BONNEVILLE POWER ADMINISTRATION

# ENERGY EFFICIENCY
# Implementation Manual

October 1, 2012

This document is available online at www.bpa.gov/Energy/N/implementation.cfm.

# Table of Contents


October 2012 Changes Summary ..... i
Implementation Manual Revision Timeline ..... v
Implementation Manual Revision Diagram ..... vi
Definitions ..... vii
1. Introduction ..... 1
1.1 How Measures Become Eligible for BPA Reimbursement ..... 1
1.1.1 RTF Recommendations ..... 1
1.1.2 BPA Qualified Measures ..... 2
1.2 Reimbursement Strategies and Levels ..... 3
1.3 Policy for Measure Changes/Additions ..... 3
1.4 Official Interpretations ..... 3
2. Funding ..... 4
2.1 BPA Funding ..... 4
2.1.2 Rules for Pooling Organizations ..... 6
2.1.3 Performance Payments ..... 7
2.2 Funding Sources and Savings Allocation ..... 7
3. General Requirements ..... 9
3.1 Documentation Requirements ..... 9
3.2 Reporting Requirements ..... 9
3.2.1 Interim Invoice Process ..... 9
3.2.2 BPA Energy Efficiency Reporting System ..... 11
3.3 Oversight Review Process ..... 12
3.4 Other Requirements ..... 13
3.5 Liability Requirements ..... 13
4. Custom Programs and Projects ..... 14
4.1 Custom Programs and Projects General Requirements ..... 14
4.1.1 Custom Programs and Projects Reimbursement Levels ..... 14
4.1.2 Custom Programs and Projects Progress Payments ..... 15
4.1.3 Custom Programs and Projects Documentation Requirements ..... 15
4.2 Custom Programs ..... 16
4.2.1 Custom Program Requirements ..... 16
4.2.2 Custom Program Approval Process ..... 16
4.2.3 Custom Program Reporting and Reimbursement Requirements ..... 18
4.3 Custom Projects ..... 18
4.3.1 Custom Project Process Options Overview and Enrollment ..... 18
4.3.2 Custom Project General Requirements ..... 19
4.3.3 Custom Project Process, Option 1 ..... 20
4.3.4 Custom Project Process, Option 2 ..... 21
5. Agricultural Sector ..... 22
6. Commercial Sector ..... 30
7. Federal Sector ..... 54
8. Industrial Sector ..... 55
9. Residential Sector ..... 68
10. Utility Distribution Sector ..... 88
11. Multi-Sector ..... 90
12. Updates/Revisions ..... 103

# October 2012 Changes Summary

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

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

| Change Description | Change Rationale (e.g., business, policy or research changes) | Page No. |
|---|---|---|
| **General** | | |
| The Manual timeline has been updated to provide the BPA energy efficiency reporting system team and management team review of proposed changes. In addition, a diagram has been added to illustrate the review process. | With the changing state of BPA's reporting system and business rules, it's important to ensure that the Manual aligns with expectations, so we've added additional review levels. | v |
| The document fax number was incorrect and has been changed. | The fax number was incorrect. | throughout |
| The documentation requirements of all ENERGY STAR measures have been changed to allow the customer to support ENERGY STAR status with the product information insert or packaging that includes the ENERGY STAR logo. | The customers needed more flexibility in demonstrating ENERGY STAR status. | throughout |
| **Introduction** | | |
| For BPA Qualified measures, the RTF review requirement has been removed. | The Manual reflects a policy change made for measures where key data is missing for RTF-approval and that data can be collected through a BPA Qualified measure. | 2 |
| **Funding** | | |
| A note of clarification has been added to explain "non-reportable" as a funding source: Customers are allowed, but not required, to include non-reportable savings to BPA. BPA will not review the non-reportable data. Customers will not be credited for the energy savings reported to BPA for non-reportable activities. | This information was not previously included, but is necessary to provide a context for the funding source. | 8 |
| **General Requirements** | | |
| Customers may report savings to BPA (with or without a request for reimbursement) no more than once per calendar month with one exception: measures or projects that were included on a report and rejected or returned may be resubmitted during the same month. This rule is separate from reconciliation rules, which may allow for more frequent invoice submission. | This change creates a more efficient process for customers and BPA staff in dealing with reports. | 9 |
| BPA Energy Efficiency is currently working on procuring a long-term reporting system. During this procurement process, it will release interim reporting system IS2.0 (which will replace the Interim Invoice Process) and will provide a minimum of two weeks of notice before requiring customers to use this system, A new section has been added to explain how to use the IS2.0 BPA Energy Efficiency reporting system when available. | BPA is planning on releasing a new interim reporting system and is providing information on that system prior to its availability. | 11 |
| **Custom Programs and Projects** | | |
| The custom projects section has been revised to reflect all-in-one (proposal through completion) custom project calculators that will be available to customers soon. | These calculators were created to work with the BPA Energy Efficiency reporting system and to provide a cleaner, simpler format for custom project submittals, approvals and retention. | 15 |

