including all water applied, evapotranspiration needs and soil moisture tables. Energy savings of 75 kWh per acre may be claimed each year, for up to three years.

Additional Documentation Requirements

The BPA-supplied SIS M&V calculator spreadsheet must be submitted to BPA at the end of each irrigation season.

Reimbursement Strategies and Levels

BPA shall reimburse \$6.00 per acre per year.

Irrigation Pump Testing and System Analysis

Requirements and Specifications

- The irrigation pump must be electrically powered, 20 hp or greater, and must not have been tested through BPA-sponsored pump testing services within the past five years.
- The irrigation pump must have been in operation for the two previous years.
- The irrigation pump test⁹ must be performed by an individual possessing pump testing knowledge and experience.¹⁰
- Customers and qualified vendors must use the BPA Screening Tool to limit the amount of dry holes (i.e., pump tests that do not result in a BPA-approved custom project).
- The customer may choose from the following tests:
 - Simple System Evaluation: Measure pump discharge pressure, evaluate condition of the sprinkler nozzles and deliver a printed recommendation report to the end user.
 - Simple System Irrigation Pump Test (e.g. open discharge): Perform irrigation pump test, evaluate critical sprinklers and deliver a printed recommendation report to the end user.
 - Irrigation Pump Test and System Analysis:¹¹ Perform irrigation pump test and evaluate mainlines and critical sprinklers. Deliver a printed recommendation report to the end user.

Additional Documentation Requirements

Customer must retain a copy of irrigation pump test and recommendation report.

Reimbursement Strategies and Levels

Test Type	Reimbursement
Simple System Evaluation	\$50.00
Simple System Irrigation Pump Test (e.g. open discharge)	\$100.00
Irrigation Pump Test and System Analysis, 400 acres or less	\$200.00
Irrigation Pump Test and System Analysis, over 400 acres	\$300.00
Irrigation Pump Test and System Analysis, Complex Pumping System over 400 acres with multiple operating pumps)	\$200.00 for each main pump plus \$50 for each booster pump

⁹ Irrigation pump test: process to measure various aspects of its operation including pumping lift, discharge pressure, power input, and water flow. The results of the pump test would estimate the overall efficiency of the pumping plant under the conditions of the test.

¹⁰ Pump tests performed by BPA engineers do not qualify.

¹¹ Irrigation System Analysis: combined with a pump test, the irrigation delivery system is reviewed for potential efficiency improvements including lower flows, reduced pipeline friction and repair of leaks.

Variable Frequency Drives

Each VFD must qualify individually and be submitted individually (i.e., VFDs may not be combined or divided).

Small Milking Machines in Dairies and Other Approved Applications

Requirements and Specifications

Variable Frequency Drives (VFD) must be 10 hp or less to qualify as a deemed measure. VFDs larger than 10 hp must be submitted as a custom project.

Additional Documentation Requirements

The customer must retain documentation of hp.

Reimbursement Strategies and Levels

BPA shall reimburse \$2,200.00 per verified installation.

Agricultural Turbine Pump Applications (BPA Qualified)

Requirements and Specifications

This measure applies to pumping operations that deliver, distribute or transport irrigation water with VFDs 500 hp or less. VFDs greater than 500 hp must be submitted as custom projects. Eligible installations are limited to turbine pumps with substantial variation in flow rates (20% variation or more) or discharge pressure requirements (10% variation or more). All new VFD installations must meet IEEE 519 standards. This measure provides an annual energy savings of 400 kWh per hp.

Additional Documentation Requirements

The customer must (1) maintain the following information in its files and (2) submit it in the PTR system at the time of measure submittal (with the exception of the post-install billing history):

- Application type (turbine pumps for well or booster application)
- Operational hours per year
- Pre-install billing history for two full seasons prior to install
- Post-install billing history for one full season after install
- Utility meter number
- Pump Total Dynamic Head (TDH) rating and gallon-per-minute (GPM) flow rating
- TDH differences (as a percentage of total dynamic head)
- Flow requirements changes (as a percentage of total flow rating)
- Acres under irrigation system
- Estimated site savings kWh
- Name and version of software or model used to estimate kWh savings

- Estimated project cost and BPA reimbursement

Reimbursement Strategies and Levels

BPA shall reimburse \$80 per installed hp.

Transformer De-energization

Requirements and Specifications

Transformer De-energization (TRX) is disconnecting a transformer from downstream load sources during extended periods of agricultural inactivity and reconnecting prior to the irrigation season startup. TRX applies to systems that serve only an agricultural load and do not currently incorporate this practice. TRX projects must be submitted as custom projects.

Additional Documentation Requirements

The customer must maintain documentation showing the number of transformers de-energized, length of outage period and energy savings associated with each unit. A completion report, using standard completion report tools, is required for the first year. Subsequent reporting must use a supplemental calculation template based on the first year completion report.

Reimbursement Strategies and Levels

BPA shall reimburse the lesser of \$0.15 per kWh or 70 percent of the incremental cost of performing the project for a three-year measure life (based on the average annual energy savings over the three years of the contractual measure life, as opposed to a physical measure life).

In each year, TRX may be reimbursed for one-third of the total (calculated at the lesser of \$0.05 per year per kWh or 70 percent of incremental cost of performing the project). First year reported energy savings are based on actual energy savings. Subsequent reports calculate an adjustment to the first year figure using an average of the current and previous years or the lowest energy savings, if specified in an existing TRX contract.

New Agricultural Construction

Requirements and Specifications

New agricultural construction projects must be submitted as custom projects. Standardized M&V protocols must be provided for certain measures prior to project implementation.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

BPA shall reimburse the lesser of \$0.27 per kWh or 70 percent of the incremental installed project cost (which includes payments for design assistance/technical assistance) for improved efficiency above code.

Other Agricultural Measures

Requirements and Specifications

- Low pressure conversion with associated pump work
- Change to 40 foot spacing on hand and wheel lines to enable conversion
- Low energy precision application conversion for pivots and lateral moves
- Turf irrigation applications in landscaping, golf courses, government and municipalities and other areas (including standard sprinkler measures, motor/pumping/VFD controls and weather station driven irrigation scheduling)
- Nursery and greenhouse project improvements in irrigation, air handling, temperature and humidity controls for facilities using less than 1 aMW (If usage is above 1 aMW, projects at the facility are industrial.)

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

BPA shall reimburse \$0.25 per kWh or 70 percent of the incremental installed project cost, whichever is less.

Multi-Sector Opportunities

Additional agricultural opportunities are available in the Multi-Sector chapter.

Please see the Multi-Sector chapter for information on the following:

- Processes
 1. Custom Projects
 2. Direct Acquisition
 3. Third Party Contributions
- Measures and Initiatives
 1. Green Motors
 2. Lighting
 3. Limited Availability Emerging Technology Demonstration Pilots
 4. Variable Frequency Drives in Small Compressed Air Systems

5. Commercial Sector

Please check the key changes summary on page i of this document to see if significant changes were made to any of the measures in this sector.

This section contains general information about the Commercial Sector and measure-specific requirements and specifications, additional documentation requirements and reimbursement strategies and levels.

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The Commercial Sector includes electrical energy used in service-providing facilities and equipment of businesses; federal, state, and local governments; and other private and public organizations. The Commercial Sector is generally defined as non-manufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores and health, social and educational institutions.

Reimbursement Summary*

Program Component or Measure	Reimbursement
Combined and Interactive Commercial Projects	\$0.20/kWh, not to exceed 70 percent of the incremental installed measure cost
Commercial Lighting	See Multi-Sector chapter.
Commercial HVAC	
o <i>Unitary Air-Conditioning</i>	\$30.00 - \$1,200.00/unit
Commercial Refrigeration	
o <i>BPA EnergySmart Grocer Program</i>	Not applicable.
o <i>Deemed Refrigeration Retrofit Measures</i>	See PTR system.
Commercial Kitchen and Food Service Equipment	
o <i>Commercial Food Service Reach-in Refrigerators and Freezers (Solid and Glass Door)</i>	\$50.00-\$350.00/refrigerator or freezer
o <i>Commercial Ice Makers</i>	\$100.00-\$300.00/ice maker
o <i>Commercial Kitchen Steamers</i>	\$100.00-\$200.00/steamer
o <i>Commercial Kitchen Hot Food Holding Cabinets</i>	\$200.00-\$400.00/cabinet
o <i>Commercial Combination Ovens</i>	\$1,750.00/oven
o <i>Commercial Convection Ovens</i>	\$200.00/oven
o <i>Electric Fryers</i>	\$125.00/installation
o <i>Dishwashers</i>	\$100.00 - \$750.00/dishwasher
o <i>Pre-rinse Spray Wash Valves</i>	\$150.00/installation
o <i>Refrigerator/Freezer Recycling</i>	\$100.00/unit
Additional Deemed Offerings	
o <i>Network Computer Power Management</i>	\$10.00/workstation
o <i>ENERGY STAR Commercial Clothes Washer</i>	\$25.00-\$200.00/washer
o <i>Electric Storage Water Heaters</i>	\$25.00/unit
o <i>Insulation in Existing Small Office or Retail (<5,000 ft² building)</i>	\$0.13/kWh
o <i>Smart Power Strips</i>	\$20.00/strip
o <i>Direct Install Commercial Showerheads</i>	\$30.60/showerhead
Commercial New Construction	
o <i>Energy Smart Design ® - Office and Trade-offs</i>	\$0.25-\$0.50/square foot
o <i>New Commercial Construction/Major Renovation</i>	\$0.27/kWh, not to exceed 70 percent of incremental cost or 2% of whole building cost
Other Offerings/NEEA ENERGY STAR Computer Program	Not applicable.

*The reimbursement levels described in this table provide a summary only. Complete details of the reimbursement levels and associated requirements may be found in the corresponding text of the Manual. Please see the Table of Contents for the text location.

General Commercial Sector Information

Lighting, refrigeration, and HVAC dominate the energy savings opportunities in commercial buildings. Kitchen equipment, power controls for networked computers and new construction also represent energy savings opportunities.

The overall structure for the Commercial Sector reimbursement is:

- BPA shall pay specified reimbursements for selected measures (deemed measures, e.g., Commercial and Industrial Lighting (C&I Lighting), stand-alone lighting, computer controls).
- BPA shall pay a reimbursement of \$0.20 per kWh up to 70 percent of the project incremental cost for most HVAC, commercial refrigeration and interacting lighting.
- BPA shall pay a reimbursement of \$0.27 per kWh up to 2 percent of the whole building, as-built contracted cost (excluding land costs) for non-deemed, commercial new construction.

Specific measure requirements and reimbursement strategies are listed below.

Combined and Interactive Commercial Projects

Many Commercial Sector efficiency opportunities are complex, involving site-specific installations and expected savings or interaction between energy consuming systems in a building. These opportunities include, but are not limited to, HVAC, shell measures, building design and new construction and some lighting projects.

Requirements and Specifications

These measures must be submitted as custom projects and follow the custom project process outlined in the Manual.

Additional Documentation Requirements

For non-deemed, commercial new construction projects, the cost documentation must include a copy of the whole building, as-built contracted cost.

Reimbursement Strategies and Levels

Combined and/or interactive commercial projects that include lighting, commercial scale refrigeration and HVAC measures, among other cost-effective measures that are calculated, shall be reimbursed at \$0.20 per kWh, not to exceed 70 percent of the incremental installed measure cost. The incremental cost for retrofit of existing equipment is the fully installed measure cost. For replacement of burned out/failing/failed equipment, the incremental cost (and energy savings) is the cost above code or its equivalent. For example, for HVAC replacement, the incremental cost is the cost of equipment above the federal or state applicable standard for new or replacement equipment.

Commercial Lighting

Efficient lighting is the largest and most accessible Commercial Sector efficiency opportunity. Please refer to the Lighting program in the Multi-Sector chapter of this Manual for program details.

Commercial HVAC

The vast majority of commercial HVAC opportunities are made available only as custom projects according to the terms described above under “Combined and Interactive Commercial Projects.” A new prescriptive reimbursement for Unitary Air Conditioning described below is part of an ongoing effort to develop straightforward commercial HVAC opportunities.

Unitary Air-Conditioning Equipment in Commercial Buildings (BPA-Qualified)

Requirements and Specifications

Unitary air-conditioning equipment refers to air-cooled, single cooling-zone, packaged unit, air-conditioning equipment for commercial building applications. This equipment can be used in conjunction with gas or electric heating systems. Heat pumps are excluded.

Additional Documentation Requirements

Additional documentation requirements exist to facilitate information collection and evaluation of installed measures. The following information will be collected through the PTR system:

1. Facility name
2. Building type
3. Hours per week of operation
4. Unit cooling capacity (size in tons)
5. Installed unit make and model number
6. Manufacturer published Energy Efficiency Rating (EER)
7. Equipment cost
8. Total installed project cost

Reimbursement Strategies and Levels

Reimbursement levels are based on EER thresholds for premium efficiency equipment per the table below for equipment size ranges. The EER refers to the number published by the unit manufacturer per ARI test procedures 210/240 or 340/360. Model specific EER values published by the Consortium for Energy Efficiency (CEE) or the Air-Conditioning Heating and Refrigeration Institute (AHRI) are acceptable in place of unit manufacturer data. AHRI verified HVAC equipment is located in the [CEE Directory](#) and the [AHRI Directory](#). Additional Information is also available at the [CEE Web site](#) and at the [AHRI Web site](#).

Measure reimbursements by efficiency level and unit size are detailed in the table below. Though reimbursements are the same across all cooling zones, the PTR system has different reference numbers for each cooling zone. Customers

may pursue this measure as a custom project when warranted, for example, by exceptional cooling loads (i.e., a load above and beyond the cooling load in the building's ambient space).

Measure Category by Efficiency Tier and Unit Size Range (Btu/h; Tons)	Minimum EER Requirement	Reimbursement (\$/unit)
Tier 1 Premium Efficiency		
<65,000; <5.4	11.6	\$30.00
>=65,000 and <135,000; 5.4 - 11.3	11.5	\$60.00
>=135,000 and <240,000; 11.3 - 20.0	11.5	\$250.00
>=240,000 and <760,000; 20 - 63.3	10.5	\$500.00
>=760,000; >63.3	9.7	\$300.00
Tier 2 Premium Efficiency		
<65,000; <5.4	12	\$75.00
>=65,000 and <135,000; 5.4 - 11.3	12	\$150.00
>=135,000 and <240,000; 11.3 - 20.0	12	\$400.00
>=240,000 and <760,000; 20.0 - 63.3	10.8	\$800.00
>=760,000; >63.3	10.2	\$1,200.00

Commercial Refrigeration

The large efficiency opportunities presented by commercial refrigeration measures are available through the BPA EnergySmart Grocer Program (formerly known as EnergySmart). Several deemed refrigeration measures that were previously only available through the BPA EnergySmart Grocer program have also now been made available to customers. These measures are described below in the commercial kitchen and food service equipment section.

BPA EnergySmart Grocer Program

Requirements and Specifications

The BPA EnergySmart Grocer Program is implemented by Portland Energy Conservation, Inc. (PECI) in collaboration with participating customers. To participate, customers must sign up using Direct Acquisition (DA). In addition, customers must sign a new or revised service agreement with PECI, identifying DA as the funding source. Customers have access to program activity through a web portal.

Customers wishing to self-fund must (1) enroll in DA, (2) send a written request to their COTR for self-funding by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes) and (3) sign a service agreement with PECI. Customers will be invoiced on a quarterly basis and are obligated to pay all incentive costs incurred in their service territory. Customers may claim the amount paid to BPA in the PTR system.

Customers may opt out of self-funding by sending a written request to their COTR. The request will take effect on the first day of the following quarter, and customers will be obligated to pay all costs incurred up to the start of the new quarter.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

There is no reimbursement available for this measure.

Deemed Refrigeration Retrofit Measures

In order to allow customers to capture incremental savings opportunities that are not well-served by the BPA EnergySmart Grocer Program, BPA will reimburse deemed measures previously available only through the program. These measures include auto-closers (walk-in and reach-in), vending machine controllers, anti-sweat heat controls, evaporator fans, high-efficiency doors for refrigerators and freezers, gaskets, motors, strip curtains and night covers. To ensure that the region captures the greatest value from its investment in the BPA EnergySmart Grocer Program, customers are advised to work closely with PECI so that any activity is incremental to that program. Note that deemed calculated measures remain available exclusively through the BPA EnergySmart Grocer Program. In addition, customers claiming reimbursements of these measures must retain documentation and conduct all required inspections without support from PECI.

Requirements and Specifications

Please refer to the PTR system for requirements and specifications.

Additional Documentation Requirements

Customers must retain documents in their files for all claims submitted to BPA including the following:

- Invoices for equipment installed in the facility specifying quantity and type of equipment installed
- Vendor documentation, by facility, that installed measures meet specifications (e.g., model numbers and cut sheets)

Reimbursement Strategies and Levels

Please refer to the PTR system for reimbursement levels.

Commercial Kitchen and Food Service Equipment

BPA offers reimbursement for a suite of high-efficiency commercial kitchen and food service electric equipment, including refrigerators, freezers, ice makers, steamers, hot food holding cabinets, combination ovens, convection ovens, fryers, dishwashers and pre-rinse spray wash valves. In efforts to help customers administer a comprehensive commercial kitchen equipment efficiency program, BPA is continuing to develop reimbursements for additional measures and will include them as they are ready.

Reimbursements are also available for recycling of residential-style refrigerators and freezers from commercial buildings.

Commercial Food Service Reach-in Refrigerators and Freezers (solid door, glass door, and chest)

Requirements and Specifications

ENERGY STAR 2.0 has replaced CEE Tier 2 as the specification for this measure. Information on qualifying units may be found at the [Consortium for Energy Efficiency](#) (CEE) and [ENERGY STAR](#). Note that ENERGY STAR 2.0 is substantially the same as the previous CEE Tier 2 specification.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Deemed reimbursements are based on ENERGY STAR 2.0 Commercial Food Service Refrigerators and Freezers as shown in the tables below. Size is the interior volume of the equipment as listed by ENERGY STAR.

Refrigerator Reimbursement (Solid or Glass Door)

Size (cubic feet)	Reimbursement
0-14.9	\$50.00
15-29.9	\$50.00
30-49.9	\$150.00
50+	\$150.00
Chest	\$75.00

Freezer Reimbursement (Solid or Glass Door)

Size (cubic feet)	Reimbursement
0-14.9	\$100.00
15-29.9	\$100.00
30-49.9	\$350.00
50+	\$350.00
Chest	\$150.00

Commercial Ice Makers

Requirements and Specifications

Ice machines must be Air Cooled and CEE Tier 2 (ENERGY STAR) or CEE Tier 3 qualified. Water Cooled machines do not qualify for reimbursements. Reimbursement levels are associated with the amount of ice production per day. Additionally, higher reimbursements are offered for premium efficiency CEE Tier 3 qualifying machines. Information on qualifying units is listed at [CEE](#).

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Reimbursement levels range between \$100.00 and \$300.00. Due to the number of ice makers included in the program, please refer to the PTR system for the complete list of measure reimbursement amounts.

Commercial Kitchen Steamers

Requirements and Specifications

Qualifying units must be new and must meet the recently created RTF Tier 2 standards described below.

For 3-Pan Electric Steamers: (a) an Idle Energy Rate of 220 W or less and (b) a Cooking Efficiency of 65% or greater.

For 5-Pan Electric Steamers: (a) an Idle Energy Rate of 230 W or less and (b) a Cooking Efficiency of 65% or greater.

For 6-Pan Electric Steamers: (a) an Idle Energy Rate of 250 W or less and (b) a Cooking Efficiency of 65% or greater.

The [CEE Tier 1A and 1B](#) lists include information on Idle Energy Rate and Cooking Efficiency necessary to determine whether a particular model qualifies, but there is no updated list of RTF Tier 2 qualifying units.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Size	Reimbursement
3 pan	\$100.00
5 pan	\$200.00
6 pan	\$200.00

Commercial Kitchen Hot Food Holding Cabinets

Requirements and Specifications

Model must be new and meet CEE’s list of [Qualified Hot Food Holding Cabinets](#) Tier 2 requirements or have an idle energy rate of 20 watts per ft³ or less.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Size	Reimbursement
7-12	\$200.00
13-17	\$300.00
18-22	\$400.00

Combination Ovens

Requirements and Specifications

To qualify, energy efficient electric combination ovens must be new and must have a cooking efficiency of 70% or greater and an idle energy rate of 3.5 kW or less. Qualified units are listed in the table below.

Manufacturer	Model Number	Heavy Load Efficiency	Idle Energy Rate (kW)
Cleveland	OEB 10.10	80%	1.7
Alto-Shaam	7-14ES	79%	1.9
Cleveland	OEB-6.2	76%	1.9
Henny Penny	ECC-61	82%	3.1
BKI	1.1	73%	1.85
BKI	1.06	70%	2
Cleveland	OES-6.2	70%	2.9
Blodgett	BX-14E	72%	3.3

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

BPA will reimburse \$1,750 per qualified unit.

Convection Ovens

Requirements and Specifications

Model must be a new commercial electric convection oven listed as meeting ENERGY STAR requirements.

Information on qualifying units is listed at the [ENERGY STAR Web site](#).

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Size	Reimbursement
Half	\$200.00
Full	\$200.00

Electric Fryers (BPA Qualified)

Requirements and Specifications

The electric fryer must meet RTF eligibility requirements. The table below includes all RTF approved units using less than 10,000 kWh per year. Eligibility is based on cooking energy efficiency and the idle energy rate of the unit.

Company	Brand	Model Name	Model No.	Fryer Size (inches)	Cooking Energy Efficiency	Idle Energy Rate (Watts)
Hobart Corp.	Hobart	1HF50D	1HF50D	14	83.7	630
Vulcan-Hart Co.	Vulcan	1ER50D	1ER50D	14	83.7	630
Frymaster L.L.C.	Frymaster	RE14TC	RE14TC	14	87.17	630
Frymaster L.L.C.	Frymaster	BK14TC	BK14TC	14	87.17	772
Frymaster L.L.C.	Frymaster	BK14TRC	BK14TRC	14	87.17	772
Frymaster L.L.C.	Frymaster	BKFP214TC	BKFP214TC	14	87.17	772
Frymaster L.L.C.	Frymaster	BKFP214TRC	BKFP214TRC	14	87.17	772
Frymaster L.L.C.	Frymaster	BKFP314TC	BKFP314TC	14	87.17	772
Frymaster L.L.C.	Frymaster	BKFP314TRC	BKFP314TRC	14	87.17	772
Frymaster L.L.C.	Frymaster	BKFP414TC	BKFP414TC	14	87.17	772
Frymaster L.L.C.	Frymaster	RE17TC	RE17TC	14	87.17	772
Frymaster L.L.C.	Frymaster	RE22TC	RE22TC	14	87.16	772
Frymaster L.L.C.	Frymaster	Protector	FPELx22	13x14	86.9	810
Frymaster L.L.C.	Protector	FPELx14	FPELx14	14	85.6	790
Frymaster L.L.C.	LOV	BIELAx14	BIELAx14	14	85.3	790

Additional Documentation Requirements

As part of an ongoing effort to add deemed measures to the Commercial Sector, electric fryers have been approved on a BPA qualified basis in order to collect cost information from actual installations of qualifying equipment. To enable this effort, customers must retain invoices on installed equipment and input the cost, brand name and model number in the PTR system when reporting installations.

Reimbursement Strategies and Levels

BPA shall reimburse \$125 per qualified installation.

Dishwashers

Requirements and Specifications

Dishwasher must be new and must meet RTF efficiency standard, shown below, as maximum annual kilowatt usage by dishwasher type, and list of RTF qualified dishwashers by dishwasher type.

RTF Efficiency Standard

Dishwasher Type	RTF Approved Annual kWh Efficiency
Under counter low temperature	5,219
Door type low temperature	16,236
Single tank low temperature	16,332
Multi-tank low temperature	18,232
Under counter high temperature	6,852
Door type high temperature	20,116
Single tank high temperature	21,019
Multi-tank high temperature	27,538

Qualifying list of Energy Efficient Dishwashers Meeting the RTF Standard

Make	Model	Temperature
Under Counter		
Hobart	LXiC, LXiGC	Low
Auto-Chlor System	U34, U34 PT-10, U38	Low
Jackson	AvengerLT	Low
Ecolab	ES-1000N, PA-UN	Low
Jackson	AvengerLTH, Ware Force UL30	Low
ADS	ET-AF	Low
CMA Dishmachines	GL-X, L-1X, L1X16	Low
Single Tank Door Type		
Hobart	AM15, AM15T, AM15F	High and Low
ADS	High Temp HT-25	High and Low
ADS	AFC-ES, AF-ES	Low
Auto-Chlor System	D2, D2CL, D2CR	Low
Ecolab	APEX TSC, ES-2000, PA-1	Low
Insinger	CS-5, CS-5C, CS-5CH, CS-5H	Low
Auto-Chlor System	A4, A4 (IW), A5, A5 (IW)	Low
CMA Dishmachines	EST-AH 1, EST-AH 2, EST-AH 3, EST-AH 4, EST-C 1, EST-C 2, EST-C 3, EST-C 4	Low
Ecolab	APEX TSC Double, ES-4000, PA-2, Omega 5E	Low
Jackson	Conserver XL2, Delta 5, Ware Force DG	Low
Single Tank Conveyor		
Hobart	CL54e, CLCS76e, CLPS76e, FRCL54e, FRCL76e, C54a, CCS76A, CPW90A, CRS76A, FRC54A, FRC76A, FRC90A, CL44e, CLCS66e, CLPS66e, FRCL44e, FRCL66e, C44A, CCS66A, CPW80A, CRS66A, FRC44A, FRC66A, FRC80A	High and Low
Auto-Chlor System	AC-44, AC-44-RC, AC-66	Low
ADS	ADC-44, ADC-66	High and Low
Admiral	44-4CS, 66-4CS	Low
Jackson	Ware Force 44L	Low
Jackson	AJX-44CE, AJX-66CE, AJX-80CE	High and Low
Multi-Tank Conveyor		
Hobart	CL64e, CLCS86e, CLPS86e, FRCL64e, FRCL86e	High and Low

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Type	Reimbursement
Low Temp, Electric Hot Water	\$750.00
High Temp, Electric Hot Water	\$750.00
Low Temp, Gas Hot Water	\$100.00
High Temp, Gas Hot Water	\$350.00

Pre-rinse Spray Wash Valves

Requirements and Specifications

Qualified installations require electrically heated dishwashing water in a facility that serves 10 or more meal shifts per week (for example, a facility that serves lunches and dinners, five days a week). If the facility does not meet the shift requirement, the customer may document the reason for an exception to the 10-meal shift rule. The documentation must indicate that the rinse system uses the equivalent amount of energy as 10 or more meal shifts. Exceptions may include commercial bakeries; central school district cafeterias that prepare thousands of hot meals; or catering facilities that may only be used three times a week but provide meals for hundreds of people at a time. The specification requires direct installation of a new nozzle with a flow rate of 1.6 gallons per minute or lower.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

BPA shall reimburse \$150.00 per qualified installation.