| Change Description | Change Rationale (e.g., business, policy or research changes) | Page No. |
|---|---|---|
| The custom programs and projects documentation section was clarified to remove requirements that were included in the calculators (e.g., reporting the amount paid to the end-user was removed as a separate line item as it is a part of the calculator). | This removed redundant requirements that could lead to confusion. | 15 |
| The custom programs section was clarified. | This section was ambiguous in parts, and was clarified. | 16 |
| The custom projects measurement and verification (M&V) requirements were clarified to explain when the Engineering Calculations with a Verification Plan may be used. | Previously, this section included two pieces of criteria and it wasn't clear whether they both had to occur to use this M&V Plan or if only one had to occur. The section was clarified to indicate that both have to occur. | 19 |
| **Agricultural Sector** | | |
| The requirement that customers complete an SIS Summary Sheet has been removed. | This requirement was removed per customer feedback and because it would require additional changes to IS2.0. | 25 |
| The Variable Frequency Drives in Ag Turbine Pumps vague change notice set to take effect on October 1, 2012 has been removed. No changes will happen this cycle, and a new notice will be issued if and when BPA is aware of specific changes. | BPA is working to determine the details for proposed changes and therefore cannot make or announce a change. | 27 |
| For VFDs in Ag Turbine Pumps, customers may use the VFD Calculator to estimate savings (available in the Document Library). This document is for the customer's use and is not required to be submitted to BPA. | This calculator was previously available on the BPA Agricultural Resources page but not listed in the Implementation Manual or posted to the Document Library. | 27 |
| **Commercial Sector** | | |
| Effective April 1, 2013, BPA shall reimburse $25.00 - $30.00 per qualifying traffic signal. Savings for the 12-inch green LED turn signal will decrease from 245 kWh to 90 kWh. | Reimbursement will be lowered because BPA is paying beyond the incremental cost. The savings will be reduced due to an RTF review of the savings for this measure. | 33 |
| Reimbursement for some Unitary Air-Conditioning Equipment in Commercial Buildings have gone up. | With the transition to a new Consortium for Energy Efficiency standard, the savings increased for most units, making it possible to increase the reimbursements. Furthermore, there has been low uptake on these measures, and higher reimbursements may motivate participation. | 34 |
| If regional installations for Unitary Air-Conditioning Equipment in Commercial Buildings are insufficient to support RTF simplified M&V approval, this measure will no longer be available effective October 1, 2014. | The measure may be discontinued if it does not provide the savings needed by BPA. | 34 |
| A new measure for Heat-Pump Equipment Conversion and Upgrade in Commercial Buildings is now available. Customers may continue to use the custom project path for all heat pump equipment conversions and upgrades until April 1, 2013. After April 1, 2013, customers are required to use this deemed measure unless the installations meet listed conditions. | Commercial heat pumps are an area of great opportunity and one in which customers have requested deemed measures. BPA has developed a measure to address this need and to shift the heat pump work currently done through the custom project path to the new deemed path. | 37 |
| The transition process for Energy Smart Grocer Combined BPA Turnkey/Self-funded Turnkey participants has been clarified. | The section needed clarification on the method for transitioning funding sources. | 40 |

| Change Description | Change Rationale (e.g., business, policy or research changes) | Page No. |
|---|---|---|
| Effective April 1, 2013, reimbursement for a deemed refrigeration retrofit measure will be reduced (i.e., Refrigeration Control Improvements (non-VFD) Anti-Sweat Heat Control Low Temp Any Commercial Building will be reduced from $50.00 to $40.00). | The current reimbursement is greater than the incremental cost and needs to be corrected. | 42 |
| **Federal Sector** | | |
| There are no changes. | | |
| **Industrial Sector** | | |
| The Energy Project Manager section was clarified to describe the EPM Comprehensive Plan and Year-1 and Year-2 EPM agreements. There are two separate EPM agreement templates available to customers (provided by ESI partners and Energy Management staff). An EPM payment calculator is also now included in the section. | This section was confusing and needed to be clarified. The calculator will assist in calculating payments with the BPA Energy Efficiency reporting system. | 58 |
| The Track and Tune (T&T) savings calculations process has been clarified, and a T&T payment calculator is now included in the section. | The calculator will assist in calculating payments with the BPA Energy Efficiency reporting system. | 61 |
| The High Performance Energy Management (HPEM) section has been clarified to describe savings and reimbursement and the HPEM performance period start date. BPA will also default to booking 75% of first year savings unless the customer requests otherwise. An HPEM Calculator that calculates payments is now included in the section. | This section was confusing and needed to be clarified. The savings booking change was made to prevent negative savings in subsequent years. Customers asked for clarification to the HPEM performance period start date to be based on full monthly billing cycle. The calculator will assist in calculating payments with the BPA Energy Efficiency reporting system. | 64 |
| In the Variable Frequency Drives for Fans in Spud and Onion Storage Facilities, the ENERGY STAR documentation requirement has been removed. | This requirement was mistakenly included in the April 2012 version of the Implementation Manual and is not necessary. | 67 |
| The industrial lighting section has been moved to the multi-sector Non-Residential lighting section. | The industrial lighting information was multi-sector in nature, so it was moved to the multi-sector chapter. | 95 |
| **Residential Sector** | | |
| The showerheads measure was clarified to indicate that showerheads left at a customer's residence at the customer's request are considered to be distributed over-the-counter. | BPA planning determined that this is the appropriate distribution method. | 71 |
| The BPA *Simple Steps, Smart Savings* Program name was changed to BPA *Simple Steps, Smart Savings* Retail Promotion, and clarifications were added to the participation and funding options. | The name was modified to emphasize that it only applies to retail activities, and funding clarifications were added to make clear that customers can contract directly with the contractor using their own funds and ECA funds. | 71 |
| The Heat Pump Water Heater measure was clarified, and the requirement that the water heaters be on the BPA qualified products list was changed to NEEA's product list. In addition, the reimbursements were broken out by tiers, and Tier 2 measures were added. | The product list was changed because NEEA now has a sufficient product list, and BPA's list is duplicative. New research and support from NEEA indicates that Tier 2 heaters are a source of savings. | 73 |
| The requirement that pipe insulation end-user identifying information be submitted through the BPA Energy Efficiency reporting system has been removed. | The updates/revisions section issued on 7/18/12 correctly stated that end-user identifying information need not be submitted through the BPA Energy Efficiency reporting system, but the change was not reflected in the text. It has now been corrected. | 75 |