Negative Change Notice: The RTF updated savings and costs for pre-rinse spray valves in April 2009, resulting in a decrease in deemed savings and incremental cost. As a result, the BPA reimbursement will decrease to \$100 per spray valve beginning April 1, 2011.

Refrigerator and Freezer Early Retirement and Recycling

Requirements and Specifications

The existing appliance for recycling must be verified as functional, serving a commercial building within the participating customer service territory and a minimum of 10 ft³ capacity. The unit may be a residential-style appliance being used in a commercial setting. The unit must be decommissioned and its components recycled.

Additional Documentation Requirements

- Disposal/recycling documents
- Cubic size of refrigerator or freezer

Reimbursement Strategies and Levels

BPA shall reimburse \$100.00 per decommissioned residential refrigerator or freezer unit.

Additional Deemed Offerings

BPA offers reimbursement for computer power management solutions, certain efficient commercial appliances and shell measures and is actively working to develop additional deemed commercial measures for customers.

Network Computer Power Management

BPA offers deemed incentives on qualified installations of network computer power management software.

Requirements and Specifications

Specifications for The Network Computer Power Management are as follows:

1. Workstation is defined as the computer monitor and the computer box.
2. The software must give the IT administrator easily-accessible, central control over the power management settings of networked workstations, with the capability to override user settings.
3. The software must have the capability to cause a workstation's power-energy savings mode to be remotely enabled or disabled as necessary for centrally distributed software updates (for example: Wake on LAN capability).
4. The software must have the capability to monitor disk and central processing unit activity and delay setting the computer to a low-power mode until the activity has finished.
5. The software must provide reports on energy savings achieved through implementation of the software's features.

Cost and energy savings are per computer controlled.

Qualified software includes, but is not limited to, the following:

1. Verdiem
2. Lightspeed Power Manager
3. 1E Night Watchman
4. Faronics Power Save
5. Lakeside SysTrack PM

Please contact your COTR to determine unlisted product eligibility.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

BPA shall reimburse \$10.00 per workstation.

Negative Change Notice: In May 2009, the RTF reduced per unit savings from 180 kWh to 115, and changed the status of this measure from deemed to provisionally deemed for 24 months. Effective April 1, 2011, this measure will change to provisionally deemed status at the reduced savings level. The reimbursement for this measure is not expected to change. The measure is scheduled to expire in May 2012. Efforts to develop a third-party supported program for this measure have been suspended.

ENERGY STAR Commercial Clothes Washers

Requirements and Specifications

If the clothes washer is on the ENERGY STAR commercial list, it may be claimed as a commercial measure. The ENERGY STAR list includes commercial laundries and multifamily common area coin-operated machines.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Combination	Reimbursement
Electric water heater and electric dryer	\$200.00
Electric water heater and gas dryer	\$100.00
Gas water heater and electric dryer	\$100.00
Gas water heater and gas dryer	\$25.00

Electric Storage Water Heaters

Requirements and Specifications

BPA shall reimburse customers for cost-effective, energy-efficient electric storage water heaters meeting the minimum energy factor provided in the PTR system and summarized in the table below. Reimbursements apply to both residential and commercial model water heaters installed in commercial buildings. A list of qualifying units for commercial style water heaters is available in the PTR system.

Additional Documentation Requirements

Copy of purchase receipt/invoice with the following information:

- Manufacturer or brand name
- Model number
- Rated storage volume, in gallons (for storage water heaters)

Reimbursement Strategies and Levels

Reimbursements and required efficiency levels are summarized in the table below:

Tank Type and Size	Minimum Energy Factor	Reimbursement
Residential, 25 – 34.99 gallons	EF- 0.94 or higher	\$25.00
Residential, 35 – 44.99 gallons	EF- 0.94 or higher	\$25.00
Residential, 45 – 54.99 gallons	EF- 0.95 or higher	\$25.00
Residential, 55 – 74.99 gallons	EF- 0.93 or higher	\$25.00
Residential, 75 – 99.99 gallons	EF- 0.92 or higher	\$25.00
Residential, 100 – 119.99 gallons	EF- 0.85 or higher	\$25.00
Commercial, 25 – 34.99 gallons	Standby loss of 157 or lower	\$25.00
Commercial, 35 – 44.99 gallons	Standby loss of 185 or lower	\$25.00
Commercial, 45 – 54.99 gallons	Standby loss of 201 or lower	\$25.00

Tank Type and Size	Minimum Energy Factor	Reimbursement
Commercial, 55 – 74.99 gallons	Standby loss of 238 or lower	\$25.00
Commercial, 75 – 99.99 gallons	Standby loss of 249 or lower	\$25.00
Commercial, 100 – 119.99 gallons	Standby loss of 287 or lower	\$25.00

Reimbursements and busbar energy savings can also be found in the PTR system.

Insulation in Existing Small Office or Retail (<5,000 square feet) Buildings

Requirements and Specifications

Deemed energy savings for attic, wall and floor insulation measures are available for existing small buildings (less than 5,000 square feet) used for office or retail activities.

BPA shall allow claims and provide reimbursement for insulation of whole buildings provided each individual office or retail space is less than 5,000 square feet and all of the individual spaces are under one roof. Customers may claim the individual spaces using the deemed energy savings and PTR system reference numbers.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

BPA shall reimburse based on deemed savings value of individual measures in the PTR system and by \$0.13 per deemed kWh of busbar energy savings (for different applications).

Smart Power Strips (RTF provisionally deemed through September 30, 2011)

Smart Power Strips reduce energy losses from plug loads by curtailing power to certain electrical equipment when not needed. This measure is provisionally deemed by the RTF. If regional installations are sufficient to support RTF-level data collection, BPA will bring this measure to the RTF for deeming as a full measure. Conversely, if regional installations are insufficient to support RTF-level data collection, this measure will expire on October 1, 2011 and will no longer be available.

While participation in research efforts is not required to claim the reimbursements, customers are encouraged to collaborate on development of this new measure. Additional documentation requirements exist to support this research.

Requirements and Specifications

All Smart Power Strips must be used in accordance with the manufacturer's instructions and must be able to curtail plug loads.

1. Timer Based Smart Power Strips must do the following:
 - a. Use a digital timer and not mechanical controls
 - b. Be programmable

2. Current Sensor Smart Power Strips must do the following:
 - a. Automatically switch off peripheral plug load from the control plug outlet
 - b. Prohibit false switching by incorporating resistor-capacitor circuit filters or equivalent
3. Occupancy Sensor Smart Power Strips must do the following:
 - a. Include a passive infrared occupancy sensor which operates to automatically switch off peripheral plug load from the control plug outlet

Additional Documentation Requirements

1. Date of installations and model numbers installed Smart Power Strips
2. Number of Smart Power Strip installations
3. General type of plug load affected by Smart Power Strip installations

Reimbursement Strategies and Levels

BPA shall reimburse \$20 per Smart Power Strip.

Direct Install Commercial Showerheads (provisionally deemed)

Requirements and Specifications

In order to qualify for BPA reimbursement, the showerhead must have a rated flow rate at 2.0 gallons per minute or below and be directly installed in a qualified commercial facility with electrically heated hot water. Showerheads may be installed by utility staff; a utility contractor; or commercial building facility or maintenance staff where installations are overseen and documented by utility staff (i.e., utility staff verifies pre and post flow). There are three qualified installation contexts: hospitality (hotels/motels), health care facilities (including hospitals) and small commercial facilities (including office showers).

Additional Documentation Requirements

As part of an ongoing effort to add deemed measures to the Commercial Sector, showerheads have been included as a provisionally deemed measure in order to collect additional data needed for full deeming. To enable this effort, customers must record various data upon installation. Please refer to the PTR system for data collection details.

Reimbursement Strategies and Levels

BPA shall reimburse \$30.60 per qualified installation. Note that there are nine measures in the PTR system, grouped by flow rate (<2.0, <1.75, or <1.5 GPM) and installation context (Hospitality, Health Care, or Small Commercial).

Commercial New Construction

BPA offers multiple paths to access efficiency opportunities in commercial new construction, including both standardized design packages and custom projects.

Requirements and Specifications

Eligible buildings are one of the following:

- A new office building
- An office addition to an existing building
- A major office renovation, requiring changes in multiple end-uses or a permit

The building must use one or more of the following HVAC system types for at least 70 percent of the conditioned space:

- Roof-top variable-air-volume (VAV) with electric reheat
- Roof-top VAV with a non-electric reheat
- Packaged heat pump
- Single zone equipment with gas furnace

The building must:

- Be three stories or less
- Be 100,000 square feet or less of conditioned area
- Have 30 percent or less window to wall area ratio

Energy Smart Design ® – Office information is available on the [BPA Energy Efficiency Web site](#), and technical specifications are available in the PTR system. All of the items in the Reimbursement Strategies and Levels table, below, must be included in the new office building to qualify for the package incentive. Code takes precedence if it exceeds any of the items.

Trade-offs are allowed as long as the new measure saves as much or more electricity than the Energy Smart Design ® – Office package. All Trade-off measures must exceed code to qualify for the package incentive.

Additional Documentation Requirements

Required documentation includes those items indicated in the technical specifications, submitted by a professional familiar with the project. A professional can be a qualified customer representative, a registered architect, licensed engineer or commissioning agent. In addition any Trade-offs must be documented using the Trade-off form. The customer shall verify documentation has been submitted and keep the documentation on file.

Reimbursement Strategies and Levels

BPA shall reimburse the customer \$0.50 per square foot of conditioned area for Package A, \$0.25 per square foot of conditioned area for Package B and \$0.25 per square foot of conditioned area for Package C for eligible new, small office buildings that meet the requirements of the Energy Smart Design ® – Office Prescriptive Packages.

Description	Requirements	Incentives (\$/ft ²)		
		Package A \$0.50	Package B \$0.25	Package C \$0.25
Cooling system minimum efficiency level	CEE Tier 2 Specifications	✓	✓	
Effective window U-value	Fixed 0.35 Maximum Curtain wall 0.40 Maximum	✓	✓	
Window solar heat gain coefficient	0.30 Maximum	✓	✓	
Enhanced economizer, including dedicated thermostat stage, differential changeover with dry-bulb sensors, and low ambient outside air compressor lock-out	Required	✓	✓	
Integrated Design of HVAC System, including fan power and plug load reduction	Required	✓	✓	
Lighting Budget (whole building)	0.75 Watts/SF Maximum, while providing illuminance levels as recommended by IESNA	✓		✓
Lighting Controls	Occupancy sensors- install where lighting loads are over 100 watts and sensors are not required by code; emergency fixtures are exempt	✓		✓

Negative Change Notice: Pending changes to non-residential energy codes may affect Energy Smart Design ® - Office packages. These changes will be implemented in the April 1, 2011 Manual to more accurately reflect the new code baseline.

New Commercial Construction, Major Renovation and Residential Multifamily Higher than Three Stories

Requirements and Specifications

These measures must be submitted as custom projects.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

New commercial construction will be reimbursed on a performance-based approach that reimburses the lesser of \$0.27 per kWh or 2 percent of whole building as-built contracted cost (excluding land costs). The key to project eligibility for the higher

“new construction” reimbursement is the existence of an implementation design plan that usually involves modeling and a building construction permit. Major renovations (multiple end uses changed with a construction or building permit required) are reimbursed on a performance-based approach that reimburses the lesser of \$0.27 per kWh or 70 percent of incremental cost for improved efficiency above code.

Cost-effective geothermal heat pumps for all multifamily and commercial new construction applications (including residential multifamily less than three stories) will be reimbursed according to the Commercial Sector reimbursement schedule as a custom project.

Other Offerings

NEEA ENERGY STAR Computer Program

Requirements and Specifications

BPA, on behalf of its customers, along with a number of individual customers, has committed supplemental funding to NEEA to help achieve ENERGY STAR personal computer market transformation in the Northwest region. In alignment with BPA’s efforts, this measure is solely available through participation in a subscription offering by NEEA.

Additional Documentation Requirements

Customers must retain proof of funding (e.g., a canceled check) and savings reports received from NEEA.

Reimbursement Strategies and Levels

There is no reimbursement available for this measure.

Multi-Sector Opportunities

Additional commercial opportunities are available in the Multi-Sector chapter.

Please see the Multi-Sector chapter for information on the following:

- Processes
 1. Custom Projects
 2. Direct Acquisition
 3. Third Party Contributions
- Measures and Initiatives
 1. Green Motors
 2. Lighting
 3. Limited Availability Emerging Technology Demonstration Pilots
 4. Variable Frequency Drives in Small Compressed Air Systems

6. Industrial Sector

Please check the key changes summary on page i of this document to see if significant changes were made to any of the measures in this sector.

This section contains general information about the Industrial Sector and measure-specific requirements and specifications, additional documentation requirements and reimbursement strategies and levels.

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The Industrial Sector includes electrical energy used by fixed pieces of equipment, buildings or complexes to produce, manufacture or store goods in connection with, or as part of, any process (including transportation) or system (including those related to food production). These processes and systems also include, but not limited to the following: electric distribution system hardware; Voltage Optimization; water/waste-water production and treatment; and data centers/server farms (except Commercial Sector data centers/server farms, i.e., those integrated into a commercial building that serve the information technology needs of the business enterprise). In general, Industrial Sector activities must not devote the majority of energy use within a facility to non-process related HVAC or potable hot water.

Reimbursement Summary*

Program Component or Measure	Reimbursement
Energy Smart Industrial	
○ <i>Custom Projects</i>	\$0.25/kWh or 70% of project incremental cost
○ <i>Energy Project Manager</i>	See Reimbursement Strategies and Levels.
○ <i>Track and Tune Projects</i>	See Reimbursement Strategies and Levels.
○ <i>High Performance Energy Management</i>	See Reimbursement Strategies and Levels.
○ <i>Trade Ally Delivered Small Industrial Measures</i>	\$0.25/kWh or 70% of project incremental cost
○ <i>Northwest Trade Ally Network (C&I Lighting)</i>	\$0.25/kWh or 70% of project incremental cost for custom projects (See PTR system for deemed levels.)
○ <i>BPA Funded Technical Service Providers (TSP)</i>	Not applicable
▫ <i>Variable Frequency Drives in Spud and Onion Storage Facilities</i>	\$200.00/hp
Energy Smart Utility Efficiency	\$0.25/kWh or 70% of project incremental cost

*The reimbursement levels described in this table provide a summary only. Complete details of the reimbursement levels and associated requirements may be found in the corresponding text of the Manual. Please see the Table of Contents for the text location.

Industrial Sector Overview

The BPA Energy Efficiency industrial program includes Energy Smart Industrial (ESI), Energy Smart Utility Efficiency, and Multi-Sector opportunities.

Customers must enroll in ESI in order to receive BPA funding for custom project incentives and technical services. Without ESI enrollment, industrial custom project incentives and technical services must be customer self-funded, and BPA funding is available only for Energy Smart Utility Efficiency, and Multi-Sector Measures and Initiatives.

Energy Smart Industrial

The bulk of industrial program offerings are located in ESI, which is managed by a third party contractor (ESI program partner). ESI participants are assigned an ESI Partner and offered the following program components:

- Industrial Custom Projects
- Energy Management Pilot: Energy Project Managers; Track and Tune Projects; and High Performance Energy Management
- Trade Ally Delivered Small Industrial Measures
- Northwest Trade Ally Network (C&I Lighting)
- Technical Service Providers (TSP)
- VFDs in Spud and Onion Storage Facilities

Requirements and Specifications

Enrollment: Customers enrolled in ESI on or before October 31, 2009 were given first priority in the program rollout, and customers were allowed to enroll through March 31, 2010. Customer enrollment is now at BPA's discretion, and BPA may or may not allow a customer to enroll in ESI.

A customer may enroll in ESI by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes).

Enrolled customers may use BPA funds or self-fund; customers using either funding source must follow this Manual's requirements and report savings to BPA.

ESI program partner: The customer shall meet with ESI program partner (in person or over the phone) to discuss customer needs. During this meeting, the customer must indicate its intended level of program engagement and lay out end-user communications expectations and guidelines for the ESI program partner to follow. Other topics of discussion may include magnitude of industrial load, number of industrial end users, savings goals and desired program component rollout. Following the planning meeting, the ESI program partner will acknowledge the level of program engagement and communications guidelines by sending an e-mail to the customer.

ESI Partner: An ESI Partner (provided by the ESI program partner) is assigned to the customer and is the single point of contact for customers and helps them understand and implement ESI. The customer ultimately determines the level of ESI Partner engagement, but, generally, the ESI Partner performs the following:

- Serves as an industrial technical resource to customers
- Works closely with the customer to develop an action plan for its end users
- Manages and reviews technical work products, including technical analysis of custom project proposals and completion reports
- Helps the customer identify custom projects and enters custom project proposals and completion reports into the PTR system and submits to customer for review and acceptance (The customer continues to perform the final official submittal to BPA.)

Custom Projects: For custom project proposals accepted by BPA on or after April 1, 2010 the customer shall pass through the full incentive amount to the end user.

The end user is responsible for the design and construction of energy efficiency projects and is encouraged to solicit bids for such work.

The customer may receive assistance during the custom project process. The following chart demonstrates the party responsible for each custom project step.

Custom Project Process Step	Responsible Party
Development of M&V Plan	ESI Partner, TSP or Customer
Entry of Custom Project into PTR system	ESI Partner or Customer
Submittal of Custom Project Proposal to BPA	Customer
Review of Custom Project Proposal	BPA ESI Engineer, ESI program partner Quality Control Engineer and COTR
Provision of Technical Advice to Customer	ESI Partner
Development of Custom Project Completion Report	ESI Partner, TSP or Customer
Entry of Completion Report into PTR system	ESI Partner or Customer
Submittal of Completion Report to BPA	Customer
Review of Custom Project Completion Report	BPA ESI Engineer, ESI program partner Quality Control Engineer and COTR

Additional Documentation Requirements

For custom project proposals accepted by BPA on or after April 1, 2010, customers must maintain proof of 100% incentive pass-through to end users (e.g., proof of payment through a copy of check to end user or other method of money delivery). If BPA approves customer's request for progress payments, customer must retain proof of equipment installation (or other documentation required by BPA's progress payment approval) in order to be paid by BPA.

Reimbursement Strategies and Levels

Custom project incentives for new and retrofit construction projects are the lesser of \$0.25 per kWh or 70% of project incremental cost. Progress payments may be available for eligible custom projects. The customer must request progress payments in its custom project proposal in Section IV, Measurement and Verification (M&V) Plan. The request must include a project schedule and estimated progress payments that coincide with project costs and measureable milestones. Progress payments will be made after project milestones have been accomplished and verified in accordance with

the BPA approved custom project proposal. At a minimum, eligible custom projects must meet the requirements below.

- The progress payment amount meets or exceeds \$100,000.00.
- The estimated incentive is equal to or greater than \$500,000.00.
- The time to complete the project exceeds 24 months from the BPA custom project proposal approval date to the completion report submittal date OR the project requires a greater than 11 months post M&V period.
- The sum of the progress payments does not exceed the lower of (a) 70% of actual expenditures of the project incurred up to the date of the progress payment invoice to BPA or (b) 50% of the estimated total project incentive

Energy Management Pilot (Optional ESI Component)

Energy Management is a pilot component composed of (1) the Energy Project Manager, (2) Track and Tune Projects and (3) High Performance Energy Management. An ESI Partner is closely involved with Energy Management.

1. Energy Project Manager (Optional Energy Management Pilot Feature)

Requirements and Specifications

BPA will co-fund Energy Project Managers (EPMs), end-user employees or contractors who manage energy efficiency custom projects at the end users' facilities. If applicable, EPMs will also manage Track and Tune (T&T) Projects, deemed lighting and High Performance Energy Management (HPEM), at the end users' facilities. A customer may request EPM funding by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes). If using bilateral funding, the customer must also seek a proportionate increase in the ECA implementation budget. Funding is provided to the customer in installments, and the customer must pass through the entirety of each installment payment to the end user. The customer must send BPA an executed EPM agreement between it and the end user.¹² This agreement must, at a minimum, identify an energy savings goal of at least 1,000,000 kWh of verified annual busbar energy savings per year; the customer's responsibility to pass through all funding to the end user; and the end user's obligation to employ a qualified EPM.

The customer (via its end user) must achieve projected energy savings of at least 1,000,000 kWh verified annual busbar energy savings and should do so within one year of the EPM funding Commencement Date. The Commencement Date is the date the final of the following actions occur: (1) BPA receives the executed customer EPM agreement with its end user, (2) an EPM is hired or designated by the end user and (3) BPA approves EPM funding. Though a one-year timeline is recommended, the customer is allowed up to 18 months from the EPM funding Commencement Date to fully achieve projected energy savings.

¹² In certain instances, when the Manual procedures are unworkable, the customer and BPA may agree to a direct agreement between the end user and BPA.

As a condition of receiving EPM funding, the customer must ensure the end user meets the following requirements:

- a. The end user must hire or designate an EPM to identify, evaluate and implement industrial electrical energy efficiency projects including T&T and HPEM, if appropriate. The EPM must be familiar with, and have experience in, electric energy efficiency in the Industrial Sector and must have knowledge and experience working in the end user's type of business.
- b. The EPM must manage electrical energy efficiency projects that deliver 1,000,000 kWh or greater in verified annual industrial busbar energy savings. These savings must be verified, i.e., the savings must be reportable in the PTR system and approved by BPA.
- c. No later than 90 days after the Commencement Date, the EPM must submit an EPM Comprehensive Plan to the customer and BPA. The EPM Comprehensive Plan must be approved by BPA and include, at a minimum, the following:
 - i. Projected verified annual busbar energy savings (at least 1,000,000 kWh)
 - ii. Name of the EPM
 - iii. Total annual salary of the EPM, including benefits
 - iv. Itemized summary of planned electrical energy efficiency projects (including participation in either HPEM or T&T) that will comprise the verified annual busbar energy savings, including estimates of the energy savings, cost savings and implementation costs
 - v. Schedule for project development, implementation and completion
 - vi. Project implementation schedule showing energy savings or energy savings progress expected at six months after the Commencement Date and energy savings expected over the life of the plan
 - vii. If applicable, Energy Management Pilot participation plan for T&T and HPEM

The EPM must submit status reports to the customer and BPA describing (1) energy savings achieved and projected and (2) projects completed, in-process or planned. Status reports are due (1) no later than six months from the Commencement Date and (2) no later than one year from the Commencement Date.

No later than six months after the Commencement Date, the end user must achieve, to BPA's satisfaction, the six-month verified annual busbar energy savings or energy savings progress described in the project implementation schedule of the EPM Comprehensive Plan. Energy savings may be verified or in the form of BPA-approved custom project proposals or in-progress T&T Projects.

Additional Documentation Requirements

Customer must retain copies of the executed customer EPM agreement with its end user, the EPM Comprehensive Plan and the status reports.

Reimbursement Strategies and Levels

The customer must invoice BPA upon the end user reaching the milestones in the chart below. Customers are not obligated to return any money already received.

Payment No.	Funding Amount	Milestone
1	\$25,000*	Commencement Date
2	1/3 of the funding** less previous payments	BPA approves the EPM Comprehensive Plan
3	2/3 of the funding** less previous payments	End user achieves, to BPA’s satisfaction, the six-month energy savings or energy savings progress described in the project implementation schedule of the EPM Comprehensive Plan
4	The lesser of (a) \$0.025 per kWh of actual verified busbar energy savings, (b) the total annual salary of the EPM as described in the EPM Comprehensive Plan, or (c) \$250,000, less previous payments	End user meets, exceeds, or fails to meet (as certified by BPA) the EPM Comprehensive Plan projected Verified Energy Savings

*Funding beyond this payment will not be provided unless the verified energy savings goal or actual savings achieved is greater than 1,000,000 kWh.

**Funding is based on the lesser of (a) \$0.025 per kWh of the verified energy savings goal, (b) the total annual salary of the EPM as described in the EPM Comprehensive Plan, or (c) \$250,000.

Savings in excess of the payment ceiling (i.e., savings with dollar amounts exceeding (a) the total annual salary of the EPM as described in the EPM Comprehensive Plan or (b) \$250,000) may be carried over to subsequent funding years, subject to BPA’s approval.

2. Track and Tune Projects (Optional Energy Management Pilot Feature)

Requirements and Specifications

T&T Projects are a combination of site or sub-system tune-ups that focus on operations and maintenance opportunities for increased energy efficiency. A performance tracking system (PTS)¹³ is included in a T&T Project to determine annual energy savings and associated sustained savings incentive payments from BPA. A customer may request T&T funding by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes). The customer’s request must include a budget estimate for the life of the project (estimated or verified savings * \$0.1375¹⁴).¹⁵

¹³ The PTS uses measurement equipment and software to track and communicate system or facility-level energy use during the baseline and post tune-up periods. The PTS tracks key independent variables to develop a meaningful normalized energy use profile. The PTS is installed and owned by the end user and eligible for BPA funding.

¹⁴ .025*5*1.1 = .1375

A T&T agreement must be signed between the customer and the end user, and the customer is responsible for reporting savings in the PTR system. The customer must ensure that its end user assigns an Energy Champion to (a) serve as the primary contact for T&T Providers (TSP,¹⁶ outside expert or in-house end user personnel) and (b) implement and track all suitable T&T projects.

- a. The Energy Champion shall work with the T&T Provider and the ESI Partner to perform a scoping study that results in a tune-up and monitoring plan. The plan must include a preliminary estimate of energy savings potential, recommendations for how to track energy savings, recommendations for baseline determination and a detailed proposal for subsequent technical services to perform the tune-up.
- b. The end-user Energy Champion shall implement and track all suitable T&T projects defined in the T&T Provider's tune-up and monitoring plan, or elsewhere. The end-user Energy Champion is responsible for managing the end user's completion of the following steps:
 - i. PTS Installation - Install a PTS capable of tracking and delivering electronic energy savings data (e.g., electric energy consumption, production quantities and operating hours) to end user, customer, the T&T Provider and BPA and its representatives (including ESI program personnel). Data should be available frequently enough to allow changes in T&T implementation if necessary to increase energy efficiency.
 - ii. Baseline Determination - Wait for an energy baseline to be established with data from the PTS prior to beginning actual tune-up activities.
 - iii. Tune-Up - Participate in a tune-up with the T&T Provider and begin to implement changes to increase energy efficiency.
 - iv. Action Plan Report - Submit an Action Plan Report (as prepared by the T&T Provider) to BPA and customer that summarizes the activities and results of the tune-up and includes a plan to implement specific energy efficiency project action items¹⁷ that are beyond the scope of changes that could be made in the course of the tune-up.
 - v. Action Item Implementation - Implement action items. The end user and Energy Champion make the final determination regarding which action items are implementable.

¹⁵ Example: A T&T Project focused on a system that uses 10,000,000 kWh/yr (annual baseline energy use). T&T Completion Report includes project verified savings of 1,000,000 kWh/yr, with project costs totaling \$10,000.00.

- Performance Tracking System funding cap = $10,000,000 \times \$0.0025 = \$25,000.00$
- T&T Completion Report Incentive caps at lesser of $\$0.075 \times$ busbar savings or 70% of project cost. In this example, it caps at 70% of project cost, equaling \$7,000.00.
- Estimated Performance Tracking System maintenance funding for years 1 - 5 cap = \$25,000.00 total
- Estimated T&T Sustained Savings for years 1 - 5 = $\$0.1375 \times 1,000,000 = \$137,500.00$ total

Total Estimated Budget Funding for Track and Tune Project = \$194,500.00

¹⁶ Separate TSP funding is available for the listed TSP activities per BPA's established TSP program.

¹⁷ Action items are generally defined as the list of low-cost energy savings activities that were identified and recommended in the T&T Action Plan Report that in aggregate produce cost-effective energy savings.

- vi. T&T Completion Report - Submit a T&T Completion Report to customer and BPA upon implementation of all implementable action items. The T&T Completion Report may be completed by the ESI program partner, T&T Provider or a combination of the two and must include the following:
 - A. Verified energy savings data derived from the PTS and (where necessary) production data.
 - B. Documented costs (including invoices or other records when necessary) for labor, material and services that were incurred to implement the energy efficiency action items that were identified in the Action Plan Report.
 - C. Documentation that demonstrates which action items were completed in accordance with the recommendations of the Action Plan Report.
- vii. Sustained Savings Reports - Submit five annual Sustained Savings Reports to customer and BPA that demonstrate energy savings as derived from the PTS energy data and (where necessary) production data. Sustained savings reports may be completed by the ESI program partner, the T&T Provider or a combination of the two.

Additional Documentation Requirements

Customer must retain copies of the following:

- Executed T&T agreement between customer and end user
- Tune-up and monitoring plan
- Action Plan Report
- T&T Completion Report
- Sustained Savings Reports

Reimbursement Strategies and Levels

The customer must invoice BPA upon the end user reaching the milestones in the chart below.

Payment No.	Funding Amount	Milestone
1	Lesser of documented PTS costs or \$0.0025 per kWh of estimated annual energy usage of system baseline; allowable exceptions of up to \$10,000 for system baseline of 4,000,000 kWh or less but capped at \$50,000 for system baseline of 20,000,000 kWh or greater	End user purchases and installs BPA-approved PTS.
2	\$0.075 per kWh of actual verified energy savings identified in the T&T Completion Report, not to	BPA reviews and approves end-user submitted T&T Completion Report.*

Payment No.	Funding Amount	Milestone
	exceed 70% of implementation costs identified in the T&T Completion Report	
3	\$0.025 per kWh of actual verified energy savings, plus documented PTS costs of up to \$0.0025 per kWh of baseline**	BPA reviews and approves end-user submitted Sustained Savings Report for the prior year.
4	\$0.025 per kWh of actual verified energy savings, plus documented PTS costs of up to \$0.0025 per kWh of baseline**	BPA reviews and approves end-user submitted Sustained Savings Report for the prior year.
5	\$0.025 per kWh of actual verified energy savings, plus documented PTS costs of up to \$0.0025 per kWh of baseline**	BPA reviews and approves end-user submitted Sustained Savings Report for the prior year.
6	\$0.025 per kWh of actual verified energy savings, plus documented PTS costs of up to \$0.0025 per kWh of baseline**	BPA reviews and approves end-user submitted Sustained Savings Report for the prior year.
7	\$0.025 per kWh of actual verified energy savings, plus documented PTS costs of up to \$0.0025 per kWh of baseline**	BPA reviews and approves end-user submitted Sustained Savings Report for the prior year.

*The first year concludes the date the end user submits the T&T Completion Report. The T&T Completion Report is submitted no earlier than three months and no later than 12 months following submittal of the Action Plan Report.

**The upper limit on allowable ongoing PTS costs are capped at the lesser of \$50,000 or \$0.0025 per kWh of baseline energy usage of the energy using systems(s) that are being addressed by the T&T project. These caps apply to the cumulative expenditures for the 5 year sustained savings period. These are end user incurred costs that are related to ongoing data transmission costs and maintenance and repair costs associated with operating and maintaining the PTS system.

3. High Performance Energy Management (Optional Energy Management Pilot Feature)

Requirements and Specifications

This feature provides energy management coaching and development for end users. High Performance Energy Management (HPEM) is designed to (a) generate more T&T projects, (b) drive more custom projects into the PTR system and (c) generate savings via Monitoring, Targeting and Reporting (MT&R) analysis. Annual sustained savings incentives will be available from BPA for verified savings from the MT&R Completion Report.

A customer may enroll in HPEM by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes). The customer's request must include a budget estimate for the life of the project (estimated or verified savings * \$0.1375¹⁸).¹⁹

As a condition of receiving HPEM funding, the customer must ensure the end user meets the following requirements:

- a. End user must assign two staff members to attend one year of monthly BPA HPEM training sessions, with each session consisting of approximately 10 to 15 industrial peer facilities. End user attendees must attend, participate in and complete the training sessions and provide two to four presentations describing end user's energy performance. The customer and end user must keep information exchanged in training sessions confidential.
- b. Concurrent with HPEM training, and over the course of the HPEM program, the end user shall implement a continuous improvement process program for energy management at end user's facility, including, but not limited to, the following:
 - i. Conducting an assessment of current energy management practices (e.g., does end user track, manage or reduce energy usage?)
 - ii. Establishing an energy management policy with goals and assigned accountabilities
 - iii. Assigning an Energy Champion, a key contact person for the energy management continuous improvement process
 - iv. Establishing an energy team to implement custom project proposals, Key Performance Indicators (energy use per unit of production) and an energy plan for the facility
 - v. Implementing energy efficiency activities and projects
 - vi. Establishing and maintaining an energy use data tracking system with an established baseline, energy use and energy savings

Customer and end user must make available to BPA all information necessary to facilitate HPEM and determine energy savings (e.g., electrical data, natural gas data, production quantity). Customer must ensure that end user provides an annual MT&R Completion Report to BPA that tracks energy usage and unit production over the course of the previous year. Yearly funding amounts are based on the BPA verified savings in the MT&R Completion Report.

Customer must report energy savings in the PTR system on an annual basis for five consecutive years. Energy savings will be verified by BPA based on MT&R analysis techniques and will not include any projects that received funding from other BPA programs (e.g., custom projects, deemed projects or T&T Projects).

¹⁸ .025*5*1.1 = .1375

¹⁹ Example: A HPEM project has an estimated annual savings of 1,000,000 kWh. Budgetary funding to apply for the duration of the High Performance Energy Management project would be \$137,500.00.

Additional Documentation Requirements

Customer must retain copies of the MT&R Completion Reports and provide documentation that the requirements (a) and (b) have been met.

Reimbursement Strategies and Levels

Annual incentive payments are based upon a five-year period and are paid according to the chart below.

Funding Period*	Funding Amount	Milestone
Year 1	\$0.025 per kWh of BPA verified MT&R energy savings for previous year	End user completes HPEM training program, implements a continuous improvement process program for energy management and BPA receives annual MT&R Completion Report
Year 2	\$0.025 per kWh of BPA verified MT&R energy savings for previous year	End user implements a continuous improvement process program for energy management, and BPA receives annual MT&R Completion Report
Year 3	\$0.025 per kWh of BPA verified MT&R energy savings for previous year	End user implements a continuous improvement process program for energy management, and BPA receives annual MT&R Completion Report
Year 4	\$0.025 per kWh of BPA verified MT&R energy savings for previous year	End user implements a continuous improvement process program for energy management, and BPA receives annual MT&R Completion Report
Year 5	\$0.025 per kWh of BPA verified MT&R energy savings for previous year	End user implements a continuous improvement process program for energy management, and BPA receives annual MT&R Completion Report

*The first year begins on the date of the first BPA HPEM training. Payments are made at the conclusion of each year based upon the BPA verified savings in the MT&R Completion Report.

Trade Ally Delivered Small Industrial Measures (Optional ESI Component)

Requirements and Specifications

The Small Industrial Measures component provides cost-effective, simple measures with broad market applicability to leverage trade ally networks (e.g., compressed air, refrigeration and motors) to handle specific efficiency measures where the energy savings of individual projects are small. Simplified analysis tools will be created to assist with project development. Projects of this size justify a simple,

streamlined analytical approach, including M&V, due to the small scale of energy savings and incentive. An ESI Partner is closely involved with Small Industrial Measures.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

The ESI custom project reimbursement levels apply, as described in the ESI Reimbursement Strategies and Levels.

Northwest Trade Ally Network (C&I Lighting) (Optional ESI Component)

Requirements and Specifications

The Northwest Trade Ally Network is a BPA initiative that supports lighting trade allies and customers in the commercial and Industrial Sectors. The ESI program includes Lighting Specialists who enhance the program by working one-on-one with trade allies, customers and end users at the project level. Along with working with trade allies and the lighting supply chain, the Lighting Specialists provide on-site lighting walk-through; on-site meetings and/or technical development with an end user, trade ally and/or customer representative; and review of end user trade ally proposals with recommendations for enhancing lighting efficiency technology.

Per the Lighting section in the Multi-Sector chapter, Industrial Sector lighting projects estimated to provide more than 100,000 kWh in annual savings may be submitted as custom projects rather than deemed measures.

Projects that do not meet the requirements of the Lighting section in the Multi-Sector chapter (e.g., new technologies, new applications, specialized fixtures or control schemes) or those that have interactive effects with other non-lighting measures that are not part of the Lighting Calculator Spreadsheet may be submitted as custom projects regardless of the level of site energy savings.

Beginning April 1, 2011 the following changes will take effect:

1. Only qualifying Industrial Sector lighting projects estimated to provide more than 200,000 kWh in annual site energy savings may be submitted as custom projects. Qualifying projects are those that do not meet the requirements of the deemed lighting measures (e.g., new technologies, new applications, specialized fixtures or control schemes).
2. Custom project proposals must include the following:
 - a. A reason for custom project qualification, in the custom project proposal template (Section IV, Item B)
 - b. A completed Lighting Calculator Spreadsheet
3. If the measures contain adding new fixtures where existing fixtures do not exist but are required to meet operational requirements, the measure must be listed a separate measure in the custom project proposal and contain incremental cost and savings information. The baseline description must

contain the justification for the additional fixtures (e.g., required for safety, change in equipment layout, change in use of area).

4. The following M&V guidelines apply:
 - i. Power measurements for new induction or fluorescent fixtures are not required; customers may use manufacturers' published wattage specifications to determine energy savings.
 - ii. Customers may use lighting power estimates listed in the Lighting Calculator Spreadsheet for existing fluorescent, quartz or incandescent lights.
 - iii. Customers must measure the actual input power of the fixture for all other types of lighting, new or existing.
 - iv. Customers must verify the controls and schedule of automated lighting with a fixed control schedule controls (e.g., time-based controllers or photo-cells) but are not required to log the system operation.
5. BPA reserves the right to reject a lighting custom project and require submittal under the Multi-Sector lighting requirements.

Additional Documentation Requirements

See the Lighting section in the Multi-Sector chapter.

Reimbursement Strategies and Levels

For custom lighting projects, the reimbursement levels of ESI custom projects apply, as described in the corresponding Reimbursement Strategies and Levels, above.

For deemed lighting projects, the reimbursement levels of Multi-Sector Lighting apply, as described in the corresponding Reimbursement Strategies and Levels. See the Multi-Sector chapter.

BPA Funded Technical Service Providers (Optional ESI Component)

Requirements and Specifications

BPA funding, through the ESI program partner, is available for eligible technical services necessary to develop and complete custom projects. Technical Service Provider (TSP) consultants can be utilized for scoping, project assessments, completion reports (M&V) and miscellaneous consulting. BPA decides whether to fund TSPs based on cost effectiveness of the customer's proposal and likelihood of implementation.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

No reimbursement is paid to the customer as BPA contracts directly with the ESI program partner.

Variable Frequency Drives in Spud and Onion Storage Facilities

Requirements and Specifications

Ventilation fan VFD installations in spud and onion storage facilities have a deemed energy savings of 1,000 kWh per hp. If the fan VFD project is combined with other measures such as moisture management systems, louver replacements or refrigeration computer control upgrades, the entire project must be submitted as a custom project. Each VFD must qualify individually and be submitted individually as a custom project (i.e., VFDs may not be combined or divided).

Additional Documentation Requirements

The customer must retain a copy of the completed spud and onion storage shed energy savings calculation.

Reimbursement Strategies and Levels

BPA shall reimburse \$200.00 per hp.

Energy Smart Utility Efficiency

Energy Smart Utility Efficiency (ESUE) includes Voltage Optimization (VO) and System Improvements (SI). Any SI needed to successfully implement VO must be included as part of the VO project. Any SI that is not directly necessary to the implementation of VO must be submitted, separately, as an SI project.

A customer does not need to be enrolled in ESI to participate in ESUE.

Requirements and Specifications

The general custom project process requirements apply with one exception: equipment in stock may be used if accepted as part of a custom project proposal so long as the customer can document equipment was installed after BPA's acceptance of the custom project proposal.

The specific requirements of VO and SI are discussed below.

1. VO

VO is a technique for improving the efficiency of the electrical grid by reducing voltage on the feeder lines that run from substations to homes and businesses. Although VO is appropriate for any end use type, ESUE focuses on residential and small commercial end use loads.

To ensure the avoidance of potentially detrimental effects from lowering system voltage, BPA developed the Simplified VO Measurement & Verification Protocol based on RTF guidelines. This protocol requires specific system stability thresholds be met prior to lowering service voltages. The improvements will become part of the VO custom project and, as such, qualify for BPA incentives.

All VO projects require a BPA-funded scoping study, and if the results of the scoping study indicate a cost effective project, a BPA-funded detailed study will follow. These studies require the collection of data from feeders, substations and the customer. If a customer does not provide the data or access to the data within the agreed upon time frame set between the customer and the TSP, the utility project

will be moved to the end of the queue for technical service requests.²⁰ Customers may participate by submitting a request via the [TSP Portal](#) and by following the custom project process documented in the chart below.

2. System Improvements

System Improvements may include the following measures:

- Power transformer replacement
- Service conductor replacement
- Higher distribution primary voltage (including insulator additions and replacement)
- Transformer load management (replacement of improperly sized transformers for loss improvements)
- Balancing loads and phases
- Adding parallel feeders
- Operation improvement (recognition and phase balancing)
- De-energizing seasonally unloaded transformers
- Service distribution transformer
 - Replacing an existing or proposed transformer with a higher efficiency transformer
 - Multiple transformers versus single transformer based on system analysis
 - Power factor improvement to reduce line losses
 - Volt-Amperes-Reactive (Reactive Power) Management
 - Voltage management
 - Fixed and switched capacitors

Customers may participate in SI by (1) requesting technical services via the [TSP Portal](#) or submitting a custom project proposal and (2) following the custom project process documented in the chart below.

Custom Project Process Step	VO	System Improvements
Request of Technical Service via TSP	Customer	Customer
Complete Utility Questionnaire	Customer	NA
Provision of Technical Advice to Customer	TSP	TSP if requested by Customer
Scoping Study	TSP	TSP if requested by Customer
Detailed Study	TSP	NA
M&V Plan Development	NA (M&V Plan is predefined in the BPA)	Customer or TSP

²⁰ Each technical service request should be limited to no more than 12 feeders or three substations.

	VO Protocol)	
Entry of Custom Project into PTR system	TSP	Customer or TSP
Submittal of Custom Project Proposal to BPA	Customer	Customer
Review of Custom Project Proposal	COTR and Energy Smart Utility Efficiency Engineer	COTR and BPA Field Engineer
Collect and Analyze data to verify estimated savings	TSP	Customer or TSP
Development of Custom Project Completion Report	TSP	Customer or TSP
Entry of Custom Project Completion Report into PTR system	TSP	Customer or TSP
Submittal of Custom Project Completion Report to BPA	Customer	Customer
Review of Custom Project Completion Report	COTR and Energy Smart Utility Efficiency Engineer	COTR and BPA Field Engineer

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

The retrofit custom project incentive levels apply: \$0.25 per kWh or 70% of project incremental cost.

Progress payments may be available for eligible custom projects. The customer must request progress payments in its custom project proposal in Section IV, M&V Plan and include a project schedule with estimated progress payments that coincide with project costs and measureable project milestones.

Progress payments will be made after project milestones have been accomplished and verified in accordance with the BPA approved custom project proposal.

Eligible custom projects must meet the minimum requirements listed below, but even if these requirements are met, BPA reserves the right to deny the request for progress payments.

- The progress payment amount meets or exceeds \$20,000.00.
- Estimated savings for the project are greater than 500,000 kWh per yr per substation (busbar savings) OR the estimated incentive for the project is greater than \$100,000.00.
- Time to complete the project exceeds 12 months from the BPA custom project proposal approval date to the completion report submittal date OR the project requires a greater than three months post M&V period.

- The sum of the progress payments does not exceed the lower of (a) 70% of actual expenditures of the project incurred up to the date of the progress payment invoice to BPA or (b) 50% of the estimated total project incentive.

Multi-Sector Opportunities

Additional industrial opportunities are available in the Multi-Sector chapter.

Please see the Multi-Sector chapter for information on the following:

- Processes
 1. Custom Projects
 2. Direct Acquisition
 3. Third Party Contributions
- Measures and Initiatives
 1. Green Motors
 2. Lighting
 3. Limited Availability Emerging Technology Demonstration Pilots
 4. Variable Frequency Drives in Small Compressed Air Systems (If customer does not enroll in ESI, it may use the Small Compressed Air calculator tool without technical assistance from BPA or ESI program partner.)

7. Residential Sector

Please check the key changes summary on page i of this document to see if significant changes were made to any of the measures in this sector.

This section contains general information about the Residential Sector and measure-specific requirements and specifications, additional documentation requirements and reimbursement strategies and levels.

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The Residential Sector includes electrical energy used in a residential setting (e.g., single-family residences, multifamily residential structures (up to three stories high) and manufactured homes). Excluded are temporary residences such as hotels, motels, nursing homes, dorms or any other generally temporary quarters. (Multifamily housing greater than three stories is considered commercial.)

Reimbursement Summary*

Program Component or Measure	Reimbursement
Lighting	
○ <i>ENERGY STAR CFLs</i>	\$1.00-\$5.50/unit
○ <i>ENERGY STAR Lighting Fixtures</i>	\$10.00/fixture
Showerheads	
	\$12.00 - \$20.00/unit
Appliances (New)	
○ <i>ENERGY STAR Clothes Washers</i>	\$25.00-\$70.00/washer
○ <i>ENERGY STAR Freezers</i>	\$25.00/freezer
○ <i>ENERGY STAR Refrigerators</i>	\$25.00/refrigerator
Appliance Decommissioning/Refrigerator and Freezer Early Retirement and Recycling	
	\$125.00/unit
Electric Water Heating	
○ <i>Electric Storage Water Heaters</i>	\$25.24-\$105.77
○ <i>Gravity-Film Heat Exchangers</i>	\$159.77-\$228.24
HVAC Measures	
○ <i>Ductless Heat Pump</i>	\$1,000.00-\$1,500.00/unit
○ <i>PTCS Air-Source Heat Pump Upgrade with Min. HSPF 8.5/SEER 14 Ratings (bundled)</i>	\$470.00-\$1,790.00/unit
○ <i>PTCS Air-Source Heat Pump Conversions</i>	\$1,400.00-\$1,900.00/unit
○ <i>PTCS Heat Pump Commissioning and Controls</i>	\$300.00-\$850.00/unit
○ <i>PTCS Geothermal (Ground-Source) Heat Pump Systems (new)</i>	\$2,400.00-\$3,000.00/unit
○ <i>PTCS Duct Sealing in Manufactured Homes</i>	\$400.00/unit
○ <i>PTCS Duct Sealing in Existing Single-Family Homes</i>	\$500.00/unit
○ <i>PTCS Duct Sealing in Single-Family New Construction</i>	\$400.00/unit
Line Voltage Electronic Thermostats	
	\$115.00-\$160.00/unit
New Construction	
○ <i>New ENERGY STAR Manufactured Homes</i>	\$850.00-\$1,450.00/unit
○ <i>New ENERGY STAR Site-Built Homes</i>	\$600.00-\$2,800.00/unit
○ <i>New Homes Built to the Montana House Specifications</i>	\$200.00-\$1,500.00/unit
○ <i>New Multifamily Construction</i>	\$80.00-\$140.00/unit
Weatherization	
○ <i>Insulation</i>	See PTR system.
○ <i>Prime Window Replacement</i>	\$6.00/square foot
○ <i>Air Sealing</i>	See PTR system.
Low-income Weatherization	
	Dollar for dollar reimbursement with limits
Low-income Window Replacement	
	Dollar-for-dollar reimbursement not to exceed \$20.00/square foot
Residential Custom Projects	
	\$0.30/measured first year kWh with limits

* The reimbursement levels described in this table provide a summary only. Complete details of the reimbursement levels and associated requirements may be found in the corresponding text of the Manual. Please see the Table of Contents for the text location.

Lighting

CFLs and fixtures must be ENERGY STAR qualified and installed in a residential setting. CFLs may be claimed under one measure only (e.g., CFLs in ENERGY STAR fixtures cannot be claimed as documented direct install CFLs if the ENERGY STAR fixture was already claimed under that measure).

Both standard twister CFLs and specialty CFLs are eligible. Specialty CFLs are defined as the following screw-base bulbs: candelabras, G-lamps (globe), R-lamps and PAR-lamps (reflectors), torpedoes, dimmable and three-way. *Note: T-2s and A-lamps are considered standard twisters and do not meet the definition of specialty CFLs.*

Effective April 1, 2011, the following changes will occur in the lighting program:

- ENERGY STAR specialty CFLs (retail markdown) – Savings will be reduced to 21 kWh per CFL, and BPA's reimbursement will decrease to \$2.25 per CFL.
- ENERGY STAR specialty CFLs (direct install) – Savings will be reduced to 25 kWh per CFL.
- ENERGY STAR standard twister CFLs (direct mail) – Savings will be reduced to 27 kWh per CFL.
- ENERGY STAR specialty CFLs (direct mail) – Savings will be reduced to 21 kWh per CFL.
- CFL measures in the PTR system will attribute savings by bulb type (rather than room type).

This section covers (1) ENERGY STAR CFLs - retail markdown/direct mail/other distribution, (2) ENERGY STAR CFLs – documented direct install, (3) ENERGY STAR – special or hard-to-reach opportunities and (4) ENERGY STAR light fixtures.

ENERGY STAR CFLs - Retail markdown/direct mail/other distribution

Requirements and Specifications

CFL must be ENERGY STAR qualified and must be more than five watts. The number of non-requested CFLs that may be mailed to a residential household is limited to four bulbs per household, per fiscal year.

Additional Documentation Requirements

- Vendor or retail sales invoice with the number, manufacturer (make), type and wattage of bulbs purchased
- Documentation that CFL is ENERGY STAR qualified
- Documentation of the allocation methodology for the retail markdown model, in cases where a participating store serves more than one customer
- Clarification of the distribution method used (e.g., given out at an event, over-the-counter, coupon program, retail markdown program, direct mail, on-line fulfillment)

Reimbursement Strategies and Levels

BPA shall provide reimbursement according to the table, below.

CFL Measure	Reimbursement
CFL – Retail markdown (twister)	\$1.00
CFL - Retail markdown (specialty)	\$3.00
CFL – Direct-mail (twister)	\$1.50
CFL – Direct-mail (specialty)	\$4.00
CFL – other distribution methods (twister)	\$2.50
CFL - other distribution methods (specialty)	\$4.00

ENERGY STAR CFLs – Documented Direct Install

Requirements and Specifications

ENERGY STAR CFLs must be documented as directly installed, which means that bulbs are either (1) physically installed or witnessed at the time of installation by a customer program employee or an agent/contractor acting under a signed agreement for the customer or (2) documented with a visual inspection by the customer or its agent after installation. Customers are encouraged to consider multiple measures in a direct install program opportunity to maximize the investment of time. Other opportunities might include energy-saving showerheads and even a mini-home energy audit. Customers may choose to address their entire service territory or begin with a limited area before scaling up. Smaller scale options might include working with the CAP agency or a local tribal entity.

Note: ENERGY STAR New Homes (electric) may qualify for this measure for lighting measures installed above the ENERGY STAR Homes requirement. ENERGY STAR New Homes (gas) may utilize this measure if they meet the documentation requirements included below.

Additional Documentation Requirements

- Vendor or retail sales invoice with the number, manufacturer (make), type and wattage of bulbs purchased
- Documentation that CFL is ENERGY STAR qualified
- Residential address of installation
- Type, wattage and number of bulbs installed
- Name/agent responsible for installing bulbs or inspection

Reimbursement Strategies and Levels

BPA shall provide reimbursement according to the table, below.

CFL Measure	Reimbursement
Documented Direct install CFL—(twister)	\$4.00
Documented Direct install CFL—(specialty)	\$5.50

ENERGY STAR CFLs—Special or Hard-to-reach opportunities

Requirements and Specifications

This measure provides support for special opportunities or cases in which a customer has the opportunity to leverage additional resources to reach an otherwise hard-to-reach part of its residential customer base. This measure requires advance approval by BPA.