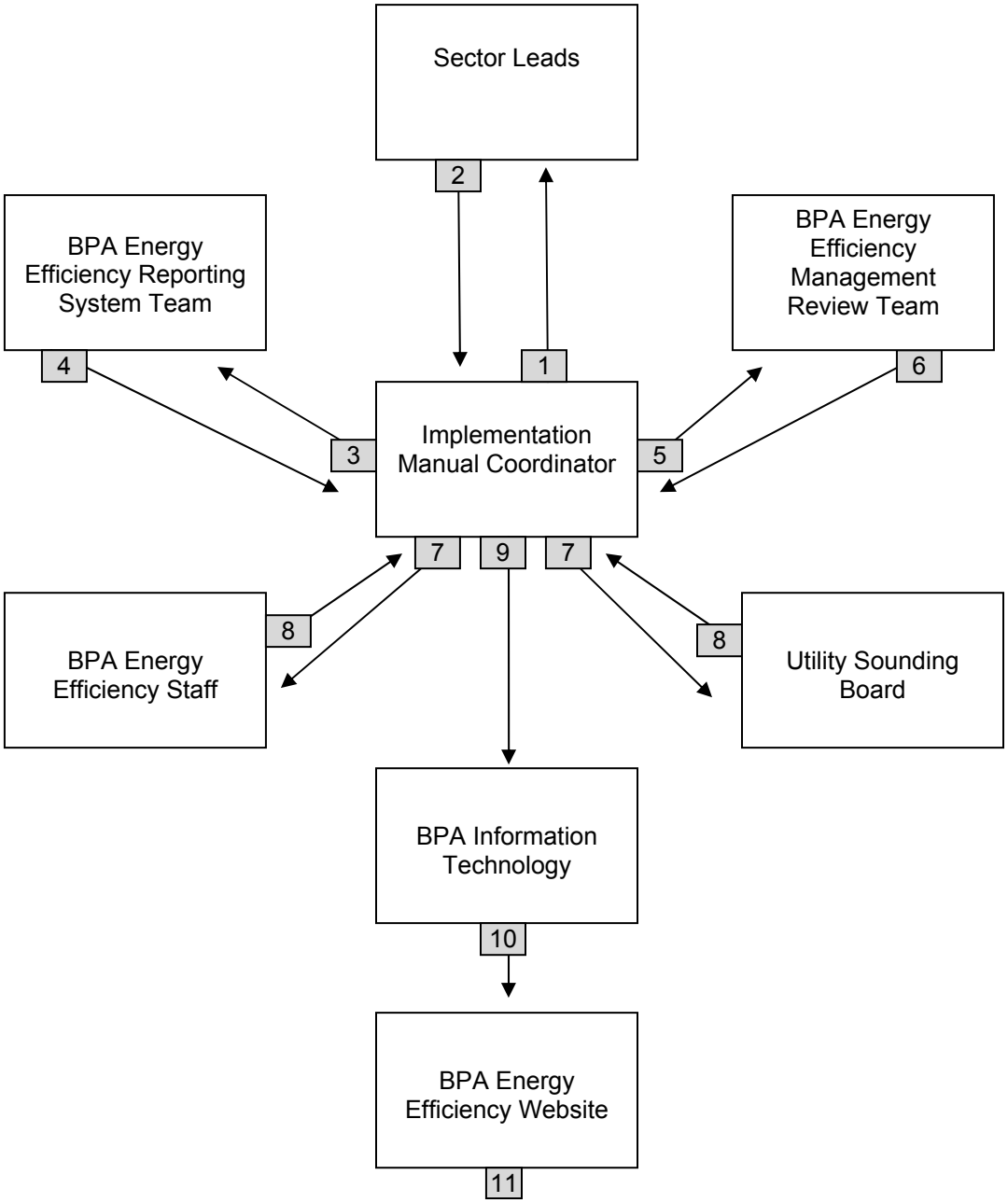
| Change Description | Change Rationale (e.g., business, policy or research changes) | Page No. |
|---|---|---|
| In the Ducted Systems with Performance Tested Comfort Systems Measure, BPA has postponed the effective date (to April 1, 2013) of the new installation standards which will not allow open loop installations (when the new standard is in effect, open loop installations must be claimed as BPA-qualified). | The new standards were originally scheduled to go into effect on October 1, 2012, but the version of the new standards posted in April was incorrect. BPA is now reissuing notice with the correct standards. | 76 |
| Ducted Systems with Performance Tested Comfort Systems Measure language has been clarified, and the documentation requirements have been changed to reflect new retention/submittal locations. | The previous submittal/retention locations were incorrect. | 76 |
| New measures have been added to the Ducted Systems with Performance Tested Comfort Systems section to allow Variable Speed Heat Pump Upgrades. These measures are BPA Qualified. | The RTF announced that Variable Speed Heat Pump Upgrades are ineligible, so BPA is allowing them as BPA Qualified and performing additional research. | 76 |
| Effective April 1, 2013, the New Multifamily Construction measure is no longer available. | Recent advances in residential building code have surpassed the RTF specifications to the extent that the RTF has determined that the specification is less stringent than current building codes. | 82 |
| In the standard income insulation section, measures for multifamily insulation were added. | These measures were missed in the creation of the Interim Deemed Measure List. | 83 |
| The prime window replacement section has been expanded to explicitly include patio doors. | Though patio doors were always allowed under this measure, it wasn't clear. | 84 |
| **Utility Distribution Sector** | | |
| There are no changes. | | |
| **Multi-Sector** | | |
| The Non-Residential Lighting section was reorganized, and information previously only in the industrial section has been moved to this section. | This section was confusing, and information was scattered. It was reorganized to provide needed clarity to customers and BPA staff. | 95 |
| Effective April 1, 2013, LED Exit Signs or Retrofit Kits (BPA-Qualified) will no longer be available. | This measure was inconsistent with BPA's comprehensive approach to lighting projects. The LED Exit Sign measure still exists in the lighting calculator with the same reimbursement. | 98 |
| Effective April 1, 2013, Non-Residential ENERGY STAR CFLs (BPA-Qualified) will no longer be available. | This measure will be discontinued because an Energy Independence and Security Act baseline update is required for continuation, uptake was minimal and the measure is inconsistent with BPA's comprehensive approach to lighting projects. CFL measures still exist in the lighting calculator. | 98 |