Additional Documentation Requirements

- Vendor or retail sales invoice with the number, manufacturer (make), type and wattage of bulbs purchased
- Documentation that CFL is ENERGY STAR qualified
- Documentation of advance approval from BPA
- Documentation of additional resources leveraged for the project
- Clarification of the distribution method

Reimbursement Strategies and Levels

BPA shall provide reimbursement according to the table, below.

CFL Measure	Reimbursement
Special or Hard-to-reach Opportunities—(twister)	\$4.00
Special or Hard-to-reach Opportunities—(specialty)	\$5.50

ENERGY STAR Lighting Fixtures

Requirements and Specifications

Lighting fixture must be ENERGY STAR qualified.

Additional Documentation Requirements

- Manufacturer name
- Model number or other documentation that the fixture is an ENERGY STAR qualified lighting fixture

Individual lighting fixture incentive applications (end user with incentive form or coupon): Customers must document the ENERGY STAR status by doing one of the following: (1) have end users submit the ENERGY STAR logo from the lighting fixture box or product information insert that includes the ENERGY STAR logo or (2) confirm product availability on the [ENERGY STAR product list](#).

Customers may elect to provide a coupon to their end users to assist in the documentation process. Sales of qualified fixtures using the customer-supplied coupon may be documented by having the participating store provide a store sales report detailing the manufacturer, model number and date of each sale generated by the coupon. These reports will be considered the purchase receipt/invoice and must be maintained on file at the customer's place of business.

In-store markdown of qualified ENERGY STAR lighting fixtures: Fixtures to be included in an in-store markdown or promotion must be confirmed, in advance, as ENERGY STAR qualified. Sales of qualified fixtures via a markdown promotion must be documented by having the participating store(s) provide a store sales report detailing the manufacturer, model number and date of each sale generated by the promotion. These store sales reports will be considered the purchase receipt/invoice and must be maintained on file at the customer's place of business.

Reimbursement Strategies and Levels

BPA shall reimburse \$10.00 per fixture for ENERGY STAR qualified lighting fixtures.

Showerheads

The section includes the following:

- Showerheads – Retail markdown
- Showerheads – Mailed by request
- Showerheads – Direct install

Showerheads – retail markdown

Requirements and Specifications

Showerhead must have a gallon per minute (GPM) flow rate of 2.0 or less.

Additional Documentation Requirements

- Vendor or retail sales invoice with the quantity, manufacturer (make), type and GPM of showerheads sold via retail markdown
- Documentation of the allocation methodology for the retail markdown model, in cases where a participating store serves more than one customer

Reimbursement Strategies and Levels

BPA shall provide reimbursements of \$12.00 per showerhead, to be recorded in the PTR system as "Any water heater/Any showerhead."

Showerheads – mailed/distributed by request

Requirements and Specifications

This measure is available for all types of residential buildings (multifamily, single-family and manufactured homes). The hot water in the home must be heated by an electric water heater.

The showerhead must have a GPM flow rate of 2.0 or less.

The customer must be able to provide proof of end-user request for the showerhead with water heater fuel documented.

Additional Documentation Requirements

- Quantity, manufacturer name, type, and GPM of showerhead(s)
- Proof of end user request for the showerhead or documentation of directly installed showerhead

Reimbursement Strategies and Levels

Reimbursement is \$12.00 per showerhead, with a limit of two showerheads per residence.

Showerheads – Direct Install

Requirements and Specifications

This measure is available for all types of residential buildings (multifamily, single-family and manufactured homes). The hot water in the home must be heated by an electric water heater.

Showerhead must have a GPM flow rate of 2.0 or less.

The showerhead must be directly installed, which means the showerhead is either (1) physically installed or witnessed at the time of installation by a customer program employee or an agent/contractor acting under a signed agreement for the customer or (2) documented with a visual inspection by the customer or its agent after installation.

Additional Documentation Requirements

- Quantity, manufacturer name, type and GPM of showerhead(s) installed
- GPM of showerheads removed, if known
- Water heater fuel type
- Name/agent responsible for installing showerhead or completing the inspection

Reimbursement Strategies and Levels

Reimbursement is \$20.00 per showerhead, with a limit of two showerheads per residence.

Appliances (new)

Requirements and Specifications

BPA shall provide reimbursements for the purchase of ENERGY STAR qualified appliances with deemed energy savings.

Additional Documentation Requirements

- Manufacturer or brand name
- Model number
- Documentation detailing the specifications (e.g., energy factor) for the appliance claimed. A copy of the page from the [ENERGY STAR Web site](#)

listing the appliance model is sufficient for documentation, provided it details the specifications for the model claimed.

- Documentation of ENERGY STAR status by (1) having end users submit the ENERGY STAR logo from the appliance packaging or product information insert that includes the ENERGY STAR logo or (2) confirming product availability on the [ENERGY STAR product list](#). In the event that ENERGY STAR specifications change, BPA shall continue to accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.
- In the case of clothes washers, documentation of water heat fuel and clothes dryer fuel is needed to claim higher reimbursement and deemed savings.

Reimbursement Strategies and Levels

The reimbursement differs for each type of appliance, listed below.

ENERGY STAR Clothes Washers: Two reimbursement amounts are available, depending on the water heater fuel type.

- \$70.00 per ENERGY STAR clothes washer (with electric water heater)
- \$25.00 per ENERGY STAR clothes washer (with gas water heater)

Effective April 1, 2011, savings will be reduced, on average by 50%. New measures will be enhanced to provide three tiers with reimbursement levels as follows: MEF 2.0-2.19 = \$30.00; 2.20-2.45 = \$50.00; 2.46+ = \$70.00. All ENERGY STAR clothes washers with gas water heat = \$20.00.

ENERGY STAR Freezers: \$25.00 per ENERGY STAR qualified full-size freezer (7.75 ft³ or greater)

Effective April 1, 2011, freezer measures will be simplified into a single measure – “Any ENERGY STAR freezer.” Savings will be 46 KWh per unit, and reimbursement will be \$15.00 per unit.

ENERGY STAR Refrigerators: \$25.00 per ENERGY STAR qualified full-size refrigerator (7.75 cubic feet or greater)

Effective April 1, 2011, savings will be reduced, on average, by 50%, and reimbursement will decrease to \$15.00 per unit.

Appliance Decommissioning

Refrigerator and Freezer Early Retirement and Recycling

Requirements and Specifications

The existing appliance for recycling must be verified as functional, serving a home within the participating customer service territory and a minimum of 10 ft³ capacity. The unit must be decommissioned and its components recycled.

Additional Documentation Requirements

- Disposal/recycling documents
- Cubic size of refrigerator or freezer

Reimbursement Strategies and Levels

Reimbursement is \$125.00 per decommissioned refrigerator or freezer unit.

Effective April 1, 2011, (1) refrigerator savings will be reduced to 525 kWh per unit and reimbursement will decrease to \$100.00 and (2) freezer savings will be reduced to 606 kWh per unit and reimbursement will be \$100.00.

Electric Water Heating

Requirements and Specifications

BPA will reimburse customers for cost-effective, energy-efficient electric storage water heaters meeting the minimum energy factor provided in the PTR system and summarized in the table below. BPA will also provide reimbursements for cost-effective installations of gravity-film heat exchangers in electric water heater applications.

Additional Documentation Requirements

- Copy of purchase receipt/invoice
 - Manufacturer or brand name
 - Model number
 - Rated storage volume, in gallons (for storage water heaters)
- Warranty period, if claiming higher 20-year or longer warranty

Reimbursement Strategies and Levels

Reimbursements are summarized in the table below:

Tank Size	Minimum Energy Factor	Minimum Warranty	Busbar Energy Savings (kWh/yr)	Reimbursement
50 gallons	EF 0.93 or higher	Any	101	\$25.24
50 gallons	EF 0.94 or higher	20 year*	133	\$46.62
65 gallons	EF 0.91 or higher	Any	106	\$26.48
65 gallons	EF 0.94 or higher	20 year*	205	\$71.77
75 gallons	EF 0.92 or higher	20 year*	177	\$61.93
80 gallons	EF 0.91 or higher	Any	181	\$45.32
80 gallons	EF 0.92 or higher	20 year*	215	\$75.32
85 gallons	EF 0.92 or higher	20 year*	217	\$76.11
105 gallons	EF 0.91 or higher	20 year*	302	\$105.77
119 gallons	EF 0.85 or higher	Any	166	\$41.59

* Currently only the Marathon Water Heaters meet the 20 year minimum warranty requirement.

Reimbursements and busbar energy savings can also be found in the PTR system.

Gravity-film Heat Exchangers: \$0.35 per kWh (according to the busbar energy savings in the PTR system). Reimbursements and busbar energy savings are listed in the PTR system and summarized in the table below.

Residence Type	Retrofit or New Construction	Application	Water Heater Type	Energy Saving (kWh/yr)	Reimbursement
Single-Family & Multifamily	Retrofit	DHW & Shower Preheat	Electric	652	\$228.24
Single-Family & Multifamily	Retrofit	DHW Preheat	Electric	522	\$182.60
Single-family	New Construction	DHW & Shower Preheat	Electric	652	\$228.24
Single-Family	New Construction	DHW Preheat	Electric	522	\$182.60
Multifamily	New Construction	DHW & Shower Preheat	Electric	652	\$228.24
Multifamily	New Construction	DHW Preheat	Electric	522	\$182.60
Multifamily	New Construction	Shower Preheat	Electric	456	\$159.77

HVAC Measures

BPA will provide reimbursements for HVAC measures in electrically-heated homes including ductless heat pumps, high-efficiency heat pump upgrades, heat pump conversions, geothermal heat pump systems; and for heat pumps, proper installation, sizing, refrigerant charging and duct sealing protocols.

This section covers the following:

- Ductless Heat Pumps (DHP)
- Ducted Systems with PTCS
 - PTCS Air-source Heat Pump Upgrade, with minimum HSPF 8.5/SEER 14 ratings (bundled measure)
 - PTCS Heat Pump conversions (BPA Qualified)
 - PTCS Heat Pump Commissioning & Controls as a standalone (unbundled) measure
 - PTCS Geothermal (Ground-source) Heat Pump Systems
- PTCS Duct Sealing as a stand alone (unbundled) measure
 - PTCS Duct Sealing in Manufactured Homes
 - PTCS Duct Sealing in Existing Single-Family Homes

- PTCS Duct Sealing in Single-Family New Construction

HVAC Measures - Ductless Heat Pump (provisionally deemed)

Qualifying applications for DHPs include existing single-family homes with zonal electric heat, existing manufactured homes with zonal electric heat and existing multifamily homes with zonal electric heat.

Requirements and Specifications

- BPA will provide reimbursement for only one DHP per residence.
- The home must have permanently installed zonal electric resistance heating as the primary heating system.
- DHP systems with ducted indoor units do not qualify for BPA reimbursement.
- Zonal hydronic heating systems may be claimed for BPA reimbursement as zonal electric heat.
- Newly constructed homes (i.e., homes less than one year old) do not qualify for BPA’s DHP reimbursement.
- DHP must follow [specifications](#).
- DHP must be a split system heat pump employing inverter-driven outdoor compressor units, with inverter-driven or variable-speed indoor blowers.
- DHPs must be installed by a qualified contractor who has attended a Northwest Ductless Orientation and has received installation training from the manufacturer of the DHP equipment it installs.
- DHP applications for which there is no BPA reimbursement can be pursued as a custom project proposal (i.e., homes with electric forced-air furnaces or new construction, excluding Energy Star New Homes).

Additional Documentation Requirements

Required documentation must be sent to [Fluid Market Strategies](#) (Fluid). Fluid shall determine that the installation meets eligibility requirements and that the following forms are complete:

- Homeowner Participation Form (or approved utility form)
- Contractor Invoice Form (or approved utility form)
- Vendor invoice

The following must be maintained in the customer’s project file:

- Proof that the DHP installation has been submitted to Fluid and recorded in the [DHP regional database](#)

Reimbursement Strategies and Levels

Housing Description	Heating Type	Reimbursement
Single-Family (existing)	Zonal Electric Heat	\$1,500.00
Single-Family (existing)	Electric Forced-Air Furnace w/ or w/o Central Air Conditioning	\$0
Manufactured Homes (existing)	Zonal Electric Heat	\$1,500.00

Housing Description	Heating Type	Reimbursement
Manufactured Homes (existing)	Electric Forced-Air Furnace w/ or w/o Central Air Conditioning	\$0
Existing Multifamily	Zonal Electric Heat	\$1,000.00
Existing Multifamily	Electric Forced-Air Furnace w/ or w/o Central Air Conditioning	\$0

HVAC Measures - Ducted Systems with PTCS

BPA reimbursements for ducted HVAC systems with PTCS are available for single-family and manufactured homes and include high-efficiency heat pump upgrades, heat pump conversions and geothermal heat pump systems installed as specified by PTCS. Additional measures include PTCS commissioning and controls on new heat pumps and PTCS duct sealing on new and existing ducts.

PTCS work must be performed by a PTCS certified technician and must be certified as PTCS. A qualifying heat pump may be installed with electric or non-electric auxiliary heat systems; however, the electric heat pump must be the primary system used to meet the heating needs of the house to qualify for BPA reimbursement.

When more than 50% of the heating system ducts run through unconditioned space, the ducts must be sealed and PTCS certified. PTCS duct sealing is not required when (1) 50% or less of the heating system ducts run through unconditioned space or (2) the duct system has previously been sealed and has been PTCS certified.

The PTCS specifications are available in the [PTR system, under Downloads](#).

PTCS forms are available at the [PTCS Web site](#).

This section covers the additional requirements of the following:

- PTCS Air-source Heat Pump Upgrade, with minimum HSPF 8.5/SEER 14 ratings (bundled measure)
- PTCS Heat Pump conversions for electric forced-air furnaces (BPA Qualified)
- PTCS Heat Pump Commissioning & Controls as a stand alone (unbundled) measure, Federal Minimum Standard or better heat pump
- PTCS Geothermal (Ground-source) Heat Pump Systems
- PTCS Duct Sealing as a stand alone (unbundled) measure

PTCS Air-source Heat Pump Upgrade with Minimum HSPF 8.5/SEER 14 Ratings (bundled)

Requirements and Specifications

- Heat pump must be new and be installed according to "PTCS Air-source Heat Pump Installation Standards," available in the PTR system at the time of installation.

- All heat pump equipment must be ARI tested and certified. Manufacturer claims of equipment "equivalent to ARI certified equipment" will not be accepted.
- Heat pumps must be HSPF 8.5/SEER 14 or better. Allowable tradeoffs of the HSPF and SEER ratings are as follows:
 - A minimum SEER rating of 13.5 is acceptable if HSPF is at least 8.6.
 - A minimum SEER rating of 13.0 is acceptable if HSPF is at least 8.7.
- Homes with heated floor area greater than 4,500 square feet may claim up to two heat pump measures when two qualifying heat pumps are installed.
- PTCS duct sealing is required unless (1) 50% or less of the heating system ducts run through unconditioned space or (2) the duct system has previously been sealed and has been PTCS certified.

Additional Documentation Requirements

- PTCS heat pump form
- PTCS duct sealing form (if duct sealing is required)
- ARI certificate
- Copy of one of the following:
 - Whole-house heating and cooling calculation (ACAA Manual J) and balance-point worksheet
 - PTCS Heat Pump and Central Air Conditioner Sizing Calculator, which can be found under [Downloads in the PTR system](#)
- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been accepted in the [PTCS registry of certified units](#).

Reimbursement Strategies and Levels

The PTCS air-source heat pump upgrade measure is intended to provide an incentive to homeowners to install a high-efficiency heat pump, when replacing an existing heat pump; adding a heat pump to a system with gas backup; or installing a heat pump in a home that previously had zonal electric heat.

Customers converting an electric forced-air furnace to air-source heat pumps should claim the PTCS Heat Pump Conversion measure.

The reimbursement level for the PTCS air-source heat pump upgrade measure varies depending on the heating zone (HZ) and cooling zone (CZ) and whether PTCS duct sealing is required. See the reimbursement schedule in the table below.

HZ/CZ	PTCS Duct Sealing Required	PTCS Duct Sealing Not Required
HZ 1/CZ 1	\$915.00	\$470.00
HZ 1/CZ 2	\$935.00	\$480.00
HZ 1/CZ 3	\$975.00	\$500.00

HZ/CZ	PTCS Duct Sealing Required	PTCS Duct Sealing Not Required
HZ 2/CZ 1	\$1,380.00	\$650.00
HZ 2/CZ 2	\$1,390.00	\$665.00
HZ 2/CZ 3	\$1,425.00	\$685.00
HZ 3/CZ 1	\$1,730.00	\$780.00
HZ 3/CZ 2	\$1,750.00	\$790.00
HZ 3/CZ 3	\$1,790.00	\$815.00

PTCS Air-source Heat Pump Conversions (BPA Qualified)

The PTCS air-source heat pumps conversion measure is intended to provide an incentive to homeowners with an electric forced-air furnace to install a high-efficiency heat pump.

Requirements and Specifications

- Heat pump must be new and installed according to "PTCS Air-source Heat Pump Installation Standards," available in the PTR system at the time of installation.
- All heat pump equipment must be ARI tested and certified. Manufacturer claims of equipment "equivalent to ARI-certified equipment" will not be accepted.
- Heat pumps must be HSPF 8.5/SEER 14 or better. Allowable tradeoffs of the HSPF and SEER ratings are as follows:
 - A minimum SEER rating of 13.5 is acceptable when HSPF is at least 8.6.
 - A minimum SEER rating of 13.0 is acceptable when HSPF is at least 8.7.
- Homes with heated floor area greater than 4,500 square feet may claim up to two heat pump measures when two qualifying heat pumps are installed.
- PTCS duct sealing is required unless 50% or less of the heating system ducts run through unconditioned space or the duct system has previously been sealed and PTCS certified.

Additional Documentation Requirements

- PTCS heat pump form
- PTCS duct sealing form (if duct sealing is required)
- ARI certificate
- Copy of one of the following:
 - Whole-house heating and cooling calculation (ACAA Manual J) and balance-point worksheet
 - PTCS Heat Pump and Central Air Conditioner Sizing Calculator, which can be found under [Downloads in the PTR system](#)

- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been entered into the [PTCS registry of certified units](#) and "Accepted" in the PTCS Registry

Reimbursement Strategies and Levels

The reimbursement level varies depending on the efficiency of the heat pump installed and whether PTCS Duct Sealing is required. See the reimbursement schedule in the table below.

Type/HZ	PTCS Duct Sealing Required	PTCS Duct Sealing NOT Required
Single-family HZ 1	\$1,900.00	\$1,400.00
Single-family HZ 2	\$1,900.00	\$1,400.00
Single-family HZ 3	\$1,900.00	\$1,400.00
Manufactured home HZ 1	\$1,900.00	\$1,400.00
Manufactured home HZ 2	\$1,900.00	\$1,400.00
Manufactured home HZ 3	\$1,900.00	\$1,400.00

PTCS Heat Pump Commissioning & Controls (unbundled)

This measure is intended to provide an incentive for high-efficiency heat pumps and heat pumps meeting the federal minimum standard of 7.7 HSPF/13 SEER. The PTCS technician will correctly size the system to the heating load, test for sufficient air flow across the coils and install an auxiliary heat lockout when the outdoor temperature is above 30 degrees Fahrenheit.

This measure is available for Single-family New Construction, Single-family Existing Homes and existing Manufactured Homes. This reimbursement is available for any heat pump system regardless of the size of the home or the number of new heat pumps installed.

Requirements and Specifications

- Heat pump must be new and be installed according to "PTCS Air-source Heat Pump Installation Standards," available in the PTR system at the time of installation.
- This measure may be applied to any new heat pump and does not require a minimum HSPF or SEER rating.
- All heat pump equipment must be ARI tested and certified. Manufacturer claims of equipment "equivalent to ARI-certified equipment" will not be accepted.
- The BPA reimbursement is per new heat pump installed.

Additional Documentation Requirements

- PTCS heat pump form
- PTCS duct sealing form (if duct sealing is performed)

- ARI certificate
- Copy of one of the following:
 - Whole-house heating and cooling calculation (ACAA Manual J) and balance-point worksheet
 - PTCS Heat Pump and Central Air Conditioner Sizing Calculator, which can be found under [Downloads in the PTR system](#)
- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been accepted in the [PTCS registry of certified units](#)

Reimbursement Strategies and Levels

The reimbursement level varies depending on the application and whether duct sealing is also performed. See the reimbursement schedule in the table below.

Note: PTCS Duct Sealing is highly recommended (but not required) when a substantial percentage of the duct system is outside the heated envelope. If PTCS Commissioning and Controls is performed in combination with PTCS Duct Sealing, an additional \$50.00 reimbursement is provided to encourage contractors and homeowners to perform PTCS Duct Sealing when duct sealing is desirable.

PTCS Duct Sealing (unbundled) is located immediately following Ground-source Heat Pumps.

Measure	Manufactured Homes	Single-family Existing Homes	Single-family New Construction
PTCS System Commissioning & Controls	\$300.00	\$300.00	\$300.00
PTCS Duct Sealing	\$400.00	\$500.00	\$400.00
PTCS Commissioning & Controls with Duct Sealing	\$750.00	\$850.00	\$750.00

PTCS Geothermal (Ground-source) Heat Pump Systems (new)

This measure is available for Single-family New Construction and Single-family Existing Homes. The geothermal heat pump system application must be listed in the PTR system as a reportable, cost-effective measure.

Requirements and Specifications

- The replacement of an existing geothermal heat pump unit or the thermal exchange loop does not qualify for BPA reimbursement.
- Geothermal heat pump must be installed by a PTCS and IGSHPA certified technician. Contact [Ecos Consulting](#) for latest information on available training.
- Geothermal heat pump systems must be ENERGY STAR qualified, new and installed according to the "PTCS Ground-source Heat Pump Specifications,"

(available in the [PTR system under Downloads](#)) and IGSHPA specification at the time of installation.

- BPA will only provide one reimbursement per home for geothermal heat pumps and will only allow claims for geothermal heat pumps connected to hydronic heating systems in residential end-use applications provided all PTCS and IGSHPA specifications are met.

Additional Documentation Requirements

- PTCS Geothermal heat pump form
- PTCS duct sealing form (if duct sealing is required)
- Copy of one of the following:
 - Whole-house heating and cooling calculation (ACAA Manual J) and balance-point worksheet
 - PTCS Heat Pump and Central Air Conditioner Sizing Calculator, which can be found under [Downloads in the PTR system](#)
- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been accepted in the [PTCS registry of certified units](#)

Reimbursement Strategies and Levels

BPA sets reimbursements based on the incremental busbar energy savings from a standard air-source heat pump (upgrade to a geothermal system) regardless of the end user's reasons for the installation of the geothermal heat pump system.

Single-family installations in HZ 1: Reimbursement is \$2,400.00 per unit for cost-effective applications listed in the PTR system.

Single-family installations in HZs 2 and 3: Reimbursement is \$3,000.00 per unit for cost-effective applications listed in the PTR system.

Multifamily: Cost-effective geothermal heat pumps for all multifamily applications, including residential and commercial multifamily (greater than three stories), will be reimbursed according to the Commercial Sector reimbursement schedule as a custom project (See Commercial Sector for more information).

PTCS Duct Sealing (unbundled)

PTCS Duct Sealing (unbundled) may be applied to any new or existing heat pump or electric forced-air furnace in a new or existing single-family home, or a new or existing manufactured home.

To qualify, the pretest must show that duct sealing is required, and ducts must be outside the heated envelope (i.e., in an un-insulated crawlspace).

This section includes PTCS duct sealing in manufactured homes, PTCS duct sealing in existing single-family homes and PTCS duct sealing in single-family new construction.

PTCS Duct Sealing in Manufactured Homes

Requirements and Specifications

- All electrically-heated manufactured homes qualify for this measure if PTCS duct testing indicates that duct sealing is required to meet the PTCS specifications. Pre-existing duct leakage to the outside must be greater than 100 CFM₅₀ for single-wide homes or 75 CFM₅₀ leakage per section for multi-section homes (e.g., double wide 150 CFM₅₀, triple wide 225CFM₅₀).
- This measure applies to both new and existing manufactured homes, as long as the home meets the pre-test requirement stated above. In the PTR system, this measure is identified as "Existing Manufactured Homes."

Additional Documentation Requirements

- PTCS duct sealing form
- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been accepted in the [PTCS registry of certified units](#)

Reimbursement Strategies and Levels

Reimbursement is \$400.00 for PTCS Duct Sealing in electrically-heated manufactured homes for all climate zones.

PTCS Duct Sealing in Existing Single-family Homes

Requirements and Specifications

All electrically-heated existing single-family homes qualify for this measure if PTCS duct testing indicates that duct sealing is required to meet the PTCS specifications. Pre-existing duct leakage to the outside must be greater than 250 CFM₅₀ or 15 percent of the floor area, whichever is less.

Additional Documentation Requirements

- PTCS duct sealing form
- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been accepted in the [PTCS registry of certified units](#)

Reimbursement Strategies and Levels

Reimbursement is \$500.00 for PTCS Duct Sealing in electrically-heated existing single-family homes for all climate zones.

PTCS Duct Sealing in Single-family New Construction

Requirements and Specifications

- The home must be new construction and not have been occupied for more than one year.
- Pre-existing duct leakage test is not required.

Additional Documentation Requirements

- PTCS duct sealing form
- Vendor invoices
- Proof that the required PTCS form(s), for unit being claimed, has been accepted in the [PTCS registry of certified units](#)

Reimbursement Strategies and Levels

Reimbursement is \$400.00 for PTCS Duct Sealing in electrically-heated single-family new construction for all climate zones.

Line-Voltage Thermostats

Requirements and Specifications

This measure applies to replacement of bi-metal line voltage thermostats in existing single-family homes with line-voltage electronic thermostats. All existing thermostats, except those in bathrooms, must be replaced with thermostats in accordance with the most recent version of the "Electronic Thermostat Specifications," which are available in the PTR system.

Additional Documentation Requirements

- Statement noting that all thermostats (except those located in bathrooms) have been replaced
- Invoice for thermostats
- Model number(s) of thermostat(s)

Reimbursement Strategies and Levels

Reimbursements are per home as listed in the table below.

HZ	Reimbursement
HZ 1	\$115.00
HZ 2	\$160.00
HZ 3	\$160.00

New Construction

New ENERGY STAR Manufactured Homes

Requirements and Specifications

BPA will reimburse customers for energy-efficient upgrades to new electrically-heated manufactured homes on the condition that residences have been designed, constructed and certified by the Northwest Energy Efficient Manufactured (NEEM) Homes program as ENERGY STAR, including Eco-Rated Homes.

NEEM has an online tracking and certification system. Contact [Mark Johnson](#), BPA at 503-230-7669 for current information.

Other deemed measures eligible to be added to a NEEM-certified ENERGY STAR manufactured home include the following:

- PTCS Air-Source Heat Pumps Conversion measure (bundled)
- PTCS Air-Source Heat Pump Upgrade measure (bundled)
- PTCS Commissioning and Controls on a code minimum air-source heat pump
- PTCS Duct Sealing, if pretest demonstrates ducts need sealing
- ENERGY STAR lighting fixtures or CFLs
- ENERGY STAR clothes washers, refrigerators and freezers

Additional Documentation Requirements

- Installation address
- Copy of NEEM Certificate of Compliance

Reimbursement Strategies and Levels

HZ	Reimbursement
HZ 1	\$ 850.00
HZ 2	\$1,150.00
HZ 3	\$1,450.00

New ENERGY STAR Site-Built Homes

Requirements and Specifications

BPA will accept claims for new electrically-heated homes certified compliant with the [ENERGY STAR Homes Northwest standards](#) by the state certifying organization.

Gas-heated ENERGY STAR homes do not qualify for BPA reimbursements under new construction, however, reimbursements for electric appliances and lighting may be claimed in gas heated homes.

In multiplex units where each unit is separated fully from ground-to roof by double party wall construction, BPA will allow such units to be classified as single-family units (i.e., townhouses, condominiums or row houses).

BPA will accept claims for homes built to ENERGY STAR Homes Northwest standards:

- Builder Option Package #1 if a heat pump is installed or for
- Builder Option Package #2 (zonal electric heat)
- Oregon High Performance Home Builder Option Package

BPA shall accept claims for homes built to ENERGY STAR Homes Northwest standards using one of several approved technical compliance options. The qualifying and non-qualifying Technical Compliance Options (TCOs) are listed in the table below.

Technical Compliance Option	Option Type & BPA Credit Qualification	Does Not Qualify for BPA Credit	General Description
TCO #1: Perimeter Insulated Crawlspace	Component Trade-Off Qualifies for BPA credit if heat pump is installed in home east of the Cascades.		Perimeter insulated crawlspaces are specified with a package of measures as an alternative for insulated floor in NWBOP#1.
TCO #2	No longer available	No longer available	
TCO #3: Advanced Lighting Package	Component Trade-Off Qualifies for BPA credit in home with heat pump or zonal electric heat.		EPA's Advanced Lighting Package using efficient fixtures, in targeted locations, as an option for meeting ENERGY Star lighting requirement (50 percent of sockets).
TCO #4: Natural Gas Fired Hydronic Heating		Component Trade-Off does not qualify for BPA credit.	Alternative heating system source and distribution measures using natural gas fired boilers or integrated water heating systems
TCO #5: Electric Fired Hydronic Heating	Component Trade-Off Qualifies for BPA credit as an ENERGY STAR home with zonal electric heat.		Alternative heating system source and distribution measures using electric fired boilers or integrated water heating systems. NWBOP#2
TCO #6: U-Value Equivalency	Component Trade-Off Qualifies for BPA credit if electric energy savings are maintained or improved.		Spreadsheet driven Ua/Uo calculator with component library and prototype weightings - allows TCOs (only) to review proposed measure trade-offs and approve equivalent component substitutions within NWBOP#1
TCO #7: U-Value Equivalency	Component Trade-Off Qualifies for BPA credit if electric energy savings are maintained or improved.		Spreadsheet driven Ua/Uo calculator with component library and prototype weightings -allows TCOs (only) to review proposed measure trade-offs and approve equivalent component substitutions within NWBOP#2
TCO #8: Improved Ua		Component Trade-Off does not qualify for	Substitutes improved Ua features (R-49 adv. attics and R-21 adv.

Technical Compliance Option	Option Type & BPA Credit Qualification	Does Not Qualify for BPA Credit	General Description
for DHW EF,		BPA credit.	wall) for reduced gas water heater efficiency within NWBOP#1.
TCO #9: 0.74 AFUE gas fireplace with electric zonal back up,		Component Trade-Off does not qualify for BPA credit.	Allows a gas unit heater (ductless) such as a fireplace in combination with electric resistance zonal (ductless) as the heating source within NWBOP#1
TCO #10: Ductless heat pump with electric zonal back up,	Component Trade-Off Qualifies for BPA credit as an ENERGY STAR home.		Allows a DHP in combination with electric resistance zonal heating source within NWBOP#1
TCO #11: 90 AFUE propane furnace substitute for 80 AFUE		Component Trade-Off does not qualify for BPA credit.	Substitute a 90 AFUE propane furnace for a 90 AFUE gas furnace. This substitution will allow the home to qualify if all other components of the home meet the NWBOP#1 requirements. Propane water heater may also be substituted for gas at the required efficiency levels within NWBOP#1.
TCO #12: HSPF 8.3 heat pump coupled to a 90 AFUE gas furnace		Component Trade-Off does not qualify for BPA credit, electric energy savings not maintained.	Allow a HSPF 8.3 heat pump when coupled to a 90 AFUE gas furnace backup that provides all heating at temperatures below 40 degrees F as a trade-off option in NWBOP#1.
TCO #13: Cathedral Attic	Alternate Compliance Option: Qualifies for BPA credit if heat pump is installed.		This TCO only applies to ENERGY STAR homes in Montana or Idaho. Attic ceiling shall be insulated with R-33 foam applied in place. All other NWBOP#1 requirements still apply.
TCO #14: Lighting Power Density/Watts per ft ²	Alternate Compliance Option: Qualifies for BPA credit.		Fifty percent CFL sockets are not required to qualify lighting if homes lighting requirements are met w/ 1.1 watts per ft ² or less. Lighting spreadsheet required in NWBOP#1.
TCO #15: Conditioned Crawlspace	Alternate Compliance Option: Qualifies for BPA credit if heat pump is installed.		This TCO only applies to ENERGY STAR homes built east of the Cascades. Crawlspace is sealed and insulated using perimeter insulation in place of floor insulation. Wall and ceiling insulation improvements are required in NWBOP#1.
TCO #16	NWBOP #2, Alternate Compliance Option		Increase envelope insulation values and install a simple, point source, energy recovery ventilator

Technical Compliance Option	Option Type & BPA Credit Qualification	Does Not Qualify for BPA Credit	General Description
			in place of a central ventilation system within NWBOP#2.
TCO #17	Alternate Compliance Option, to NWBOP#2 for homes with zonal electric heat. Qualifies for BPA credit.		Increase envelope insulation values, improve window performance and install a bathroom exhaust fan with timer in place of place of a central ventilation system with heat recovery within NWBOP#2.
TCO OR #14 (Oregon Only)	Alternate Compliance Option: Lighting Density Package/Watts per ft ² .		Allows alternate path to satisfy BOP or Advanced Lighting Package lighting requirements
TCO#001 OR (Oregon Only)		Alternate Path to meet 2009 Oregon BOP#1 for homes with gas fired hydronic heating systems. Does not qualify for BPA credit.	Requires increase in shell R-values as component trade off to ORBOP#1 requirements.
TCO #002 OR (Oregon Only)		Alternate Path to meet 2009 Oregon BOP#1 for homes with gas stove, fireplace or wall furnace with zonal electric backup. Does not qualify for BPA credit.	Requires increase in shell R-values and Window U-values as component trade off to ORBOP#1 requirements.

Deemed measures eligible to be added to an ENERGY STAR site-built home include the following:

- ENERGY STAR lighting measures above what the ENERGY STAR homes measure requires
- ENERGY STAR clothes washers, ENERGY STAR refrigerators, ENERGY STAR freezers
- Gravity-film heat exchangers (GFX)

Additional Documentation Requirements

- Installation address
- Copy of the certification label provided by the state certifying organization which includes the name of the certifier for each ENERGY STAR home

Reimbursement Strategies and Levels

BPA shall provide reimbursements as shown in the tables below.

ENERGY STAR Site-Built Homes Reimbursements for Homes built to BOP #1, with a Heat Pump or an Approved TCO

HZ/ CZ	Ducts Outside where Duct Sealing is required*	Ducts Inside where Duct Sealing is not required*
HZ 1/CZ 1	\$1,140.00	\$ 600.00
HZ 1/CZ 2	\$1,180.00	\$ 600.00
HZ 1/CZ 3	\$1,250.00	\$ 600.00
HZ 2/CZ 1	\$1,800.00	\$ 850.00
HZ 2/CZ 2	\$2,000.00	\$ 850.00
HZ 2/CZ 3	\$2,100.00	\$ 850.00
HZ 3/CZ 1	\$2,600.00	\$1,020.00
HZ 3/CZ 2	\$2,700.00	\$1,020.00
HZ 3/CZ 3	\$2,800.00	\$1,020.00

*See HVAC section for definitions.

ENERGY STAR Site-Built Homes Reimbursements for Homes built to BOP #2, with Zonal Electric Heat

HZ	Reimbursement
HZ 1	\$1,170.00
HZ 2	\$1,400.00
HZ 3	\$1,600.00

New Homes Built to the Montana House Specifications

Requirements and Specifications

BPA shall accept claims for new electrically-heated homes certified compliant with the Montana House Specifications by the customer. The Montana House Specifications are in the PTR system. Currently this measure is available only for homes built in Montana and in HZ 2 and HZ 3 of Idaho, Wyoming and Nevada.

Deemed measures eligible to be added to a Montana House site-built home include the following:

- ENERGY STAR lighting measures above what the Montana House specifications requires
- ENERGY STAR clothes washers, ENERGY STAR refrigerators, ENERGY STAR freezers
- Gravity-film heat exchangers

Summary of Montana House New Construction - Prescriptive Component Requirements

Insulation			
Ceiling		R-49 Adv.	Flat or vaulted.
Wall (above grade)		R-21 Int. + R-5 foam	
Floors over Unconditioned Space		R-38	Insulation in floor joist cavity.
Slab Floors	Unheated	R-10 Full Slab + R-5 Thermal Break	Applies to all concrete slab floors above or below grade. Minimum R-5 thermal break required between slab edge and all walls and footings.
	Heated Radiant	R-15 Perimeter, R-10 Remaining Slab + R-5 Thermal Break	Applies to all concrete slab floors above or below grade. Perimeter insulation shall be installed for a distance of 4 feet vertical, horizontal, or combined distance. Minimum R-5 thermal break required between slab edge and all walls and footings.
Basement Wall		R-21	Below-grade walls can extend up to 24 inches above grade.
Sealed Crawlspace Wall		R-21	The crawlspace wall shall be sealed and mechanical ventilation shall be provided. Sealed crawlspaces shall be considered conditioned space.
Windows & Doors			
Glazing	Windows	≤ U-0.32	NFRC rated: Up to 1% of heated floor area exempt.
	Skylights	≤ U-0.50	Skylight area shall not exceed 5% of heated floor area.
	Max. Glazing Area	21% of Heated Floor Area	Combined window and skylight area.
Exterior Doors		≤ U-0.16	One door up to 28 ft ² exempt.
Ducts in Unconditioned Space			
Insulation	Rigid	R-11	
	Flexible	R-8	
Sealing		Mastic	Cloth duct tape not allowed.
Max. Leakage		Not tested	
Ventilation & Air Sealing			
Ventilation System		Whole-House	Mechanical ventilation system required.
Envelope Tightness		6.0 ACH @ 50Pa	Customer to test 10% of homes
Heating & Cooling Equipment			
Heat Pump		8.5 HSPF/SEER 13	Installed according to Montana House New Construction specifications for sizing and controls.
Air Conditioner		SEER 13	
Zonal Electric			Electronic thermostat required.
Forced-air Electric			ENERGY STAR programmable thermostat required.
Water Heating			
Electric Water Heaters	≤ 39 gallons		Energy Factor ≥ 0.96
	40 to 49 gallons		Energy Factor ≥ 0.94
	50 to 64 gallons		Energy Factor ≥ 0.93
	≥ 65 gallons		Energy Factor ≥ 0.91
Appliances & Lighting			
Appliances		ENERGY STAR qualified	Applies to built-in appliances only.
Lighting		ENERGY STAR qualified	A minimum of 50% of sockets to be either ENERGY STAR bulbs, fixtures, or both.

Additional Documentation Requirements

- Builder information (name and contact information).
- House information (including):
 - Installation address
 - Foundation type
 - Square footage of home
 - Heating system equipment type (zonal, forced-air furnace, HP, GSHP)
 - Type of ventilation system and specific measure installed including rated CFM, etc.
 - Reports of inspections performed by the customer, including any substantial findings and documentation of any corrective actions taken

Reimbursement Strategies and Levels

BPA shall provide reimbursement for the Montana House as indicated below. Heat Pump, Duct Sealing and Commissioning & Control reimbursements can be combined with the Shell Upgrade reimbursement.

Measure	Reimbursement
Shell Upgrades Only	\$1,500.00
Air-source Heat Pump	\$300.00
Duct Sealing (prescriptive)	\$300.00
Commissioning & Controls (customer verified)	\$200.00

New Multifamily Construction

Requirements and Specifications

New multifamily construction of five or more units and fewer than three stories can be made more efficient than code or standard practice per the latest version of the RTF “Multifamily New Construction Low Rise Technical Specifications” (available in the PTR system). Deemed measures eligible to be added to multifamily homes include ENERGY STAR lighting measures, ENERGY STAR clothes washers, ENERGY STAR refrigerators, ENERGY STAR freezers, ENERGY STAR dishwashers and cost-effective gravity-film heat exchangers (GFX).

Projects not meeting the prescriptive specifications that qualify as being above code or standard practice efficiency must be reviewed and approved by BPA as custom projects. The amount and type of M&V required will be determined by the BPA reviewing engineer but is not expected to be complex.

Multifamily housing above three stories is considered commercial construction and must be submitted for new construction incentives and BPA pre-approval (i.e., a custom project proposal) under the Commercial Sector. The table below summarizes the required prescriptive path for compliance with the multifamily New Construction Low Rise Specifications.

Multifamily New Construction Specifications—Summary¹

Component		Heating Zone 1 (<6,000 HDD)	Heating Zone 2 (6,000-7,500 HDD)	Heating Zone 3 (>7,500 HDD)
Ceilings ²	Attic	R-38 Std.	R-38 Std.	R-38 Std.
	Vaults	R-30	R-30	R-30
Walls ²	Above Grade	R-21, Inter.	R-21, Inter.	R-21, Inter.
	Below Grade Inter. w/R-5 thermal break ⁴	R-21	R-21	R-21
Floors	Over Crawlspace and Unheated Basements	R-30	R-30	R-30
	Slab-on-Grade Perimeter	R-15	R-15	R-15
Glazing ³	Maximum NFRC rated U-value	U-0.30	U-0.30	U-0.30
	Exterior Doors	U-0.19	U-0.19	U-0.19
Duct Insulation	Rigid	R-11	R-11	R-11
	Flexible	R-8	R-8	R-8
Water Heaters		<i>Please see the Multifamily New Construction specification found in the PTR system under Downloads.</i>		
Mechanical ventilation and pollutant source control in all climate zones.				

- ¹ This table presents a summary of the requirements - the RTF's multifamily new construction specifications must be followed.
- ² Inter. indicates intermediate framing techniques
- ³ An area weighted U-value for windows which meets the component requirement of this table is acceptable.
- ⁴ A thermal break having a minimum value of R-5 is required between slab floors and all walls and footings.

Additional Documentation Requirements

- Installation address
- Copy of the certification label provided by the state certifying organization which includes the name of the certifier

Reimbursement Strategies and Levels

Projects meeting the latest version of the RTF “Multifamily New Construction Low Rise Technical Specifications” (available in the PTR system) will be reimbursed on a per unit basis as outlined in the table below.

HZ	Reimbursement
HZ 1	\$80.00
HZ 2	\$115.00
HZ 3	\$140.00

Weatherization (standard income)

BPA shall provide reimbursements for weatherization measures in homes with permanently-installed electrical heat for insulation, windows and air sealing.

To be eligible for reimbursement, weatherization measures must follow the most recent site-built weatherization specifications or mobile home weatherization specifications, available in the [PTR system, under Downloads](#).

Insulation

Requirements and Specifications

Insulation measures must follow the latest version of the [Weatherization Specifications found in the PTR system](#). Eligible insulation measures by construction type are listed below.

Insulation – Single-family

Single-family measures and pre-condition requirements are listed below. Single-family is defined as four or fewer units.

Attic Insulation (Single-family)

Existing is	Installed will be
less than R-11	R-19, R-38 or R-49
R-11 to R-19	R-38 or R-49
R-19 to R-38	R-49

Wall Insulation (Single-family)

Existing is	Installed will be
none present	Closed cavity - R-11 or fill cavity
none present	Open cavity - R-15

Floor Insulation (Single-family)

Existing is	Installed will be
less than R-11	R-19 or R-30
R-11 to R-19	R-30

Insulation – Multifamily

Multifamily (low rise) is defined as more than four units, less than four stories. Multifamily buildings more than three stories high are commercial construction.

Attic Insulation (Multifamily)

Existing is	Installed will be
less than R-11	R-19 or R-38
R-11 to R-19	R-38

Wall Insulation (Multifamily)

Existing is	Installed will be
none present	Closed cavity- R-11 or fill cavity
none present	Open cavity – R-15

Floor Insulation (Multifamily)

Existing is	Installed will be
less than R-11	R-19 or R-30
R-11 to R-19	R-30

Insulation - Manufactured Homes

Attic Insulation (Manufactured Homes)

Existing is	Installed will be
less than R-11	R-19
less than R-11*	R-30*
R11 to R-19**	R-30**
*This measure is not cost-effective in HZ 1; therefore, no credit is available for this zone.	
**This measure is not cost-effective in HZ 1 & HZ 2; therefore, no credit is available for these zones.	

Floor Insulation (Manufactured Homes)

Existing is	Installed will be
less than R-11	R-11

Additional Documentation Requirements

- Audit or field notes detailing pre- and post conditions
- Vendor invoices
- Documentation of square feet of insulation and R-value of insulation

Reimbursement Strategies and Levels

Reimbursements and busbar energy savings for specific measures can be found in the PTR system.

Reimbursement is based on square footage of insulation installed.

Prime Window Replacement

Requirements and Specifications

Window measures must follow the latest version of the weatherization specifications found in the PTR system under Downloads.

Pre-existing windows must be single pane, single pane with storms or double pane with metal frames.

The weighted average of replacement windows installed must have a National Fenestration Rating Council (NFRC) rated U-value of 0.30 or lower. All patio doors shall have a NFRC rated U-value of 0.35 or lower.

Additional Documentation Requirements

- Installation address
- Audit or field notes detailing pre- and post conditions
- Vendor invoice
- Documentation of total square footage of windows replaced

- Documentation of U-value (NFRC stickers or other verification of U-value)

Reimbursement Strategies and Levels

BPA shall provide a reimbursement of \$6.00 per square foot of glazing area of qualified windows replaced.

The BPA credit for this measure is based on the incremental improvement in performance from the pre-existing window to an ENERGY STAR window with a U-value of 0.30 or less.

Air Sealing

Requirements and Specifications

- Air-sealing measures must follow the latest version of the “Air Sealing” specifications found in the PTR system.
- If combustion appliances are present (fireplace, wood or gas stove, gas range, gas water heater, etc.) a UL- or CUL-approved carbon monoxide detector must be installed.
- Mechanical ventilation may be required. See section two of the [Air Sealing specifications found in the PTR system](#).
- If PTCS Duct Sealing is performed at the same time as the air sealing measure, the baseline blower door CFM₅₀ reading for the air sealing measure should be taken after duct sealing and the PTCS Total Leakage to Outside post test has been completed.

Additional Documentation Requirements

- Vendor invoice
- Audit or field notes detailing
 - Pre- and post-conditions (ACH at 50 CFM and ACH at natural pressure)
 - Total square footage of the pressure zone being tested and sealed (typically this is the interior floor area of the home)
 - Building volume
 - Final ACH_{natural} and notes on mechanical ventilation requirement

Reimbursement Strategies and Levels

BPA shall reimburse based on the total square floor area of the pressure zone being tested and sealed times the reduction in air infiltration per 0.1 ACH natural. Reimbursements and busbar energy savings can be found in the PTR system. The calculation of reimbursement is ft² of affected floor area x (change in ACH natural / .1) x BPA reimbursement.

This calculation is performed in the Add to Cart page in the PTR system.

Note: Converting CFM₅₀ to ACH_{natural}.

Building Volume (BV) = Area treated in ft² X Ceiling height in feet

$$ACH_{50} = (CFM_{50} \times 60) / BV$$

$$ACH_{natural} = ACH_{50} / n^*$$

Total Credit = ((Pre $ACH_{natural}$ minus Post $ACH_{natural}$) / 0.1) X credit in PTR system.

*n is a Lawrence Berkeley Laboratory (LBL) correlation factor that is above-grade story-dependent. Use your height-corrected n factor here.

Stories	n-factor
1	20
1.5	17.8
2	16.2
2.5	15.2
3	14.4

Low-income Weatherization

BPA shall provide reimbursements for low-income weatherization measures in electrically-heated homes for insulation, windows and air sealing.

Because customers that provide funding for low-income programs to Low-income Weatherization Service Providers (LIWSP) must ensure the measures are cost-effective and qualifying, BPA has attached a simple list of the qualifying measures.

BPA will reimburse customers on a dollar-for-dollar basis, with the exception of low-income prime window replacements in which the reimbursement is up to \$20.00 per square foot not to exceed 100 percent of the actual cost (listed as a separate measure, below).

Under a separate BPA program, BPA shall directly fund low-income weatherization through the existing state/LIWSP/tribal infrastructure.

Requirements and Specifications

Customers may (1) run their own low-income weatherization program using CRC or bilateral funds or (2) fund low-income weatherization efforts by providing CRC funds to state/LIWSP/tribal organizations. Low-income activity qualifies for the performance payment, regardless of whether a customer provides funds to a LIWSP or runs its own program.

Customers choosing to run their own low-income weatherization program must be in substantial compliance with programs currently funded by BPA grants for the U.S. Department of Energy Low-income Weatherization Program. Eligible measures are those that the RTF has defined as Total Resource Cost (TRC) cost-effective that are also approved by BPA. Note that BPA eligible measures might be different than eligible measures defined using the U.S. Department of Energy's Savings to Investment Ratio (SIR) method.

The following conditions apply to all low-income weatherization programs:

- Customers must have a written agreement with the LIWSP outlining terms and conditions and reporting requirements.

- BPA Energy Efficiency funds may be used to do repair work directly associated with installation of cost-effective weatherization measures, but these funds may not be comingled with other BPA funds provided to state/LIWSP/tribal organizations for the same work.
- Low-income activity qualifies for the performance payment, regardless of whether a customer provides funds to a LIWSP or runs its own program.
- Eligible measures must be reported in the PTR system. The customer is required to enter the square footage data on a measure basis. Data on a house-by-house basis is not required in the PTR system; however, house-by-house data must be maintained in customer records.
- Oversight:
 - Customers need to provide an appropriate level of oversight to ensure that funds provided to LIWSPs are used only to install eligible measures.
 - Customers and LIWSPs must expect the same level of oversight and diligence from BPA on low-income weatherization claims as they would expect for other reported activity using BPA funds.

Additional Documentation Requirements

- Documentation detailing cost of installed measures
- Documentation of the weatherization measures installed (e.g., square feet of insulation, R-value, U-value, National Fenestration Rating Council sticker)

Reimbursement Strategies and Levels

BPA reimburses dollar-for-dollar for cost-effective retrofit air sealing, insulation and duct sealing measures on the RTF list. Deemed busbar energy savings and reimbursement levels for the measures are listed in the “Low-income Weatherization List” table below and are provided in the PTR system. Low-income window replacement information may be found in the separate measure section, below.