# Implementation Manual Revision Timeline

| Action | Personnel on Point | Static Due Date | April 2013 Due Date[1] |
|---|---|---|---|
| 1. Prepare Manual for publishing and send out for first round of revisions. | BPA Energy Efficiency Implementation Manual Coordinator | 13.5 weeks before Manual publication date | December 12, 2013 |
| 2. Complete first round of revisions and return to BPA Energy Efficiency Implementation Manual Coordinator. | BPA Energy Efficiency Staff (Sector Leads, Contracts Manager, Programs Manager) | 9.5 weeks before Manual publication date | January 9, 2013 |
| 3. Incorporate first round of revisions and send to BPA Reporting System team for review. | BPA Energy Efficiency Implementation Manual Coordinator | 8.5 weeks before Manual publication date | January 16, 2013 |
| 4. Complete BPA Reporting System team review and return to BPA Energy Efficiency Implementation Manual Coordinator. | BPA Reporting System Team Representative | 7 weeks before Manual publication date | January 28, 2013 |
| 5. Incorporate BPA Reporting System edits and send to management for review. | BPA Energy Efficiency Implementation Manual Coordinator | 7.5 weeks before Manual publication | January 31, 2013 |
| 6. Complete management review and return to BPA Energy Efficiency Implementation Manual Coordinator. | Management Representative | 6 weeks before Manual publication | February 12, 2013 |
| 7. Incorporate management edits and send to BPA Energy Efficiency staff/Utility Sounding Board for second round of revisions. | BPA Energy Efficiency Implementation Manual Coordinator | 5 weeks before Manual publication | February 19, 2013 |
| 8. Complete second round of revisions and return to BPA Energy Efficiency Implementation Manual Coordinator. | BPA Energy Efficiency staff, Utility Sounding Board Members | 3 1/2 weeks before Manual publication date | March 5, 2013 |
| 9. Incorporate second round of revisions. | BPA Energy Efficiency Implementation Manual Coordinator | 2 weeks before Manual publication date | March 18, 2013 |
| 10. Convert Manual to PDF and create bookmarks and hyperlinks. | BPA Energy Efficiency Implementation Manual Coordinator | 7 days before Manual publication date | March 21, 2013 |
| 11. 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 25, 2013 |
| 12. 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, 2013 |

[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.

## Implementation Manual Revision Diagram



# Definitions

| | |
|---|---|
| **AHRI** | Air-Conditioning Heating and Refrigeration Institute |
| **aMW** | Average megawatt of electricity or the average measure of the total energy delivered in one year - 8,760,000 kilowatt-hours per year |
| **B/C** | Total resource cost benefit/cost ratio |
| **Bilateral Funding** | A form of BPA energy efficiency funding; "Implementation Budget" as used in the Energy Conservation Agreement; Energy Efficiency Incentive |
| **Bilateral Transfer** | The transfer of implementation budget between customers |
| **BPA** | Bonneville Power Administration |
| **Busbar energy savings** | Generally 9.056% above the site energy savings |
| **CEE** | Consortium for Energy Efficiency |
| **CFL** | Compact fluorescent lamp/light bulb |
| **Completed Unit** | As used in the Energy Conservation Agreement describes 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 BPA Energy Efficiency reporting system and supporting documents |
| **Completion Report** | A document submitted at the completion of a custom project (under Custom Project Process, Option 1) 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 |
| **Customer** | A utility or other regional entity that purchases power from BPA |
| **Custom Program** | Energy savings work performed under the Manual's custom program section |
| **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 Manual's custom project section (under Custom Project Process, Option 1) |
| **Deemed Measure** | A measure with estimated energy savings per unit based on a history of measured results and an ability to replicate energy savings |
| **DHP** | Ductless Heat Pump |
| **ECA** | Energy Conservation Agreement |
| **EEI** | Energy Efficiency Incentive; the basis of the implementation budget that funds energy efficiency activities |
| **EER** | Energy Efficiency Representative |
| **EM&V** | Evaluation, measurement and verification |
| **End user** | Ultimate consumer of product |
| **Energy Savings** | Conservation in first year kilowatt-hours attributable to completed units; site energy savings, which include busbar 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 |
| **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 |
| **HPWH** | Heat pump water heater; a water heater manufactured with an integrated heat pump that heats water by transferring heat from ambient air via a refrigeration cycle; does not include add-on |