All costs directly attributable to the installation of the measure are eligible for dollar-for-dollar reimbursement. This includes costs associated with low-income weatherization projects necessary to protect the integrity of the measure including, but not limited to, the following:

- Manufactured Home EPDM roofing membrane over rigid insulation
- Attic and crawl space ventilation
- Under-floor moisture barrier
- Insulation of exposed water lines

Low-income Weatherization List

Shaded Measures Do Not Qualify for Low-income Weatherization Measure Credit.	
Technology, Measure or Practice	"Qualifies" or "Does Not Qualify"
Single-family (All Heating Zones)	
Single-family Weatherization—Infiltration Control (Cost and energy savings per square feet of floor area for each 0.1 ach reduction.)	Qualifies
Single-family Weatherization—R0 to R19 Attic Insulation (Cost and energy savings are per square feet of attic area insulated.)	Qualifies
Single-family Weatherization—R19 to R38 Attic Insulation (Cost and energy savings are per square feet of attic area insulated.)	Qualifies
Single-family Weatherization—R38 to R49 Attic Insulation (Cost and energy savings are per square feet of attic area insulated.)	Qualifies
Single-family Weatherization—R0 to R19 Floor Insulation (Cost and energy savings are per square feet of floor area insulated.)	Qualifies
Single-family Weatherization—R19 to R30 Floor Insulation (Cost and energy savings are per square feet of floor area insulated)	Qualifies
Single-family Weatherization—R0 to R11 Wall Insulation (Cost and energy savings are per square feet of wall area insulated.)	Qualifies
Multifamily (All Heating Zones)	Qualifies
Multifamily Weatherization—R0 to R19 Attic insulation (Cost and energy savings are per square foot of attic area insulated.)	Qualifies
Multifamily Weatherization—R19 to R38 Attic insulation (Cost and energy savings are per square foot of attic area insulated.)	Qualifies
Multifamily Weatherization—R0 to R19 Floor insulation (Cost and energy savings are per square foot of floor area insulated.)	Qualifies
Multifamily Weatherization—R19 to R30 Floor insulation (Cost and energy savings are per square foot of floor area insulated.)	Qualifies
Multifamily Weatherization—R0 to R11 Wall Insulation (Cost and energy savings are per square foot of area insulated.)	Qualifies
Multifamily Weatherization—Infiltration Control	Does Not Qualify
Manufactured Homes (HZ 1)	

Technology, Measure or Practice	"Qualifies" or "Does Not Qualify"
Manufactured Home Weatherization—Infiltration Control (Cost and energy savings are per square foot of floor area per 0.1 air change per hour infiltration rate reduction.)—HZ 1	Qualifies
Manufactured Home Weatherization—Attic Insulation R0 to R19 (Cost and energy savings are per square foot of attic insulated.)—HZ 1	Qualifies
Manufactured Home Weatherization—Attic Insulation R19 to R30 (Cost and energy savings are per square foot of attic insulated.)—HZ 1	Does Not Qualify
Manufactured Home Weatherization—Floor Insulation R0 to R11 (Cost and energy savings are per square foot of floor insulated.)—HZ 1	Qualifies
Manufactured Home Weatherization—Floor Insulation R11 to R22 (Cost and energy savings are per square foot of floor insulated.)—HZ 1	Does Not Qualify
Manufactured Homes (HZ 2)	
Manufactured Home Weatherization—Infiltration Control (Cost and energy savings are per square foot of floor area per 0.1 air change per hour infiltration rate reduction.)—HZ 2	Qualifies
Manufactured Home Weatherization—Attic Insulation R0 to R19 (Cost and energy savings are per square foot of attic insulated.)—HZ 2	Qualifies
Manufactured Home Weatherization—Attic Insulation R19 to R30 (Cost and energy savings are per square foot of attic insulated.)—HZ 2	Does Not Qualify
Manufactured Home Weatherization—Floor Insulation R0 to R11 (Cost and energy savings are per square foot of floor insulated.)—HZ 2	Qualifies
Manufactured Home Weatherization—Floor Insulation R11 to R22 (Cost and energy savings are per square foot of floor insulated.)—HZ 2	Does Not Qualify
Manufactured Homes (HZ 3)	
Manufactured Home Weatherization—Infiltration Control (Cost and energy savings are per square foot of floor area per 0.1 air change per hour infiltration rate reduction.)—HZ 3	Qualifies
Manufactured Home Weatherization—Attic Insulation R0 to R19 (Cost and energy savings are per square foot of attic insulated.)—HZ 3	Qualifies
Manufactured Home Weatherization—Attic Insulation R19 to R30 (Cost and energy savings are per square foot of attic insulated.)—HZ 3	Qualifies
Manufactured Home Weatherization—Floor Insulation R0 to R11 (Cost and energy savings are per square foot of floor insulated.)—HZ 3	Qualifies
Manufactured Home Weatherization—Floor Insulation R11 to R22 (Cost and energy savings are per square foot of floor insulated.)—HZ 3	Does Not Qualify
PTCS Duct Sealing	

Technology, Measure or Practice	"Qualifies" or "Does Not Qualify"
Gas-Heated Homes—Cooling Only (All Cooling Zones)	
Manufactured Home w/o Electric Heat, w/ CAC—PTCS Duct Sealing	Does Not Qualify
Manufactured Home Natural Choice, w/ CAC—PTCS Duct Sealing	Does Not Qualify
Single-family w/o Electric Heat w/ CAC—PTCS Duct Sealing	Does Not Qualify
Electrically Heated Homes (Single-family and Manufactured Homes)	
HZ 1	
Manufactured Home Non-SGC Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 1	Qualifies
Manufactured Home SGC Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 1	Qualifies
Single-family Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 1	Qualifies
HZ 1/CZ 1	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 1	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 1/CZ 1	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 1	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 1/CZ 1	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 1	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 1/CZ 1	Qualifies
HZ 1/CZ 2	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 2	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 1/CZ 2	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 2	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 1/CZ 2	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 2	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 1/CZ 2	Qualifies
HZ 1/CZ 3	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 3	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 1/CZ 3	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 3	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 1/CZ 3	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 1/CZ 3	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 1/CZ 3	Qualifies

Technology, Measure or Practice	"Qualifies" or "Does Not Qualify"
HZ 2	
Manufactured Home Non-SGC Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 2	Qualifies
Manufactured Home SGC Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 2	Qualifies
Single-family Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 2	Qualifies
HZ 2/CZ 1	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 1	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 2/CZ 1	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 1	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 2/CZ 1	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 1	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 2/CZ 1	Qualifies
HZ 2/CZ 2	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 2	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 2/CZ 2	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 2	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 2/CZ 2	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 2	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 2/CZ 2	Qualifies
HZ 2/CZ 3	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 3	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 2/CZ 3	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 3	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 2/CZ 3	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 2/CZ 3	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 2/CZ 3	Qualifies
HZ 3	
Manufactured Home Non-SGC Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 3	Qualifies
Manufactured Home SGC Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 3	Qualifies
Single-family Forced-air Furnace w/o CAC—PTCS Duct Sealing HZ 3	Qualifies
HZ 3/CZ 1	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 1	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 3/CZ 1	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 1	Qualifies

Technology, Measure or Practice	"Qualifies" or "Does Not Qualify"
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 3/CZ 1	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 1	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 3/CZ 1	Qualifies
HZ 3/CZ 2	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 2	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 3/CZ 2	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 2	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 3/CZ 2	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 2	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 3/CZ 2	Qualifies
HZ 3/CZ 3	
Manufactured Home Non-SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3/CZ 3	Qualifies
Manufactured Home Non-SGC Heat Pump—PTCS Duct Sealing HZ 3/CZ 3	Qualifies
Manufactured Home SGC Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3—CZ 3	Qualifies
Manufactured Home SGC Heat Pump—PTCS Duct Sealing HZ 3—CZ 3	Qualifies
Single-family Forced-air Furnace w/ CAC—PTCS Duct Sealing HZ 3—CZ 3	Qualifies
Single-family Heat Pump—PTCS Duct Sealing HZ 3—CZ 3	Qualifies

Low-income Window Replacement

Requirements and Specifications

Window measures must follow the latest version of the weatherization specifications found in the [PTR system under Downloads](#). Pre-existing windows must be single pane, single pane with storms, or double pane with metal frames. The weighted average of replacement windows must have an NFRC rated U-value of 0.30 or lower, and patio doors must have a NFRC rated U-value of 0.35 or lower.

Additional Documentation Requirements

- Invoice, including installation address
- Documentation of number of windows and total square footage replaced
- NFRC sticker or equivalent
- Description of home (stick built or manufactured) and original window and frame

Reimbursement Strategies and Levels

BPA reimburses for single-family, multifamily, and manufactured home applications on a dollar-for dollar basis, not to exceed \$20.00 per square foot of glazing area.

Residential Custom Projects

Requirements and Specifications

Residential custom projects may be submitted using the custom project process outlined in the Multi-Sector chapter.

Additional Documentation Requirements

No additional requirements.

Reimbursement Strategies and Levels

Residential custom projects are reimbursed \$0.30 per measured first year kWh savings or 70 percent of the actual incremental cost, whichever is lower.

Multi-Sector Opportunities

Additional Residential opportunities are available in the Multi-Sector chapter.

Please see the Multi-Sector chapter for information on the following:

- Processes
 1. Custom Projects
 2. Direct Acquisition
 3. Third Party Contributions
- Measures and Initiatives
 1. Limited Availability Emerging Technology Demonstration Pilots
 2. Variable Frequency Drives in Small Compressed Air Systems

8. Multi-Sector

Please check the key changes summary on page i of this document to see if significant changes were made to any of the measures in this sector.

This section contains general information applicable across sectors, including both processes and measures and initiatives.

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The Multi-Sector section includes processes, measures and initiatives that apply across two or more sectors.

Reimbursement Summary*

Program Component or Measure	Reimbursement
Third party contributions	Dollar-for-dollar credit with limitations
Green Motors	\$2.00/hp
Lighting	See PTR system.
Limited Availability Emerging Technology Demonstration Pilots	Not applicable.
Variable Frequency Drives in Small Compressed Air System	\$0.25/kWh or 70% of project incremental cost

* The reimbursement levels described in this table provide a summary only. Complete details of the reimbursement levels and associated requirements may be found in the corresponding text of the Manual. Please see the Table of Contents for the text location.

8.1 Processes

COTR Request and Acknowledgement Procedure

Customers must follow the COTR Request and Acknowledgement Procedure to participate in certain BPA initiatives.

To initiate this procedure, the customer must send a written request to its COTR to participate in a specific initiative. If required, the customer must also include any supporting information listed in the specific initiative section.

If approved, the COTR shall confirm participation by written notice. A customer is not enrolled in a particular initiative until the COTR confirms participation in writing.

If the procedure is required, it will be listed in the specific sector section.²¹

Custom Projects

The following criteria apply to the custom project process.

1. All measures or projects that do not have a BPA deemed reimbursement level, deemed busbar energy savings, or for which cost-effectiveness has not been determined, must be submitted as custom projects.
2. Custom projects must be installed in the Pacific Northwest, as defined by the Northwest Power Act, in service areas of participating customers.
3. In general, BPA requires individual custom project proposals to have a minimum B/C Ratio of 0.5. BPA shall manage the B/C ratio at a program level²² and reserves the right to reject individual custom project proposals with B/C ratios of less than 1.0 to ensure the aggregate B/C ratio for all custom project proposals remains 1.0 or greater.
4. If a custom project proposal has been approved by BPA and equipment has been ordered, purchased or installed, the reimbursement rate in place at the time the M&V Plan was approved will apply, and the custom project cannot be canceled and resubmitted under a higher reimbursement rate.
5. BPA shall strive to provide the customer a written response within 10 working days of receiving custom project documentation.

In order to receive reimbursement for a custom project, a customer must perform the following:

1. Submit custom project proposal (including M&V Plan).
2. Secure BPA review and comment.
3. Create completion report.

²¹ Initiatives that require the COTR Request and Acknowledgement Procedure are DA initiatives, EnergySmart Grocer self-funding and Energy Smart Industrial.

²² Program level means all custom projects accepted by BPA over the rate period.

4. Secure BPA acceptance of custom project proposal (including M&V Plan) and completion report.

Each of these steps will be discussed below.

1. Submit custom project proposal (including M&V Plan).

- a. Prior to submitting a custom project proposal to BPA, the customer must screen projects according to the eligibility requirements listed below and noted in the custom project proposal template in the PTR system:
 - Deemed busbar energy savings or deemed reimbursements are not eligible for inclusion in custom project proposals.
 - The proposed measures have not been ordered, purchased or installed (unless otherwise provided in the Manual).
 - The project must not result in fuel switching.
 - The measures are designed to result in improvements in the energy efficiency of electricity distribution or use.
 - The expected life of the energy savings is at least one year.
 - The proposed baseline for each measure is documented and provides a basis for establishing energy savings.
 - The expected project simple payback (Project Cost/Annual Energy Cost Savings) is six months or greater.
 - An explanation of non-energy benefits and their operations and maintenance costs, if any are submitted
- b. While BPA reviews a submitted custom project proposal, it is locked.
- c. A customer may request technical advice from BPA regardless of the size of the project or the requirement for review and comment, unless participating in the Energy Smart Industrial program.
- d. Per the M&V guidelines, below, the custom project proposal must include an M&V Plan showing how energy savings will be verified. There are two types of M&V Plans, the Standard M&V Plan and the Light M&V Plan, each discussed below.

Standard M&V Plan

- a. The Standard M&V Plan is for projects with an expected annual energy savings of 200,000 kWh per year or greater. Engineering calculations based on simplifying assumptions are usually insufficient for standard projects. Direct metering is not explicitly required for standard projects, but it does set the standard of rigor. At a minimum, the M&V Plan must include the following sections and address the points listed below.

1. Approach

Outline the verification approach and why it was chosen. Detailed guidance for preparing an M&V Plan is included in several standard references:

- The [International Performance M&V Protocol](#)
- The RTF Appendix P energy savings verification
- [Site Specific Verification Guidelines, May 1992, BPA](#)

2. Protocols

- ASHRAE Guideline 14-2002, measurement of Energy and Demand Savings
- Direct measurement of pre and post-energy consumption and other significant variables preferred
- Simplified Voltage Optimization Measurement and Verification Protocol

3. Assumptions

Identify the significant variables that affect energy use and categorize each as “assumed” or “to be measured.” Assumed values are only acceptable if they are well documented in fact, and analysis shows possible errors will not significantly affect the overall reported energy savings. When using assumed values, use conservative assumptions. Explain the assumptions made, their uncertainty, their significance to the expected energy savings and the sources of all assumed values.

4. Metering Plan

For metered verifications, include a description of the measurement unit, the measurement duration, data sampling intervals, instrumentation to be used, information on the person performing the verification and when the verification will be performed. If applicable, include a one-line diagram showing proposed metering locations both before and after the installation. Explain how short term measurements will be extrapolated to an annual basis.

If measurement is not possible or practical, provide an explanation.

5. Calculations

Show or describe calculations to account for significant changes in production, weather, loads, hours-of-operation, set points, manual operation, occupancy or other factors that affect the annual energy savings over the expected life of the measure.

6. Quality Assurance

Describe activities planned to ensure good data and accurate calculations. Describe inspections, tests, commissioning, etc., to ensure that the proposed systems function as planned.

Light M&V Plan

The Light M&V Plan may be used for projects with expected annual energy savings less than 200,000 kWh per year. The value of the energy

savings for these projects may not be great enough to support direct measurement of energy savings. If the reviewing BPA engineer does not believe the Light M&V Plan is appropriate for a project, the Standard M&V Plan may be required. The BPA reviewing engineer may allow the Light M&V Plan for larger projects when appropriate. At a minimum, the M&V Plan must address the points listed below.

1. Approach

Each measure must have defensible annual energy savings values calculated using commonly accepted engineering practices and reasonable assumptions.

2. Calculations and Assumptions

Show or describe the engineering calculations and assumption sources. The engineering calculations must use known variables specific to the project combined with defensible assumptions. Defensible assumptions use independent third party information such as case studies, prototype testing, metering and evaluation reports and/or scientific research.

Since many of the inputs to the engineering calculation are assumed, a best-case and worst-case calculation must be made to help determine a reasonable and conservative value for energy savings. For each significant assumption, determine a realistic error boundary in order to calculate the best and worst case calculations. In the best-case calculation, all significant assumed variables must be realistic and, when occurring together, provide the highest energy savings. In the worst-case calculation, the significant variables that provide the least amount of energy savings expected must be examined. In the worst-case calculation, it is not uncommon to have no energy savings, or even negative energy savings. The final estimated energy savings value must be defensible and reasonable.

Since the engineering calculations will vary with the measure application, there is not one specific analysis tool to recommend. Check the US Department of Energy for software calculation tools such as PSAT, FSAT and MotorMaster. Using a Microsoft Office Excel spreadsheet for engineering calculations is an easy way to document the calculations and assumptions.

3. Quality Assurance

Describe inspections, tests, commissioning, spot or short-term measurements at the component or system level, etc., to ensure the proposed systems function as planned. Energy savings must be adjusted prior to submitting a completion report if the quality assurance tasks reveal the as-built, as-installed and/or as-operated conditions are significantly different than originally estimated.

2. Secure BPA Review and Comment.

- a. Custom project proposals with expected first year energy savings over 200,000 kWh require BPA review and comment in addition to BPA acceptance of the M&V Plan.
- b. BPA shall review the custom project proposal for weaknesses or concerns that would impact the project's ability to deliver the estimated energy savings at the estimated project costs or the ability of the project to be measured and verified. BPA may also identify and inform customer of possible risks related to the implementation of the project and its impact on the technical process. BPA may suggest improvements, but the decision to accept comments and proceed with the project is up to the customer and its end users, subject to BPA acceptance of the M&V Plan.
- c. Customers should secure BPA funding (i.e., identify CRC funds or ensure the addition of bilateral funds to the ECA) before beginning a custom project.

3. Create Completion Report.

- a. The customer must submit an electronic completion report to BPA after the project is installed and energy savings measured according to the M&V Plan approved in the custom project proposal. The completion report template, which is similar to the original report, is available in the PTR system. The completion report must include actual project costs, verified energy savings and information on changes to the approved M&V plan. The template will calculate the reimbursement. Documentation supporting the costs and savings claimed and invoices showing the purchase date must be provided to the COTR at time of report submittal.
- b. Reimbursement is based on the accepted completion report data.
- c. Claims are attributed to the rate period in which they are accepted by BPA.

4. Secure BPA Acceptance of Custom Project Proposal (including M&V Plan) and Completion Report.

- a. BPA must accept the M&V Plan of a custom project proposal and the completion report.
- b. If the custom project proposal or completion report is not complete or needs additional work (e.g., fails to provide an adequate M&V Plan or project description), the proposal or report may be rejected or returned for modification and the customer notified. The proposal may be resubmitted, in which case the 10 working day response time shall restart.
- c. BPA will notify customers in writing when it accepts a custom project proposal. The custom project proposal will receive a reference number from the PTR system. This number is also required for the completion report, and the completion report is required to claim reimbursement.

Direct Acquisition

The following provides (a) an overview of the Direct Acquisition (DA) mechanism, (b) a description of the implementation process and (c) a description of the CRC Repayment Option.

a. Overview

1. DA is an acquisition mechanism wherein BPA contracts directly with a third party to implement energy efficiency activities within a participating customer's service area.
2. DA may be used with a variety of initiatives (listed separately in their respective sectors).²³ Under DA, incentive data is collected and entered into the PTR system by the third party, and activity reporting is provided to the customer pursuant to the specific initiative. Unless otherwise stated in the respective initiative section, customers have no oversight responsibility and are ineligible for a performance payment.
3. BPA shall attribute energy savings (in kWh) to the customer.
4. BPA will track energy savings, and unless the customer is participating in the CRC Repayment Option, the customer does not need to make any entries into the PTR system. (Customers participating in the CRC Repayment Option must enter payments to BPA.)
5. BPA disclaims any and all warranties associated with the third party contractor's performance and does not guarantee energy savings as a result of the completed conservation projects.

b. Implementation

1. Customers must enroll in DA by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes, above).
2. Customers enrolled in DA under Consent or Consent Plus Agreements will operate under those agreements until they expire. At expiration of these agreements, customers will continue enrollment in the specific DA initiative under the parameters of the Manual (unless they rescind consent). Customers wishing to participate in additional DA initiatives, or add the CRC Repayment Option to an existing Consent agreement, may participate by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes).
3. The customer may rescind consent by providing 30 days written notice using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes). If the customer rescinds consent after BPA has hired a contractor, if necessary, it must allow BPA up to one year from receipt of notice of rescission to complete any projects for which the contractor was hired.

²³ Commercial Sector: BPA EnergySmart Grocer Program. Multi-Sector: Green Motors and Limited Availability Emerging Technology Demonstration Pilots.

c. CRC Repayment Option

1. Participation in the CRC Repayment Option is initiative specific and voluntary. Customers may opt-in or out of the CRC Repayment Option by using the COTR Request and Acknowledgment Procedure (see Multi-Sector Processes, above). Requests to opt-out will be effective on the first day of the following quarter, and customers will be obligated to pay for all costs incurred up to the start of the new quarter. Customers opting out of the CRC Repayment Option will continue program enrollment under DA unless they opt-out of the program completely.
2. The process steps below will be followed for customers enrolled in the CRC Repayment Option.
 - a. BPA shall send customers an invoice and notice summarizing the total DA costs and the total energy savings on a quarterly basis.
 - b. Customers are obligated to pay all DA costs until the effective date of the CRC Repayment option opt-out.
 - c. The customer shall pay BPA according to the terms of the invoice.
 - d. Once BPA is paid, customers may claim the amount paid and the energy savings provided by BPA toward their CRC. DA CRC Repayment Option reference numbers are available by initiative.

Third Party Contributions

Customers may receive a dollar-for dollar credit for contributions to qualified third parties for the purpose of acquiring conservation. Qualified third parties currently are (1) NEEA and (2) ETO.

1. *Northwest Energy Efficiency Alliance*

Contributions to NEEA qualify for full CRC dollar-for-dollar credit, provided NEEA installs cost-effective measures and meets all applicable requirements for measures claimed under the CRC. Contact NEEA for approval prior to making a contribution of \$200,000.00 or more and prior to reporting the contribution in the PTR system. Contributions do not qualify for a performance payment.

2. *Energy Trust of Oregon*

Contributions may be made to ETO for specific initiatives (listed below and described in their respective sectors) and may use any funding source available under this Manual. Reporting requirements shall be determined on an initiative specific basis. Customers must contact ETO if interested in a specific initiative. Note that ETO may ascribe certain participation deadlines and criteria for its initiatives, and BPA may discontinue the eligibility of ETO to receive contributions upon 30 days notice.

The following describes the ETO criteria for accepting customer contributions, customer obligations, energy savings and available initiatives.

- a. ETO shall provide each interested customer with a budget estimate for any initiative the customer requests, and ETO must receive contributions sufficient to cover all costs associated with the ETO management, implementation and delivery of its initiative in a customer's service area.
- b. ETO may agree to accept and spend contributions from a customer only when a customer satisfies the ETO qualifying criteria and there is no conflict with the ETO mission and its agreements with the Oregon Public Utilities Commission and the gas utilities.
- c. Customer must sign an initiative specific service agreement with ETO.

Customer obligations

- a. Comply with all Manual oversight, evaluation and M&V requirements.
- b. Report payment made to ETO in the PTR system under an initiative specific reference number.

Energy Savings

An energy savings estimate (kWh per dollar) will be provided in the specific initiative section and BPA shall examine actual energy savings achieved at the close of each FY and adjust the energy savings estimate for that FY and for the upcoming year, as needed.

Available initiatives

There are currently no initiatives available.

8.2 Measures and Initiatives

Green Motors Initiative

Requirements and Specifications

The Green Motors Initiative uses Direct Acquisition (DA). The CRC Repayment Option is not available. Qualified motors include NEMA standard horsepower (hp) rated motors between 15 and 5,000 hp (either NEMA premium or other) that are rewound via certified Green Motor Practices Group member service centers.

The energy savings acquired under the Green Motors Initiative are not subject to decrement.

Additional Documentation Requirements

Customer shall retain third party provided reports.

Reimbursement Strategies and Levels

An incentive of \$2.00 per hp will be paid to the participating service center that rewound the motor. The service center will acknowledge the incentive is provided by the end user's serving customer and will pass through \$1.00 per hp to the end user as a credit on the end user's invoice.

Requirements and Specifications

The Commercial and Industrial Lighting (C&I Lighting) Program is applicable to both existing building (retrofit/upgrade) and new construction projects in the Commercial, Industrial, and Agricultural Sectors. Program busbar energy savings, reimbursement levels and equipment specifications are embodied in Lighting Calculator Spreadsheets in the PTR system. Although the program requirements and process for claiming reimbursements are largely the same across sectors, users should verify that they are using the correct sector reference numbers in the PTR system for projects. Completed Lighting Calculator Spreadsheets are uploaded to the PTR system in the invoicing process. Lighting measures are considered deemed, except when they are part of a multi-measure project that includes other measures that have interactive effects with each other, in which case they may be submitted as a custom project under the multiple measures category. One exception is Industrial Sector lighting projects estimated to provide more than 100,000 kWh in annual energy savings; in this case, the customer has an option of using the custom project approach, recognizing that there is significantly more effort involved to make a custom project proposal, complete with an M&V Plan and completion report. Certain projects involving complex control strategies may also be submitted as custom projects (e.g., projects that save a lot of energy using few controls). Beginning April 1, 2011, only qualifying Industrial Sector lighting projects estimated to provide more than 200,000 kWh in annual site energy savings may be submitted as custom projects. See the Industrial Sector for more information.

BPA has developed an improved version of the Lighting Calculator Spreadsheet (version 2.0), which features a simplified interface, additional utility and trade ally tools and several new measures. Customers in need of support related to the new calculator should contact their EER. BPA will continue to accept projects submitted in previous calculator versions in order to ensure a smooth and orderly transition through September 30, 2011. Projects will be accepted on the following calculator spreadsheets:

- Version 2.0 (combined existing buildings and new construction)
- Version 1.7e (existing buildings)
- Version 1.6n (new construction)

BPA has included several new measures in version 2.0 of the calculator spreadsheet, including several LED measures. Customers are encouraged to contact BPA with questions about specific products they are considering rebating under these new measure categories.

All calculated projects must result in at least a 25% reduction in annual energy use to qualify for reimbursement. For purposes of estimating energy savings from occupancy sensors and lighting controls, the default reduction in hours of operation is 25%. Customers claiming a reduction greater than 25% must provide justification of the estimated savings.

Additional Documentation Requirements

The following must be submitted to BPA no more than three days after submission of each invoice or report:

For Existing Buildings:

- Existing Buildings Lighting Calculator Spreadsheet showing actual equipment installed (the electronic version must be submitted via e-mail)
- Cut sheets for high performance equipment. For projects claiming the increased incentive levels using version 1.7e or 2.0 of the Lighting Calculator Spreadsheet, cut sheets are only required for high performance lamps and ballasts not on the CEE equipment list. For high performance equipment on the CEE lists, the lamp and ballast model numbers and date of the CEE list referenced shall be entered in the appropriate row of the notes column in the Lighting Calculator Spreadsheet.

For New Construction or a Major Remodel²⁴:

- New Construction Lighting Calculator Spreadsheet showing actual equipment installed (the electronic version shall be submitted via e-mail)
- Cut sheets for high performance equipment

The following must be retained in the files for each project:

For Existing Buildings:

- Lighting Calculator Spreadsheet
- Cut sheets for high performance equipment if necessary (see above)²⁵
- Equipment purchase orders/invoices
- Contractor invoices
- Project estimates and/or other related project documents
- PCB ballast and lamp disposal (must meet environmental requirements)

For New Construction or a Major Remodel:

- Lighting Calculator Spreadsheet
- Cut sheets for high performance equipment
- Equipment purchase orders/invoices
- Contractor invoices
- Project estimates and/or other related project documents

The following must be in the files after completing the inspection:

For Existing Buildings:

²⁴ Major Remodel is defined as any project that requires code compliance and inspection.

²⁵ Failure to submit cut sheets for high performance equipment within three days of submission of the report or invoice may result in reimbursements at standard equipment rates.

- Lighting Calculator Spreadsheet showing validated counts and proper listing and labeling of equipment installed
- Corrected/completed Lighting Calculator Spreadsheet with date of completion
- Field notes from inspection (recommended)

For New Construction or a Major Remodel:

- Lighting Calculator Spreadsheet showing validated counts and proper listing and labeling of equipment installed
- Field notes from inspection (recommended)

Reimbursement Strategies and Levels

- The C&I Lighting measure list reimbursement schedule and requirements must be used for lighting-only projects in any size commercial, industrial, agricultural or institutional facility other than the exceptions noted above. The list is available as part of the Existing Buildings Lighting Spreadsheet Calculator in the PTR system under Downloads - "Commercial/Industrial Lighting." C&I Lighting reimbursements for existing buildings must use the Calculator Spreadsheet.
- Reimbursements for retrofits to high performance linear fluorescent technologies have been increased effective October 1, 2010. This change is designed to support capture of efficiency from replacement of inefficient T12 and first generation T8 lighting before federal minimum efficiency standards take effect on July 14, 2012. These reimbursements will remain in effect through March 31, 2012. Federal standard changes will result in changes to baseline assumptions and reduced incentives for certain linear fluorescent lamps; these changes may go into effect as early as April 1, 2012.
- If a measure is not on the C&I Lighting measure list, and there is no suitable alternative on the measure list, the customer may make a written request to its COTR for a one-time approval, prior to installation, to use a deemed measure and credit. The COTR will approve or deny the request in writing.
- If the measure does not qualify for a deemed reimbursement after a review, the customer may submit a custom project proposal or seek to have a deemed value established through the RTF.
- Reimbursements are capped at 70% of project incremental cost.
- Reimbursements for some measures in the C&I Lighting list may change over time to reflect market conditions.
- Note: Pending changes to building codes in Oregon and Washington may result in program changes to new construction lighting projects, including reduction in rebate levels or elimination of measures. These program changes may occur in the April 1, 2011 Manual.

Limited Availability Emerging Technology Demonstration Pilots

Requirements and Specifications

Emerging Technology Demonstration Pilots evaluate and assess benefits of and barriers to new technologies. Emerging Technology Demonstration Pilots may be proposed by customers or initiated by BPA. In either case, pilots will be reviewed and approved by BPA on a case by case basis. BPA pilots will do the following:

- Support research, technology demonstration or barrier identification.
- Provide current information on new technologies with best practices to customers to support eventual region-wide offerings.
- Achieves pilot-scale savings or provides data to support or confirm savings potential.
- Determine best practices for implementation and program delivery.

Emerging Technology Demonstration Pilots will be available to a limited number of customers and may be custom projects or BPA Qualified, Direct Acquisition initiatives. Enrollment will be based on criteria specific to each technology.

Participating customers may be asked to provide access to customer billing history, customer coordination, on-site metering equipment or other elements of M&V.

BPA may contract with third parties to deploy the emerging technology, evaluate performance and verify energy savings.

Savings will not be retro-actively adjusted based on pilot evaluation.

Additional Documentation Requirements

Additional documentation requirements may be specified for each pilot.

Reimbursement Strategies and Levels

Reimbursements, if any, are determined on a pilot by pilot basis.

Variable Frequency Drives in Small Compressed Air Systems

Requirements and Specifications

VFDs applied to a single air compressor 75 hp or less may use the RTF approved small compressed air calculator spreadsheet for M&V. Each VFD must qualify individually and be submitted individually as a custom project (i.e., VFDs may not be combined or divided).

Additional Documentation Requirements

- A copy of the completed RTF-approved Small Compressed Air Calculator spreadsheet
- Dated invoice showing the hp and installation address

Reimbursement Strategies and Levels

BPA shall reimburse the lesser of \$0.25 per kWh or 70% of project incremental cost for a measure with a 10 year life.

9. Renewables Option

This section contains information about the Renewables Option (RO) of the Conservation Rate Credit.

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The Renewables Option includes energy produced from a resource that is renewable, such as the following:

- Biogas
- Biomass
- Geothermal
- Hydroelectric
- Landfill Gas
- Ocean
- Solar
- Wind

Renewables Option

Criteria for Renewable Energy Resources Eligible for the Renewables Option (RO) of the Conservation Rate Credit

9.1 Purpose and Scope

The purpose of this section is to explain the procedures for implementing the RO.

The RO for Fiscal Year (FY) 2010 will be capped at \$4 million; while the RO for FY 2011 will be capped at \$2.5 million.

Many of the new requirements included in this section exist because of the aforementioned caps on claims against the RO. To ensure these annual caps are not exceeded, claims against the RO will be pro rata reduced if they total more than the aforementioned caps in any single year. Reporting restrictions have been put into place to help ensure the FY caps are not exceeded and the limited funds are distributed fairly, that the objectives of the program are met (section 9.2), and that funds are channeled toward utilities with valid project/program needs.

9.2 Objectives of the Renewables Option

- To encourage the development of new Incremental Renewable Energy Facilities and Activities in the Pacific Northwest

9.3 Definitions

- **Community Owned Renewable Projects** means that more than one member of the local community (private citizens or other non-municipal or utility entities) has a greater than 50 percent direct financial stake in a small commercial-scale project (meeting the New Renewable Energy Facility definition) other than through land lease payments, tax revenues, or other payments in lieu of taxes. Community Owned Renewable Project size is capped at 1MW, unless pre approved by BPA.
- **Energy Costs** means the cost of project energy delivered to the point of interconnection expressed on a dollar/megawatt-hour basis. Administrative & General costs are not allowed.
 - For Power Purchase Agreements or Output Contracts this would be the contract price for the reporting year. If multiple prices are paid during the reporting year, an Energy Cost based on a weighted price for the reporting year should be utilized. The weighting should be based on the price paid for actual generation received.
 - For Renewable Projects that are owned by the customer, these costs would include capital costs, financing costs, operating and maintenance costs and land purchases or leases. These costs would be net of the Production Tax Credit or the Renewable Energy Production Incentive, whichever is applicable.
- **Environmental Attributes** means the non-power attributes associated with the energy generated from a renewable energy facility. Environmental attributes are the fuel type, emissions, or other environmental characteristic of a renewable resource. Environmental attributes do not include any energy, capacity,

reliability, or other power attributes used to provide electricity services. Environmental attributes are expressed in megawatt-hours (MWh); one Environmental Attribute is created by the generation of 1 MWh of energy from a Renewable Energy Facility. Environmental Attributes are commonly referred to as "Renewable Energy Certificates" (RECs), "Green Tags" or "Tradable Renewable Certificates" (TRCs).

- **Environmentally Preferred Power (EPP)** means one of BPA's renewable energy products for which BPA charges a Green Energy Premium. (WP-07-E-BPA-25)
- **Existing Renewable Energy Facility (Existing Facility)** means a Renewable Energy Facility that was energized prior to January 1, 2006, but after May 1, 1999.
- **Hybrid Facilities** means generation facilities which use both conventional and renewable fuels. Only that fraction of generation created by use of a Renewable Energy Fuel Source shall be considered renewable.
- **Incremental Renewable Energy Facilities and Activities** means only those activities and resources that are incremental to those required by law are eligible, with the exception of retail green pricing programs as referenced in Section 9.9.
- **Integration Costs** means costs of hour-to-hour storage and/or shaping of generation from non-dispatchable Renewable Energy Facilities. Integration costs do not include within hour ancillary services (imbalance and regulation costs) or transmission costs. Self-supplied storage and shaping is eligible, if costs are approved by BPA. BPA suggests self-supplied integration cost claims should be based on near-term opportunity costs. Certification by an independent CPA is required for approval.
- **Net Electric Energy** means the metered MWh generated and sold, and excludes electric energy used within the renewable energy facility to power equipment such as pumps, motors, controls, lighting, heating, cooling and other systems needed to operate the facility.
- **New Renewable Energy Facility (New Facility)** means a Renewable Energy Facility that was energized after January 1, 2006. BPA will distinguish between new facilities and expansions of an existing facility on a case-by-case basis.
- **Pacific Northwest** means as defined in section 3(14) of the Act, Public Law 96-501, 16 USC 839.
- **Project Costs** means costs limited to independently CPA-certified contracted energy charges at the bus bar for the year in which the claim is being made and independently CPA-certified Integration Costs for the year in which the project's generation being claimed.

Project Costs = [Energy Costs at the bus bar for the year in which the claim is being made + Integration Costs for the year in which the claim is being made]

- **Proxy for Avoided Cost** means the simple average of BPA's FY 2010-11 flat Priority Firm (PF) preference rate and the 2010-11 average forward flat-block Mid-C market price used in the WP-10 rate case (WP-10-FS-BPA-03A, page 61). The 2010-11 forward flat block Mid-C market price used in the residential exchange settlement is equal to \$40.59/MWh and the FY 2010-2011 flat PF preference rate is equal to \$28.77/MWh, resulting in a Proxy for Avoided cost of \$34.68/MWh. This amount is fixed for the entire FY 2010 – 2011 rate period.
- **PTR system** means the [Regional Technical Forum's Planning, Tracking and Reporting system](#)
- **Renewable Energy Certificates (RECs)** means Environmental Attributes.
- **Renewable Energy Facility** means a single module or unit, or an aggregation of such units, which generates electric energy that is independently metered and that results from the utilization of a Renewable Energy Fuel Source.
- **Renewable Energy Fuel Source** means
 - **Biogas:** Electricity generated from the combustion of gases derived from animal manure, sewage digesters, or from decaying plant matter. Includes sewage treatment plant digesters, dairy-based anaerobic digesters and biomass gasification.
 - **Biomass** is electricity generated from combustion of:
 - The organic, non-fossil-based portion of municipal solid waste
 - Energy crops
 - Agricultural residues
 - Untreated mill or forest residues
 - Biomass-derived energy from hybrid facilities, not including energy derived from fossil fuels

Biomass does not include the combustion of black liquor or preservative-treated wood waste.

- **Geothermal:** Electricity generated from naturally occurring underground heat
- **Hydroelectric:** Electricity generated by the flow of water at facilities located outside of protected areas as defined by the Council
- **Landfill Gas:** Combustion of gases derived from landfills
- **Ocean:** Generation of electricity from wave, thermal gradient or tidal forces. Ocean energy is not likely to achieve commercial status during this rate period, and it is eligible as Research Development & Demonstration (RD&D) during the FY 2007-2009 rate period.
- **Solar:** Electricity generated from solar heat and light. Includes solar photovoltaic systems (PV) and solar water heaters.

- **Wind:** Electricity generated from wind. (Note: because costs from all project sizes exceed the effective cap, wind projects are no longer broken out into size-based categories)
- **Small commercial-scale** means all projects that are too large to qualify for net metering but less than three-megawatt capacity (e.g., onsite home-sized projects are excluded and projects must be connected to the grid).

9.4 General RO Requirements

- a. Only Incremental Renewable Energy Facilities and Activities are eligible for the RO, with the exception of retail green pricing programs detailed in Section 9.9.
- b. The RO is only available during FY 2010 through FY 2011. There was no early start for the RO claims portion of the CRC.
- c. Renewable claims under the RO must be spent on qualifying renewable activities and or projects prior to the end of the rate period (e.g., money claimed against the renewable program under CRC shall not be used for conservation measures). If all of the money claimed on renewables is not directed towards qualifying renewable projects or activities and reported to BPA by October 31, 2011, the customer will be billed for that portion of their renewable claim which remains unreported, plus interest; which will be calculated according to the terms of the Requirements Power Contract.
- d. Claims made under the RO need to be substantiated using the PTR system (see section 3.1 and 9.22 for reporting requirements).
- e. Administrative activities do not qualify for the RO unless otherwise exempted.
- f. Individual customer RO funding requests are limited to the customer's total CRC eligibility for the fiscal year in which the claim is being made.
- g. Energy generation and project cost claims must be verified via an independent annual audit which must be submitted with the customer's annual written report.
- h. It is not a requirement that the timeframes for receiving the CRC and investing in a renewable facility match. For example, it is acceptable for a customer to justify its FY 2010 credit with a renewable facility that comes on line in FY 2011.

9.5 What is a Qualified Renewable Energy Facility?

To be eligible for the RO, a renewable energy facility must satisfy the following criteria:

- a. The energy must be generated using a Renewable Energy Fuel Source and meet one of the following criteria:
 - a) **Time of first use** — The facility must begin commercial operation no earlier than May 1, 1999, and no later than December 31, 2011.
 - b) New Facilities energized after September 30, 2011, but prior to December 31, 2011, may qualify for the RO on a case by case basis,

subject to BPA approval. To qualify, the customer must provide BPA with the verification information listed below. If any one of these conditions is not met, the customer must repay BPA for claims based on the facility, plus interest (see section 9.4(c)).

- i. Verification that the customer has entered into a power purchase agreement during FY 2010 – 2011 for the output of the facility.
 - ii. Evidence supporting the claim that the facility will be energized by December 31, 2011. Examples: contractual incentives for commercial operation by December 31, 2009, or penalties for late performance.
 - iii. Verification by no later than January 15, 2012, that the New Facility achieved commercial operation by December 31, 2011.
- c) Renewable Energy Facilities on-line prior to May 1, 1999, are eligible for RO if they have been rebuilt or expanded after January 1, 2006. The following criteria apply:
- i. Rebuilt facilities qualify if the fair market value of the facility before the upgrades is less than 20 percent of the new total fair market value. In other words, capital investments in the new facility must total at least 80 percent of the value of the assessed value of the repowered facility. Tax records should be provided to validate this claim.
 - ii. Incremental expansions to Renewable Energy Facilities qualify if the additional equipment generates incremental energy which is metered independently from the original facility. Replacement or modification of existing equipment that does not change gross power production, but results in a reduction of electric power consumption, will be considered conservation.
- b. **Location** — renewable energy facilities must be located in the Pacific Northwest, with the following three exceptions:
1. The currently permitted Wyoming Wind Project at Foote Creek Rim and Simpson Ridge in Carbon County, Wyoming
 2. Projects shown by the applicant to effectively displace operation of regional nonrenewable generation resources (subject to BPA's approval)
 3. The project or a portion of the project serves load within the Pacific Northwest (subject to BPA's approval)

9.6 Metering Requirements

Except for PV, solar water heaters and RD&D projects, the output of renewable energy facilities must be metered by a revenue-quality meter at the point of delivery in accordance with generally accepted customer standards, and output and meter calibration records must be available for inspection by BPA upon request.

9.7 Power Purchases from Power Marketers

Purchases from power marketers and pooling organizations are eligible for the RO provided:

- a. The underlying resources meet the eligibility requirements for renewable energy facilities.
- b. The customer can supply documentation verifying the renewable energy resource eligibility; the amount and term of the purchase, the Project Costs, and attestation that the environmental attributes have not been sold or claimed elsewhere. The amount of the \$/MWh RO credit available for each type of underlying renewable energy facility is specified in tables RO-1 and RO-2 in section 9.17.
- c. Customers are required to retain and retire within their service territory the environmental attributes associated with power purchases from qualifying renewable energy facilities when claiming such facilities or purchases on their annual CRC report. Costs of administrating the green pricing program may qualify as eligible expenses. Net Revenues from the attribute sales and the pricing program must be reinvested in the green pricing program to qualify for the RO.

9.8 Transfer of RO Claims for Renewable Energy Output

Customers may enter contractual arrangements through which one customer would own or purchase the output from an eligible renewable energy facility and other customers would apply their RO to the output.

For example, Customer A could sign a power purchase agreement with a developer for 15 MW of wind power from a qualifying new renewable energy facility. Customer A could assign the right to claim the project as a new renewable energy facility to Customer B under a separate payment arrangement with Customer A. All of the project's output would be delivered to, and used in, Customer A's system, but Customer B would own and could claim the resource under the RO. The RECs from this project must be retired within one of the participating parties' service area(s) for the entire rate period and should not be subject of a second claim.

Customers may also transfer RO claims to other BPA customers by selling the attributes or RECs generated by eligible renewable energy facilities to other BPA customers.

9.9 Environmental Attributes from Renewable Energy Sources

This section applies only to Renewable Energy Certificates (Green Tags, RECs or environmental attributes), not to Environmentally Preferred Power (EPP); section 9.10 addresses EPP.

RECs are eligible for RO, provided the following conditions are met:

- a. Megawatt-hours cannot be claimed twice under the RO. RECs associated with renewable energy claimed elsewhere under the RO are not eligible for additional RO benefits under this section. RECs from new facilities cannot be claimed under this program during this rate period if the energy

from the project is the subject of a RO claim anytime during the rate period.

- b. Claims based on RECs from a single New Facility cannot total more during the 2-year rate period (for all customers) than could be derived from a claim based on one year of generation times the appropriate \$/MWh credit cap (table RO-1, section 9.16).

For example, PUD #1 builds a 100 MW wind facility. In its first year of production, the project produces 220,000 MWh of generation at a total cost (Energy + Integration Costs) of \$55.87. Using all of the production of the facility, PUD#1 could justify a CRC credit of \$4,661,800.00 ($(\$55.87 - \$34.68) * 220,000$). If PUD #1 chose to instead sell the RECs to various PUDs then the total amount of CRC claims via RECs from this wind facility could not exceed \$4,661,800.00 over the 2-year rate period.

Further, if PUD #1 had a CRC of \$2,000,000.00, it could use this wind facility to a) meet that credit requirement and; b) sell the RECs associated with the facility that were not allocated to the CRC to other utilities to meet their CRC obligation.

Without this restriction, REC claims for a specific New Facility could be claimed for all three years of the rate period at a purchase price equal to the credit cap. Under this scenario, REC claims would total three times that of a straight facility claim. (The amount of credit associated with REC claims is equal to the purchase price of the REC, not to exceed the caps posted in tables RO-1 and RO-2; RECs can be claimed all three years of the rate period.)

- c. Only RECs which are retired within the purchasing customer's service area are eligible for the RO program. RECs sold outside of the customer's service area cannot be claimed by the seller but may be claimed by the purchaser. RECs resold in a premium green pricing program will be eligible for RO credit in an amount equal to the REC purchase price if the revenues from the green pricing program, net of REC purchase price, are reinvested in qualifying New Renewable Energy Facilities, other qualifying Renewable Energy program(s), qualifying RD&D project(s) or the green pricing program. Costs of administrating the green pricing program may qualify as eligible expenses. Demonstration of reinvestment will be required in the October 31 annual report to BPA as required in section 9.22.
 - 1. The facility generating the RECs must be a qualifying Renewable Energy Facility as defined in section 9.5.
 - 2. The output of the generating resource from which the RECs originated is metered (section 9.6).
 - 3. The REC claim is accompanied by: (1) a generator attestation verifying the monthly output of the generation facility, that the RECs have been sold only once, and that the RECs retain associated emission offsets; (2) Wholesaler attestation(s) verifying that the RECs have been sold only once and retain

associated emission offsets; and (3) an independent annual audit verifying purchase price. Verification of REC ownership from the Western Renewable Energy Generation Information System can be used in lieu of (1) and (2) above.

4. RECs can only be claimed in the year in which they are generated.
 5. RO credit amount: Payment scale is equal to the purchase price of the RECs, not to exceed the resource specific credit caps listed in table RO-1 or table RO-2 (section 9.16). Proof of purchase price must be verified via independent audit and provided to BPA by October 31 for the proceeding fiscal year.
- d. Solar exception. RECs from PV units claimed under the RO can be sold outside of the customer's service area.

9.10 Renewables Purchases from BPA

BPA currently offers three types of renewable products: (a) Environmentally Preferred Power (EPP), (b) Alternative Renewable Energy (ARE) and (c) RECs.

- a. **EPP and ARE:** BPA will reinvest the Green Energy Premiums (as defined in WP-07-FS-BP-05) associated with EPP and ARE sales in the Pacific Northwest Renewable RD&D projects. Therefore, 100 percent of the Green Energy Premium associated with EPP and ARE (\$10.50/MWh) is eligible for the rate credit under the RO.

ARE and EPP remarketed into green pricing programs is eligible for the RO if proceeds, net of the EPP/ARE purchase price, are reinvested in New Renewable Energy Facilities, Renewable Education program(s), qualifying RD&D project(s), or the green pricing program itself. Costs of administrating the green pricing program may qualify as eligible expenses. Demonstration of reinvestment will be required in the October 31 annual report to BPA required in section 9.22.

- b. **RECs:** BPA will reinvest the green energy premiums associated with EPP in Pacific Northwest renewable RD&D projects. Therefore, the amount of the RO for BPA's RECs will be 100 percent of the premium paid for this product.

RECs remarketed into green pricing programs are eligible for the CRC if proceeds, net of the REC purchase price, are reinvested in New Renewable Energy Facilities, Renewable Education program(s), qualifying RD&D project(s), or the green pricing program. Costs of administrating the green pricing program may qualify as eligible expenses. Demonstration of reinvestment will be required in the October 31 annual report to BPA required under section 9.22.

- c. Customers are required to retain and retire within their service territory the environmental attributes associated with EPP or RECs purchased from BPA when claiming such purchases under the RO.

9.11 Third Party Blended Renewable Resource Products

A customer can receive credit under the RO for the purchase of a third party, or their own, blended renewable resource product consisting of Existing or New Renewable

Energy Facilities meeting the eligibility criteria of the RO. The appropriate “new” credit will be given to the new portion of the product for one year of estimated generation. The “existing” portion of the blended product will be given the appropriate credit for Existing Renewable Energy Facilities. Renewable energy claimed elsewhere under the RO is not eligible for additional RO benefits under this section.

Customers are required to retain and retire within their service territory the RECs associated with such transactions when claiming such purchases under the RO.

9.12 Community Owned Renewable Projects

Expenses associated with Community Owned Renewable Projects, incurred by the customer, which include but are not limited to interconnection, integration, and energy costs above the Proxy for Avoided Cost, which are not passed through to the utilities customers or to the owners of the project, are eligible for a dollar-for-dollar credit. Community Owned Renewable Projects are New Renewable Energy Facilities; therefore, claims based on energy production are limited to one year of actual generation. Consistent with other eligible activities and programs under this chapter, Administrative costs are not eligible. BPA will approve applications for a rate credit amount after the customer demonstrates to BPA’s satisfaction that the proposed project meets this definition of a Community Owned Renewable Project.

9.13 Technical Specifications for PV systems and Solar Water Heaters

- a. **Customer-side solar photovoltaic systems** — Eligible PV systems must meet the following requirements:
 1. Photovoltaic modules and inverters must be certified by the California Energy Commission (CEC). The lists of CEC-certified modules and inverters are posted on the [California Energy Commission Web site](#).
 2. The system must be installed by a licensed contractor or the purchaser, and must be installed in conformance with the system manufacturer's specifications and with applicable electrical codes and standards.
 3. Photovoltaic modules must be listed by a nationally recognized testing laboratory as meeting the requirements of the Underwriters Laboratory Standard 1703. Inverters must be listed by a nationally recognized testing laboratory for safe operation. Further, all grid-connected, inverter-based systems must meet the Institute of Electrical and Electronic Engineers Standard 929-2000. In the absence of a recognized testing standard, manufacturers of concentrator photovoltaic systems must provide acceptable evidence of one year of reliable operation of that model of equipment.
 4. Photovoltaic systems credited under the RO must be warranted as follows:
 - i. The warranty must cover the photovoltaic panel components of the generating system against breakdown or degradation in electrical output of more than 20 percent from their originally rated electrical output in the first 20 years.

- ii. Other components of the generating systems against breakdown or degradation for five years, including the full cost of repair or replacement of defective components or systems.
- b. **Solar Domestic Water Heaters** — Eligible solar domestic water heating systems must be SRCC-OG-300 rated and conform to applicable federal state and local regulations, codes ordinances and standards governing the installation of solar water heating systems..

9.14 Renewable Education Programs

Renewable Education Programs are customer-funded curriculum and demonstration projects. Education programs are eligible for a dollar-for-dollar rate credit, capped at the greater of 20 percent of a customer's total CRC over the rate period or \$25,000.00/year. In no year shall a customer's Renewable Education Program claim exceed that customer's pro rata reduced Renewable rate credit for the applicable year.

Curriculum and associated information accompanying education programs will be made available to the public. As such, the following items will be required for all education programs funded through the RO program:

- Educational curriculum and materials should be pre-approved by BPA. They can be sent to the address in Section 9.20 or e-mailed to Jamie Sims at jtsims@bpa.gov.
- [Electronic versions](#) of the educational curriculum and material will be provided to BPA.

9.15 Donations

Donations to 501c (3) non-profit organizations promoting renewable resource development in the Pacific Northwest are eligible for the RO upon BPA approval. Examples of organizations that may qualify: Bonneville Environmental Foundation, Energy Trust of Oregon, Climate Trust, Last Mile Electric Coop, and Northwest Seed. Donations are limited to 20 percent of the customer's total CRC over the rate period. One hundred percent of the donated amount is eligible for the RO. BPA may waive the 20 percent cap on a case-by-case basis if there are compelling reasons to do so.

To qualify for credit, the following conditions must be met:

- a. The 501c (3) recipient will be asked to self-certify that at least 80 percent of the donation will be used to support renewable resource activities as contemplated elsewhere in this Manual and must demonstrate that the donation was not used to support lobbying activities.
- b. The receiving organization will provide BPA and the donating customer a report documenting use of the donated funds by no later than October 31 of each year, for the preceding year. BPA reserves the right to audit the receiving organization.

9.16 Contributions to Qualified Research Development & Demonstration Activities

One hundred percent of the amount spent on qualified RD&D activities is eligible for the RO; however, renewable RD&D claims cannot comprise more than 40 percent of

the participating customer's total CRC over the rate period. Costs are limited to those incurred from October 1, 2009, to September 30, 2011. Electricity production obtained as a result of a RD&D activity will not qualify for RO credits. BPA may waive the 40 percent cap on a case-by-case basis if there are compelling reasons to do so.

BPA pre-approved RD&D activities include:

- a. The regional wind data collection program administered by Oregon State University.
- b. The Regional Solar Radiation Data Center administered by the University of Oregon, and the Wave Energy Technology Center.
- c. New ocean-powered renewable energy facilities.
- d. BPA will approve small-scale (less than \$20,000.00 per installation) renewable energy demonstration systems on a case-by-case basis without consultation with the RTF, provided the project meets all of the following criteria:
 1. The performance of the project is measured on at least monthly intervals. Projects using revenue-quality meters are preferred but not required.
 2. The system performance and description of the project must be reported to the public via the Intranet, as well as local reporting mechanisms, before September 30, 2011.
 3. The project falls under at least one of the Eligible Activities listed below, in section 9.16.1 and not specifically excluded in section 9.16.1(e).

9.16.1 Eligible RD&D Activities

The following categories of activities potentially qualify for the RO as RD&D activities. Qualification will be determined using the criteria listed in section 9.16.2.