| | |
|---|---|
| | units that modify an existing water heater. |
| **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 covered by a customer's Energy Conservation Agreement |
| **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 |
| **Invoice** | A report of measures claimed and/or savings achieved under the Manual (may or may not include a request for reimbursement) |
| **kW** | Kilowatt – one thousand watts (units of electric power) |
| **kWh** | Kilowatt-hour – one kilowatt over the period of one hour (unit of energy) |
| **Large Project Fund** | The money reserved for certain BPA-approved custom projects with reimbursement amounts that exceed 50% of the customer's original implementation budget (i.e., budget at start of rate period) |
| **LED** | Light-emitting diode |
| **Low-income** | As defined in the Federal Weatherization Assistance Program, 200% of the poverty income levels (Approved statewide definitions substitute for federal low-income weatherization programs in the corresponding states.) |
| **M&V** | Measurement and Verification |
| **Major Renovation** | A renovation to an existing structure that requires a building permit and in which multiple systems are impacted while the structure is repurposed, expanded or repositioned |
| **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 (Commercial)** | Five or more dwelling units within the same structure and more than three stories |
| **Multifamily (Residential)** | Five or more dwelling units within the same structure and 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 |
| **NFRC** | National Fenestration Rating Council |
| **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 |
| **PTCS™** | Performance Tested Comfort Systems (certification for duct sealing and heat pump commissioning) |
| **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 |
| **Single-family** | Fewer than five dwelling units within the same structure or a site-built home (Modular homes are considered single-family, site built homes.) |
| **Site energy** | The ascribed, deemed, calculated, estimated, evaluated or verified conservation in first year |

| | |
|---|---|
| **savings** | kilowatt-hours attributable to completed units |
| **Tier One Cost Allocator (TOCA)** | Per the Tiered Rate Methodology, a billing determinant for applicable customer charges, annually based on the lesser of the customer's rate period high water mark (RHWM) or the customer's forecast net requirement, calculated as a percentage of the total of RHWMs for all customers |
| **TSP** | Technical Service Provider |
| **Unassigned Account** | The grouping of unclaimed and returned Energy Efficiency Incentive funds |
| **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 |
| **Unheated buffer space (residential)** | Any residential building cavity or space that is adjacent to the thermal boundary of the house and that has no positive heat supply under thermostatic control (e.g., garages and basements) |
| **Utility** | A public customer that purchases power from BPA |
| **Variable speed heat pump** | A ducted heat pump manufactured with an inverter driven motor that is capable of adjusting its output to meet the requested heating load (with performance similar to a DHP) |
| **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) |
| **VFD** | Variable Frequency Drive |
| **Whole Building Cost** | As-built contracted cost including labor, design and measurement and verification, excluding land costs |
| **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 BPA Energy Efficiency Post-2011 Implementation Program. For additional guidance on Post-2011, see the BPA Web site. The Manual, together with the customer's Energy Conservation Agreement (ECA) and specifications in BPA's energy efficiency reporting system, incorporated herein, provides the implementation requirements for projects reported to BPA.

## 1.1 How Measures Become Eligible for BPA Reimbursement

Energy efficiency 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:

- Cost-effective conservation and estimated energy savings and costs of deemed measures
- Standard practices
- Protocols for estimating the energy savings and system value of measures/programs not on the RTF recommended list
- Protocols for measurement and evaluation of energy savings or production

Customers may write the RTF chair to propose new/changed measures. Customers should verify RTF proposal requirements, but depending upon the proposal type, certain items should be included.

- 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 change more closely aligns the change with reality.

RTF staff will place completed proposals on either the (1) RTF discussion agenda or (2) the RTF consent agenda for rejection. If any RTF member disagrees with consent agenda assignment, the proposal will be put on the discussion agenda.

Proposing parties may present directly to the RTF and/or contact individual RTF members prior to the meeting. Members must disclose contacts when the proposal is under consideration. The RTF shall consider the staff's recommendation and any public comment

**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.

Section 4 contains information on the custom program and project process.

Sections 5 through 11 contain information about specific sectors (Agricultural, Commercial, Federal, Industrial, Residential, Utility Distribution and Multi-Sector).

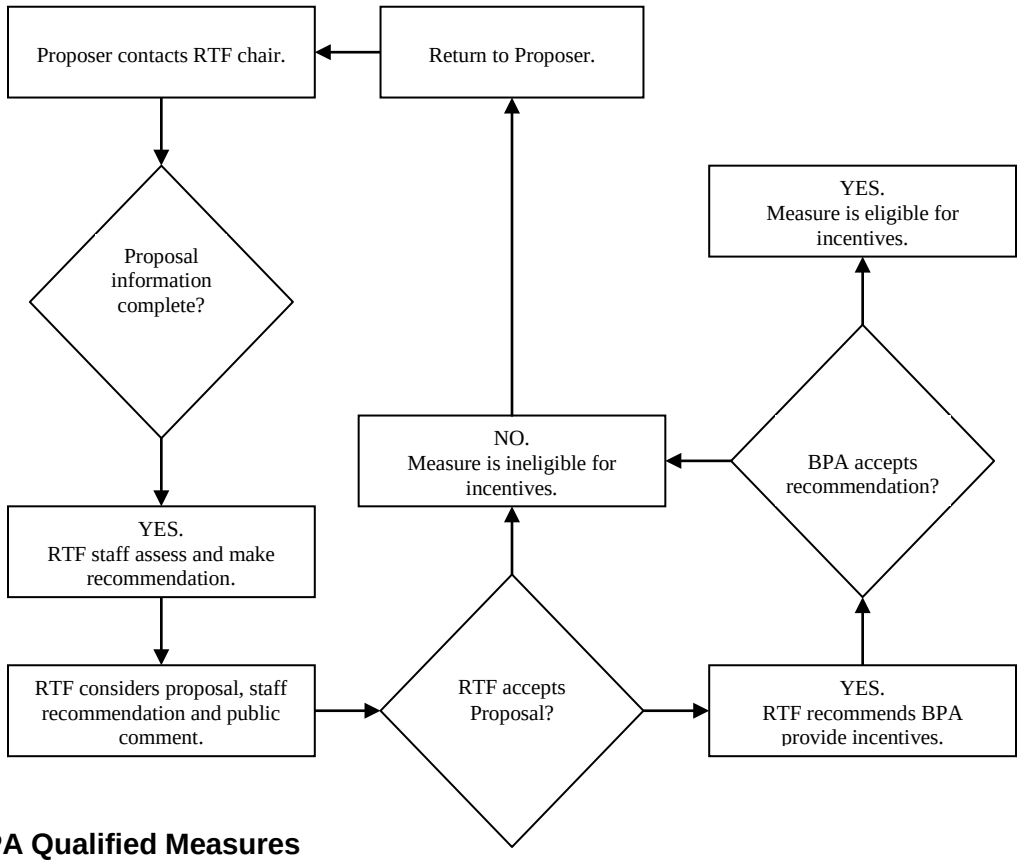
Section 12 contains updates and revisions made outside publications in October and April.

and accept or reject the proposal by majority vote, usually within 90 days of proposal receipt.

The RTF will recommend accepted proposals to BPA. These recommendations are advisory only, and BPA will generally decide within 30 days whether to accept, reject, modify or request more information regarding the RTF recommendation.

The figure below depicts the RTF process.

**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 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 data.
- The measure has estimates and reliable sources of per-unit savings, incremental costs and lifetime.
- The measure is expected to have a B/C ratio greater than 1.
- A thorough plan for data collection and evaluation has been established.

For BPA Qualified measures, BPA assesses preliminary cost-effectiveness, develops an M&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. The RTF is expected to complete its review within two RTF meetings.

Once BPA Qualified, BPA offers the measure to customers and sets expiration dates for claiming measure savings in order to ensure information is available for 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 BPA's energy efficiency reporting system.

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

### 1.2 Reimbursement Strategies and Levels

BPA strives to acquire conservation at the lowest possible cost and bases reimbursement levels on (1) busbar energy savings, which are generally 9.056% above the site energy savings and (2) estimated or verified energy savings that persist over the life of the measure (as derived from program evaluations and research projects).

There are two types of reimbursement:

1. Deemed Reimbursement: BPA sets the deemed reimbursement level by multiplying the RTF deemed estimate of busbar energy savings by a set dollar amount or by setting a specific reimbursement amount. Some measures may require additional calculations to arrive at energy savings, and when this occurs, the measure is "calculated" but still deemed.
2. Custom Programs and Projects Reimbursement: The custom programs and projects reimbursement level is determined by the custom programs and projects reimbursement table.

### 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. Customers will be given at least six months notice for changes that decrease a measure reimbursement or savings, increase requirements or delete an existing measure. Changes that increase a measure reimbursement, decrease requirements or add a new measure may be implemented at any time without prior notice.

### 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 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.

# 2. Funding

## 2.1 BPA Funding

Pursuant to section 3(a) of the Energy Conservation Agreement (ECA), BPA Energy Efficiency will reimburse customers for the costs of energy savings from in-region projects.[2]

This section discusses (1) bilateral funding, (2) pooling organizations and (3) performance payments.

### 2.1.1 Bilateral Funding

Bilateral funds may be used for all BPA-funded measures, unless otherwise specified in the Manual. Bilateral funding is administered through the customer's ECA (Exhibit A) and is referred to as the implementation budget (or in certain instances through a supplemental Large Project Fund budget in a separate exhibit).

Customers may request an ECA[3] 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 final, two originals (signed by BPA) will be sent to the customer with a request that both be signed and one returned to BPA.

Customer rate period implementation budgets (contained in ECA Exhibit A) are based on customer Tier One Cost Allocators (TOCA). Customers may pursue budget changes under the ECA, per the terms of that agreement according to the parameters detailed below for budget redistribution, reduction and increase (from the Unassigned Account and Large Project Fund). Pursuant to Section 4(c) of the ECA, 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.

The following section discusses (1) Energy Efficiency Incentive (EEI) allocation, (2) EEI redistribution, (3) EEI increase from the Unassigned Account and (4) the Large Project Fund.

1. <u>EEI Allocation</u>

   After the rate case Final Proposal is published, BPA will calculate the EEI allocation for each customer and deliver this information in a letter or similar document. BPA will revise the customer's ECA implementation budget to reflect the allocated funds, effective the first day of each rate period (i.e., October 1), unless the customer indicates a different funding amount (not to exceed the EEI allocation) through the COTR Request and Acknowledgement Procedure. If the customer does not request a different funding amount, it commits to use or transfer its full EEI allocation for the acquisition of energy efficiency, per the requirements of the Manual. Returned EEI funds will be added to the Unassigned Account, an account which will capture unclaimed EEI funds.

2. <u>ECA Implementation Budget Redistribution (Bilateral Transfers and Pooling Organizations)</u>

   Customers may redistribute EEI funds among each other by forming a pooling organization or by sending a completed Bilateral Transfer Request and Attestation

[2] BPA will not reimburse for projects that have been or will be funded in part/full by another BPA funding source.

[3] Occasionally, BPA may negotiate a non-standard agreement with a customer that contains variations from Manual requirements, but only when there is a benefit to BPA (e.g., a reduction in the reimbursement or staff time spent administering the agreement).

Form (available in the Document Library) to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955).

If customers request a bilateral transfer of EEI funds, BPA will revise the customers' ECA implementation budgets to reflect the transfer only if there is no appearance/evidence that a customer received or gave, or planned to receive or give, something of value in exchange for the transfer. Value does not include the transfer of funds in current or future rate periods. If BPA discovers that value was exchanged after revising implementation budgets, it will reverse the changes, and customers must return any transferred funds paid by BPA.