- a. Assessment of the supply, location, development potential, or quality of renewable energy sources.
- b. General preparations (i.e., not in sole support of a specific project) for the development of renewable resource areas. These efforts may include identification and resolution of technical, environmental, and institutional issues potentially affecting resource development.
- c. Research regarding environmental or other issues affecting the development and operation of renewable energy facilities. These may be undertaken at a specific project, providing the results will significantly benefit other projects.
- d. Development or demonstration of new technologies with potentially significant application to the use of renewable energy sources.
- e. Demonstration of novel applications of established technologies using renewable energy sources (e.g., new applications of commercially available technologies). Conventional applications of commercially

available technologies are not considered RD&D. For example: PV installations using conventional approaches/designs are no longer considered to be in the developmental phase and will not be considered RD&D. PV installations using new designs or novel applications may be considered developmental.

While a RD&D activity may be undertaken in conjunction with the development of a specific commercial project, the cost of the activity should not include the costs of developing or operating a proven commercial application. Efforts to lower costs through increased production or mass purchase of commercial technologies are not considered to be RD&D.

- f. Provision of information useful for the evaluation, siting, design or operation of facilities using renewable energy sources.

9.16.2 Criteria used to Evaluate Proposed RD&D Activities

Other RD&D activities may be proposed and approved by BPA on a case-by-case basis or, at BPA's sole discretion, submitted to the RTF for review. The proposal must include research technology, renewable fuel source, location, objectives, approach/methodology, tasks, timeline, budget and milestone reporting schedule. The proposal should clearly state the project's specific stage in the technology continuum (hypothesis, research, development or demonstration). The proposal should also include a section addressing the criteria set forth here, as applicable:

- a. The activity should have a high probability of expanding the use of qualifying renewable resources in the Northwest.
- b. The activity should have a high probability of achieving one or more of the following objectives: reduced resource development or operating costs; improved technology performance (reliability, conversion efficiency, etc.); reduced environmental impact; improved project development characteristics (e.g., lead time); and improved forecasts of cost, performance, development timeline or environmental impact.
- c. Preferably, activities should address resources promising low or declining costs, abundant quantity, modest or beneficial environmental effects, and favorable development characteristics, including short lead-time and modularity.
- d. Preference for activities designed to achieve multiple objectives and widespread benefits (e.g., the activity should foster the development of qualifying resources in general, as distinguished from primarily supporting the development of a specific commercial project). For example, assessment of the spatial extent, and general turbulence and wind shear characteristics of a wind resource area could be considered a qualifying RD&D activity, whereas studies leading to the placement of individual wind turbines are a responsibility of the commercial developer.
- e. Projects that are co-funded/co-sponsored are preferred. Co-funded amounts are excluded from the RO credit.

9.17 Renewable Energy Purchased from qualifying Renewable Energy Facilities

Methods to calculate the RO credit earned by energy purchases from eligible Renewable Energy Facilities are described below. The \$/MWh cap for each resource type is shown in table RO-1 (New Facilities) and table RO-2 (Existing Facilities).

- a. **New Renewable Energy Facilities:** To be eligible for credit, the New Facility must qualify under sections 9.4, 9.5, and 9.6. The amount of the credit earned by New Facilities is based on the difference between Project Costs and the Proxy for Avoided Costs (\$34.68/MWh) and capped at \$18.00/MWh. Credit can be earned for up to one year (any consecutive 12 month period during the program) of generation regardless of whether the facility is energized in the beginning or at the end of the rate period.

Calculating the credit:

1. **New Customer-scale wind (> 10 MW):** The amount of the RO is equal to the customer's share of the output from a New Customer Scale Wind project over any consecutive 12 month period during the rate period, multiplied by the difference between actual Project Costs and the Proxy for Avoided Costs, with that difference not to exceed \$18.00/MWh (see NOTE below).

Claims submitted as part of the October 31 report to BPA (section 9.22 b) should be based on actual generation and should use metered data. Claims based on forecasted generation should use capacity factors provided in table RO-1 and the nameplate rating of the facility. Forecasted claims apply to projects not on line by the end of the rate period, but scheduled to be in commercial operation prior to December 31, 2011.

Third party verification (CPA audit) of Project Costs and actual generation should be provided to BPA by December 1st following the reporting period (BPA may grant case-by-case extensions for audit reports).

New Customer-Scale wind Credit = [(Energy Costs at the busbar for the year in which the claim is being made + Integration Costs for the year in which the claim is being made) – (Proxy for Avoided Cost)]¹ x MWh generated over one year. [¹This amount is not to exceed the cap posted in table RO-1.]

2. **All other New Renewable Facilities:** The amount of the credit is equal to the customer's share of the output over any single fiscal year during the rate period, multiplied by \$/MWh credit provided in table RO-1.

New Renewable Facility Credit (other than Customer Scale Wind) = Customer share of generation in fiscal year x \$/MWh credit from table RO-1.

- b. **Existing Renewable Energy Facilities:** It is BPA’s objective to encourage the development of new incremental renewable energy facilities and activities. Therefore, the credit for existing facilities cannot exceed that of new facilities. Existing facilities will be eligible for credit on energy generated during the entire rate period. Because of the 2-year rate period, the credit for Existing Facilities is capped at 50 percent of the credit given to New Facilities using the same renewable energy source. The amount of the \$/MWh credit for generation from Existing Facilities is based on the customer’s share of actual generation during the rate period, the type of facility, and the difference between the Project Costs during the year the claim is being made and the Proxy for Avoided Cost, not to exceed the \$/MWh caps posted in table RO-2 (capped at 50 percent of the cap for New Facilities). Credit will only be given for metered generation during the rate period.

Credit = [Energy Costs at the busbar for the year in which the claim is being made + Integration Costs for the year in which the claim is being made] – [Proxy for Avoided Cost]¹ x MWh. [¹This amount is not to exceed the cap posted in table RO-2.]

1. Third party verification (audit) of Project Costs for the year the claim is being made and third party verification of actual generation should be included in the October 31 annual report to BPA. BPA may grant case-by-case extensions for audit reports.
2. The existing facility must qualify under sections 9.5 and 9.6.
3. No credit will be given to existing solar energy facilities.

Table RO-1: New Renewable Facility Credit

New Facilities			
Total Credit for each Facility = (Capacity) x (Capacity Factor) x (New Facility Credit). If claiming actual generation, disregard capacity factor and use metered data. If claiming forecasted generation use the nameplate rating to determine capacity and Capacity Factors posted below.			
Credit should not exceed the resource-specific caps listed below. <i>Credit for 1 year of Generation.</i>			
Resource type (project size)	Project Cost (Proxy) (\$/MWh)	Credit (\$/MWh) ¹	Capacity Factor ²
Biogas ³	123.19	18.00	75%
Geothermal ³	107.95	18.00	90%
Hydro ³	121.45	18.00	50%
Landfill gas ³	89.74	18.00	85%
Wood/Forest residue (wood only, not cogen) ³	167.94	18.00	80%
Wood/Forest residue (cogen) ³	128.80	18.00	80%
Wind			
Credit = (Project Cost – Proxy for Avoided Cost) x (Capacity) x (Capacity Factor). If claiming actual generation, disregard capacity factor and use metered data. If claiming forecasted generation, use the nameplate rating to determine capacity and the Capacity Factor posted below.			
Wind - OR/WA ³	120.17	18.00	32%
Wind – ID ³	128.16	18.00	30%

Wind – MT ³	101.24	18.00	38%
Solar			
	Project Cost (Proxy) (\$/MWh)	Credit (\$/unit)	Capacity Factor
Solar water heaters, collectors > 31 ft ² of evacuated tubes with equivalent output ³ (\$ credit per installation, based on capacity)	117.00	500.00	NA
Photovoltaic (PV) Credit in \$/kW ⁴ (\$ credit per kW)	501.69	500.00	NA

- ¹ New Resource Credit (\$/MWh) = (Project cost as posted in table 1) - (Proxy for Avoided Cost). NTE \$18.00/MWh. \$18.00/MWh Cap reflects the maximum FY10-11 value of CO² offsets over the life of a renewable project. (Northwest Power and Conservation Council e-mail correspondence dated 8/5/09).
- ² Capacity Factors taken from the same sources as the cost estimates. Actual metered generation should be used if the project is in commercial operation.
- ³ Project Costs are provided by the Northwest Power and Conservation Council and represent a FY 10-11 average of the levelized cost of shaped energy delivered to the bus bar over a plant's economic life.
- Biogas 15 years
 - Geothermal 30 years
 - Hydro 30 years
 - Landfill Gas 20 years
 - Wood/Forest 20 years
 - Wind 20 years
 - Photovoltaic 25 years
- ⁴ Proxy cost not provided by NWPCC. Credit amount held constant from prior rate period.

Table RO-2: Caps on Credit for Existing Renewable

Resource type	Cap (\$/MWh)
Biogas	9.00
Geothermal	9.00
Hydro	9.00
Micro hydro (< 1 MW)	9.00
Landfill gas > 2 MW	9.00
Landfill gas less than or equal to 2 MW	9.00
Wind less than or equal to 25 kW	9.00
Wind less than or equal to 10 MW	9.00
Wind - customer scale (+10 MW)	9.00
Wood/Forest residue (wood only, no Cogen)	9.00
Wood/Forest residue (Cogen)	9.00
Solar water heaters, collectors > 31 sq ft	no credit available
Photovoltaic (PV) Credit in \$/kW	no credit available

Table RO-3: Renewable Credit Proxy Values

(\$/MWh)
Proxy for Avoided Costs =
Avg of FY10 Flat PF & FY10-11 Flat-Block Mid C mkt price ¹
34.68

Cap =Proxy for present year value of a 20-year CO² offset ²**18.00**

¹ The 2010-11 average forward flat block Mid-C market price used in WP-10 rate case (WP-10-FS-BPA-03A, page 61) is equal to \$40.59/MWh and the FY 2010-2011 flat PF preference rate is equal to \$28.77/MWh, giving a Proxy for Avoided cost of \$34.68/MWh. Value will be fixed at these levels and not adjusted for inflation or variations in market prices.

² Cap based on NW Power and Conservation Council estimates of the average 2010-11 current year dollar value of a CO² offset. Any credit below \$18.00/MWh could be considered cost-effective if the CO² credits are not sold.

9.18 Effects on Net Requirements Load

Adjustments to the customer's Subscription contract and Net Requirements Load will be independent of credit given under the RO. No adjustment to net requirements load is necessary for REC and EPP purchases.

9.19 Duration of the RO and Renewable Energy Purchases

The RO can only be applied to activities undertaken during the rate period and energy generated during the rate period, except for special considerations given to new facilities energized between January 1, 2009, and December 31, 2011 (see section 9.5).

9.20 Administration

Applications, notifications, inquiries, and other matters related to the RO for renewable energy resources should be directed to the following address:

Bonneville Power Administration
Attn: Jamie Sims, MS PTL-5
P.O. Box 3621
Portland, Oregon 97208
Phone: (503) 230-3886
E-mail: jtsims@bpa.gov

9.21 Optional Pre-Application

At any time, a customer may submit a Pre-Application containing the information described below to obtain a preliminary and conditional determination of a renewable energy facility's or activity's eligibility for the RO:

(Note: Pre-Application is optional, but the October 31 report will need to include this information regardless of whether a Pre-Application is submitted.)

- a. Name and type of facility or activity or other official designation
- b. Location and address of the facility and type of renewable energy source
- c. Name, address and telephone number of a point of contact to respond to questions or requests for additional information
- d. A clear statement of how the renewable energy facility or activity satisfies the eligibility criteria

- e. If the customer intends to purchase power from a power marketer or enter into an arrangement with another customer, a description of the purchase or arrangement
- f. Other applicable information as required elsewhere in this chapter

9.22 Reporting requirements

- a. **Customer request for Renewable funds and the pro rata reduction:** Due to the \$4 million dollar annual cap (\$2.5 million in FY 2011) on total annual renewable rate credit, BPA requires customers to request total annual renewable credit claims by July 15, 2010. If total customer requests exceed the applicable annual cap dollars in any year, all requests will be pro rata reduced for that year so that the annual dollar cap is not exceeded. [Note: Small (<7.5 aMW load) customers and federal customers will not be pro rata reduced but their requests will count against the annual dollar cap.] In the event of a pro rata reduction, BPA will notify customers of the amount their request was pro rata reduced by no later than 30 days after the customer request deadline.

Due to the increased volume of renewable claims against the RO, BPA will no longer allow adjustments to renewable requests (claims) after the pro rata reduction. The dollar amount remaining after the pro rata reduction will be considered a final number and the requesting customer has an obligation to spend this amount of money on renewables before the end of the rate period. The amount reduced via the pro rata reduction should be spent on conservation, or the customer can opt out of the program.

Renewable requests made under this section should be sent to the address shown in section 9.20 by July 15 of each year of the rate period.

- b. **Annual Reports to BPA:** Customers must submit annual reports to BPA validating renewable claims made under the RO. Annual reports should use the PTR system and should be submitted by no later than October 31 of each year for the proceeding fiscal year's renewable claim. All required documentation that cannot be submitted through the PTR system (REC attestations, third party verifications, etc.) should be sent to the address shown in section 9.20

Due to increasing pressure on the annual cap, BPA will no longer accept or approve additional requests for renewable credit for FY 2011 if renewable claims from FY 2010 have not been substantiated via the annual October 31 reports. This is consistent with reporting required for conservation under section 4. Because the RO option amounts for FY 2011 will be published in August 2010, which is prior to the FY 2010 reports being filed, it may be necessary for BPA to invoice customers who are not allowed a FY 2011 RO allotment because they did not fully substantiate their FY 2010 funds.

October 31 reports to BPA validating pro rata reduced July 15 renewable rate credit requests (claims) should contain the following information to be approved:

1. A statement of the annual and monthly metered Net Electric Energy generated by the renewable energy facility during the previous fiscal year and claimed for credit by the customer.
2. A statement showing how the customer's renewable rate credit claim was derived and computed.
3. Applicable information required elsewhere in section 9, including third party verification (written verification from an independent auditor or state audit agency): BPA recognizes it may be difficult to obtain third party verification by October 31 for the previous fiscal year and may grant extensions for third party verification on a case-by-case basis.
4. RD&D and Donations: An Application for Certification for a qualified RD&D activity or eligible donations must contain a description of the qualified facility or activity, verification that applicable criteria have been met, and a copy of the invoices that are the basis for the customer's claim for credit (if applicable).
5. Purchases from BPA: The customer will reference the contract, the BPA product, the amount of the purchase (kWhs), and how much of the rate credit is being applied to this purchase in the annual October 31 report.

If a customer has not yet completed the spending for its RO allocation prior to the end of a fiscal year, the customer must submit its annual report with an explanation as to why the spending has not yet been completed and share the customer's plans to use the RO funds.

9.23 True-up for Generation-Based Claims

Due to the annual cap on renewable claims, customers making RO claims on new facilities will be required to make claims based on actual generation. True-ups will only be accepted for New Facilities that cannot complete 12 consecutive months of actual generation prior to the end of the rate period, but are energized prior to December 31, 2011. (These facilities use forecasted generation rather than actual generation.)

Customers that need to use forecasted generation for all or part of a reporting year will need to file a true-up report with BPA. After a facility completes 12 consecutive months of generation, the customer will need to file a true-up comparing previously reported forecast generation with actual generation for that forecasted period. This true-up will be used to determine if the full credit has been earned or if a refund is due BPA. The true-up report will be due 30 days after the completion of the first 12 months of generation, but in no event should it be received after January 31, 2013.

For example, if a project starts generating on July 1, 2011, in its annual report the customer will report actual generation from July 1, 2011, through September 30, 2011, and forecasted generation from October 1, 2011, through June 30, 2012. The true-up report, comparing forecasted vs. actual generation for October 2011 – June 2012, will be due on July 31, 2012.

9.24 Procedures for Processing Reports and Applications

BPA will process Pre-Applications and Annual Reports and notify the customer of its determination within 60 days of receipt of the Pre-Application and 30 days of receipt of the Application for Certification.

1. Notice to applicant — If an application meets the requirements of the RO, BPA will issue a written notice to the applicant.
2. Disqualification — If an application does not meet the requirements of the RO for renewables or if some of the kWh claimed in the application are disallowed as unqualified, BPA will issue a written notice denying the application in whole or in part, with an explanation of the basis for denial.
3. Appeal of determination — A customer may appeal a decision within 60 days. Appeals should be sent to the address shown in section 9.20.

9.25 Rules for Pooling Renewables

A project or proposal from a pooling entity is subject to the same criteria, standards, and procedures as any other entity. The pool must comply both on an individual and aggregate basis.

Renewable Pooling Requirements

- a. Pooling utilities are responsible for reporting their own individual claims and semi-annual reports. Claims are subject to applicable reporting requirements outlined in section 9.22 of this document.
- b. The pooling organization will provide an annual summary report to BPA. The report shall document the claims of all pooling participants.
- c. If the pooling entity has a mix of customers using different conservation or renewable approaches, the pool must keep customers using different approaches separate for reporting purposes.

Examples

Existing Customer Scale Wind

Big City Energy wants to use its rate credit to offset the cost of purchasing 20 MW of energy from the Big Wind Project (energized in 2001). The busbar CY 2010 power purchase price is \$44.00/MWh, their contracted integration charges are \$9.00/MWh. The project generated (and Big City Energy purchased) 60,000 MWh in 2010 and 50,000 MWh in 2011. This project would be classified as an Existing Facility and as a customer-scale wind project.

$\$/\text{MWh Credit} = [(\text{Contracted Power Cost}) + (\text{Contracted Integration Charges})] - (\text{Proxy for avoided cost}).$

NTE 33 percent of the applicable New Facility credit.

$\$/\text{MWh Credit} = [(\$44/\text{MWh}) + (\$9/\text{MWh}) - (\$34.68/\text{MWh}) = \$18.32/\text{MWh}.$

However, \$18.32/MWh > 50 percent of the credit given to New Customer Scale Wind facilities (e.g. Existing Customer-scale wind projects are capped at \$9.00/MWh).

Therefore, the \$/MWh Credit for the purchase of energy from the Big Wind Project is capped at \$9.00/MWh.

Total Credit = (Energy Generated) x (\$/MWh Credit)

Total Credit = (110,000 MWh) x (\$9.00/MWh) = \$990,000.00

Big City Energy can submit a request for a claim for \$990,000.00 anytime during the rate period, but the amount claimed in one year cannot exceed their annual CRC credit, and the claim will need to be substantiated in the next October 31 report.

Big City Energy must have the output and costs independently certified by a CPA and include these verification reports in their October 31 annual report to BPA for the year in which they make the claim.

New small wind project

During the FY 2010-2011 rate period PUD #1 signs an agreement to purchase a wind project within their service area. The Project is contracted to be energized by December 31, 2011. Project consists of two 1.5-MW turbines. This is a New Wind project with a capacity less than or equal to 10 MW but greater than 25 kW.

Credit = (Capacity) x (Capacity Factor) x (\$/MWh Credit) x (hours/year)

Credit = (3 MW) x (0.30) x (\$18.00/MWh) x (8,760) = \$141,912.00. (\$18.00/MWh = Cap)

PUD #1 can submit a claim for this project anytime during the rate period, but must include in their October 31 annual report verification that they have executed a power purchase agreement during the rate period and that contractual incentives are in-place to ensure the project is energized by December 31, 2011. By no later than January 15, 2012 PUD #1 must also demonstrate that the project was energized by December 31, 2011. If the project fails to come on-line by December 31, 2011, the PUD must repay BPA for the credit claimed for this project plus interest. If the project was energized after October 1, 2011, PUD#1 will need to include forecasted energy in their annual report and a true-up report will need to be provided after the first 12 months of consecutive operation.

Although the PUD can claim the renewable project during any year, they must substantiate the claim in the next October 31 annual report. PUD #1 must retire the RECs generated by this project during the 2010-2011 rate period within their service area. PUD #1 cannot simultaneously claim energy generated by their wind project under the rate credit program and sell the attributes or Renewable Energy Certificates (RECs) separately.

See table RO-1, section 9.16.

New customer-scale wind project with self-supplied integration services:

East Side Electric signs a contract to purchase 60 percent of the output of the 50 MW White Eagle wind project. The busbar cost of the energy is \$48.00/MWh and integration costs are \$4.00/MWh.

The project is scheduled to be energized in September 2010. The White Eagle project would be classified as a New customer scale wind project.

Credit = ((Project Costs) – (Proxy for Avoided Cost)) x (Capacity) x (Capacity Factor) x (hours/year)

Credit = [(\$48.00/MWh + \$4.00/MWh) - (\$34.68)] x (50 MW x 0.60) x (0.30) x (8760) = \$1.365.508

Credit = \$17.32/MWh

East Side can make a claim for this project anytime during the rate period, but the amount claimed in any one year cannot be greater than the customer's total CRC for that year. If East Side's total eligibility is only \$1,000,000.00/year, then it must submit a request for a claim for this project over several years rather than in a single year.

For example, it would be permissible for East Side to report only a portion of one year's worth of output received to satisfy the CRC requirements for FY 2007. East Side could then apply the remaining portion of that year's production from White Eagle to satisfy all or a portion of the CRC requirements for FY 2011.

East Side must verify, via a third party audit, generation amounts, purchase price, and justification for their near-term opportunity costs associated with self-supplied integration. The audit report and the justification for integration costs should be supplied to BPA in its October 31 annual report for the year in which it made the claim (e.g., report due by October 31, 2010, for FY 2010). This customer may want to keep the busbar energy and integration costs confidential, in such case it should arrange for a confidentiality agreement with BPA.

Generation exceeding the requested claim can be rolled forward and claimed in the following year. (FY 2011 generation cannot be rolled forward to FY 2012.)

East Side must retire the RECs generated by their portion of the White Eagle wind project during the FY 2010-2011 rate period within their service area. East Side cannot simultaneously claim energy under the rate credit program and resell the associated RECs to another customer or marketer.

See section 9.16(a).

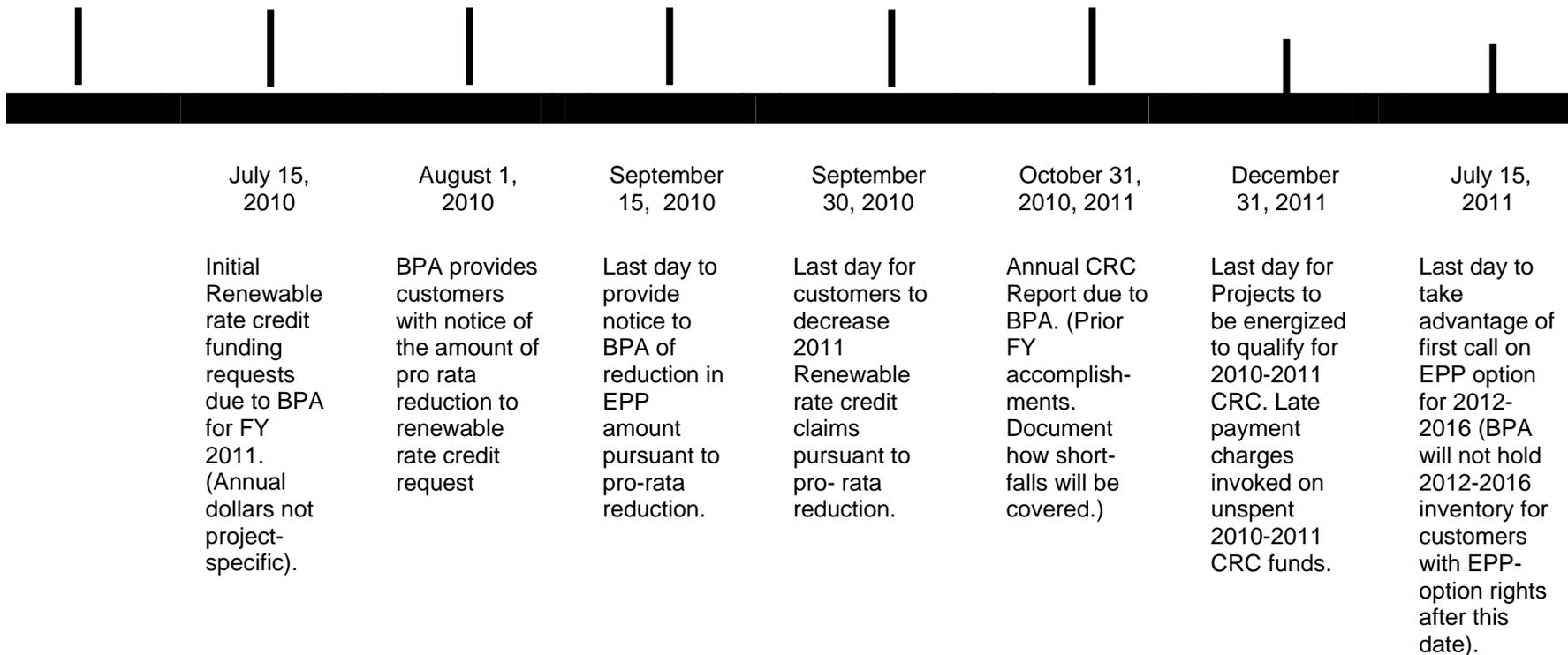
RECs

Jones County PUD purchases 50,000 MWh of Calendar Year 2011 RECs from East Side's portion of the wind Project. Jones paid East Side \$5.00/MWh for the RECs and submits a claim to BPA for \$250,000.00. The calculations are correct but BPA denies Jones' claim because:

- a) BPA determined that East Side also submitted a claim on the same portion of project.
- b) Some of the RECs will be generated after the end of the rate period. Only RECs generated during the rate period are eligible. Jones will have to use the amount of rate credit they claimed for these RECs on another eligible Renewable activity before the end of the rate period. The other customer making a claim on this project may be required to repay BPA for their claims made on this project.

See section 9.9.

EPP and Renewable Option to the Conservation Rate Credit Notice/Contract Action Timeline



10. Updates/Revisions

The table below contains a directory of any changes made to this Manual outside official publications in April and October. In addition to a change description and effective date, the table includes the location of that change, whether contained solely in this table or also in the body of this chapter or in a sector specific chapter.

The table will be blank until a change is made.

Change Description	Effective Date	Location
General		
Agricultural Sector		
The Scientific Irrigation Scheduling measure has been revised.	1/6/11	pg. 20-21
Commercial Sector		
BPA will accept projects submitted under previous lighting calculator versions in order to ensure a smooth and orderly transition through September 30, 2011 (changed from March 31, 2011).	2/9/11	pg. 111
Industrial Sector		
Residential Sector		
Multi-Sector		