3. ECA Implementation Budget Reduction

   Customers may reduce their implementation budget at anytime by using the COTR Request and Acknowledgment Procedure. BPA will revise the customer's ECA implementation budget to reflect the reduction, and the unallocated funds will be added to the Unassigned Account.

4. ECA Implementation Budget Increase from the Unassigned Account

   BPA may increase customer implementation budgets (1) at months 6, 12 and 18 of the rate period and (2) on a monthly basis, beginning the 19th month of the rate period by distributing available EEI funds from the Unassigned Account. Customers will have 10 working days to request an implementation budget increase after BPA provides an accounting of available funds. If a customer's request is approved, funds will be allocated via a revision to the customer's ECA implementation budget.

   To request an implementation budget increase from funds in the Unassigned Account, customers must submit to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) the Unassigned Account Funding Request Template (available in the Document Library) and request an amount not to exceed the total amount available in the Unassigned Account. If total requests exceed available funds, funds will be allocated pro rata, based on the allowable amount of the customers' requests.

   Customers who reduce their implementation budgets within the first 12 months of a rate period receive second priority access (behind BPA, which has first priority for Large Project Fund allocations, if applicable) to the unassigned funds up to the amount reduced. Priority is based on the date the funds were released and carries through that rate period and the one immediately following. Once the customer has recovered all the reduced funds, priority access is removed.

5. Large Project Fund Budget

   Customers may receive a supplemental Large Project Fund budget in a separate ECA exhibit to support qualifying custom projects. Per the terms of that exhibit, BPA will lock large project funding equal to the projected reimbursement, less either 1/3 of the customer's start-of-rate-period EEI allocation or 1/3 of the estimated reimbursement (customer must choose one). The difference provides the BPA payment cap, but the actual payment is based on savings achieved as documented in the custom project completion report.

   The Large Project Fund is capped at $10 million per rate period, and BPA will allocate funds on a first-come, first-served basis according to the date of the

submitted custom project proposal requesting Large Project Funds.[4] A customer must request Large Project Fund budget in its custom project proposal.[5] [6] The custom project proposal must indicate (1) the rate period in which the Large Project Fund allocation will be disbursed to the customer (by estimating the project completion date) and (2) project milestones and a proposed schedule of completion.

In order to qualify for the Large Project Fund, the requirements below must be met:

- The custom project's reimbursement meets or exceeds 50% of the customer's rate period implementation budget.[7]
- The customer must pay the end user the total reimbursement based on the custom project reimbursement rate (including the Large Project Fund budget and the share not covered by BPA).
- If a project is not completed within the projected rate period stipulated in the custom project proposal, the funding lock will be revoked, and the customer must reapply for large project funding using the COTR Request and Acknowledgement Procedure. The request must include the revised projected completion date, payment amount and documentation of the Large Project Fund requirements.
- The customer must repay BPA for the large project funding received through (1) reductions to the customer's Exhibit A Implementation Budget, (2) reductions to two start-of-rate-period EEI allocations or (3) by the customer using its own funds.

If the customer is a member of a pooling organization, all calculations are based on the customer's individual, uncombined budgets.

### 2.1.2 Rules for Pooling Organization

A pooling organization is two or more customers combining BPA funds to implement cost-effective conservation. A customer may put all or a portion of its BPA funding toward a pool and withdraw under terms and conditions agreed to by the pool. Pool membership can expand or contract as determined by the pool, but pooling organizations must provide written notice to BPA at least 30 days prior to membership formation, changes or dissolution.

A pooling organization must appoint a legally authorized representative (i.e., customer or separate entity) to assume non-transferable liability for the organization. BPA will fund a pooling organization only after it has reviewed and approved documentation of pool status (e.g., pooling organization agreement, by-laws, articles of incorporation) submitted by requesting customers. If the authorized representative is not a BPA customer with an existing ECA, BPA will offer an ECA for signature. Savings must be allocated to the individual customer where the savings are located.

---

[4] To ensure initial equitable access to the Large Project Fund, BPA will open a window for fund requests, and will consider all requests received during that window to have the same submission date and time. Funds will be allocated to qualifying projects submitted during the window on a pro-rata basis, if necessary.

[5] Only projects initiated post-2011 may qualify for the Large Project Fund.

[6] Customers using Custom Project Process, Option 2 must use Custom Project Process, Option 1 for projects using Large Project Funds.

[7] For customers in a pooling organization, this requirement is calculated using the customer's individual, uncombined rate period implementation budget.

### 2.1.3 Performance Payments

Performance payments come out of the customer's ECA implementation budget and are based on savings achieved. The payment rate and cap depend on the customer's classification as "small," "rural" or "residential" (SRR) or none of these (non-SRR) (as defined in the chart below).[8]

| SRR Status | Definition | Payment Rate *$/kWh* |
|---|---|---|
| Small | The customer's forecast net requirement is less than 10 aMW.[9] | $0.08 |
| Rural | The customer has fewer than 10 customers per line mile according to the Low Density Discount calculation. | $0.08 |
| Residential | The customer's load is greater than 66% residential, according to U.S. Energy Information Administration data.[10] | $0.08 |
| Non-SRR | The customer is not small, rural or residential. | $0.04 |

Customers may claim payment at a rate up to the rate in the table above, and the payment amount must be included in each invoice. If the performance payment is not claimed in an invoice or claimed only in part (e.g., at a rate less than the payment rate in the table above), there is no opportunity to later collect money for the unclaimed payment. The total of all performance payments is capped at 30% of the implementation budget for SRR customers and at 20% of the implementation budget for non-SRR customers.[11]

Pooling organizations may claim performance payments up to the aggregate of each pool participant's allowance.

When funds are redistributed among customers, BPA may restrict the performance payment claimable on the transferred funds.[12]

BPA highly recommends that customers use performance payments to support implementation costs in support of the Manual's activities. Implementation costs may include (1) staff (direct labor and indirect overhead for the implementation and management of conservation activities); (2) marketing (market research, advertising and promotional material production and distribution); and (3) other operating costs (equipment (e.g., metering equipment, computer software/hardware), training, travel and program development).

## 2.2 Funding Sources and Savings Allocation

When reporting savings to BPA, customers must select one or more of the following funding sources.

| Funding Source | BPA Energy Efficiency Reporting System Title | Description |
|---|---|---|
| Implementation Budget | EEI | BPA reimbursement in the form of EEI funding; ECA funded activities that are accepted by BPA |
| Large Project Fund Budget | LPF | BPA reimbursement in the form of EEI |

[8] BPA will notify customers of their rate-period classification in the EEI eligibility letter.

[9] This forecast is based on the Rate Period High Water Mark Process. For the FY 2012-2013 rate period, the forecast is based on the customer's Tier One Cost Allocator.

[10] BPA reserves the right to request additional documentation (e.g., an annual report) to verify a customer's load.

[11] The implementation budget does not include Large Project Funds.

[12] This restriction reduces the risk that BPA will overpay because performance payments are paid on a $/kWh basis, independent of reimbursement amount (i.e., a customer could max out its performance payment, receiving little reimbursement and then transfer its remaining implementation budget to another customer that similarly maxes out the performance payment).

| Funding Source | BPA Energy Efficiency Reporting System Title | Description |
|---|---|---|
| | | funding; ECA Large Project Funded activities that are accepted by BPA |
| BPA-accepted, Non-BPA Funds | Self-funding | Non BPA-funded activities that *are accepted* by BPA |
| Not-BPA-accepted, Non-BPA Funds[13] | Non-reportable | Non BPA-funded activities that *are not accepted* by BPA |

Customers are credited for all savings (except non-reportable) achieved in their service territory. Savings may be allocated to either the EEI or the customer depending on the amount of BPA reimbursement requested by the customer.

| BPA Reimbursement (EEI) Amount Requested | Available Applications | Savings Allocated to EEI | Savings Allocated to Customer |
|---|---|---|---|
| All | Deemed measures and custom projects | 100% | 0% |
| None | Deemed measures and custom projects | 0% | 100% |
| Partial | Custom projects | See tables, below. | See tables, below. |

**Partial BPA Reimbursement Requests – Savings Allocation**
Industrial Projects (*Effective February 1, 2013, these formulas apply to all projects regardless of sector.)*

| | |
|---|---|
| EEI | $\frac{\textit{Amount of BPA Reimbursement Requested} *}{\textit{Amount Paid to the End User} **} \textit{ X Total Reported Savings}$ |
| Customer | $\frac{(\textit{Amount Paid to the End User} **) - (\textit{Amount of BPA Reimbursement Requested} *)}{\textit{Amount Paid to the End User} **} \textit{ X Total Reported Savings}$ |

*Use the amount paid to the end user if less than the amount of BPA reimbursement requested.
**This amount may not exceed the total available BPA reimbursement.

**Partial BPA Reimbursement Requests – Savings Allocation**
Non-Industrial Projects *(Effective February 1, 2013, these formulas are inapplicable.)*

| | |
|---|---|
| EEI | $\frac{\textit{Amount of BPA Reimbursement Requested}}{\textit{Total Available BPA Reimbursement}} \textit{ X Total Reported Savings}$ |
| Customer | $\frac{(\textit{Total Available BPA Reimbursement}) - (\textit{Amount of BPA Reimbursement Requested})}{\textit{Total Available BPA Reimbursement}} \textit{ X Total Reported Savings}$ |

[13] Customers are allowed, but not required, to include non-reportable savings to BPA. BPA will not review the non-reportable data. Customers will not be credited for the energy savings reported to BPA for non-reportable activities.

# 3. General Requirements

## 3.1 Documentation Requirements

Each measure contains documentation requirements. All documentation must be retained in the customer's file, and certain documentation must be submitted to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) or sent to BPA through its energy efficiency reporting system when available.

Customers must retain required information for no less than three years after the term of the ECA or through September 30, 2017, whichever is later. Information must be available to BPA upon request.

If a customer agent or contractor was used for some or all of the measure development, implementation or verification, the customer must also retain a subcontract that documents Manual requirements and contains information required by the ECA.

## 3.2 Reporting Requirements

Customers may report savings to BPA (with or without a request for reimbursement) no more than once per calendar month with one exception: measures or projects that were included on a report and rejected or returned may be resubmitted during the same month. Reports must include supporting documentation required by the Manual, and documentation must prove that measures were available for implementation during the claimed period and properly installed and operating. BPA may reject measures that do not meet these requirements.

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

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

This section will discuss (1) the Interim Invoice Process and (2) the BPA Energy Efficiency reporting system and the next interim reporting system (that will be available at a later date, to be announced by BPA).

### 3.2.1 Interim Invoice Process

BPA's energy efficiency reporting system is temporarily unavailable. BPA will provide between 14 and 30 days of notice prior to the availability of the system.

Currently, customers who seek BPA reimbursement must e-mail Interim Invoices (available in the Document Library) to eedocs@bpa.gov.The Interim Invoice does not require detailed data on individual projects or deemed measures. Customers must, however, retain detailed information associated with interim claims and must submit this information no later than 60 days after BPA's energy efficiency reporting system becomes operational. The Deemed Measure Upload Template (available in the Document Library) may assist in this process.

Once data is reported in BPA's energy efficiency reporting system, BPA will work with customers to reconcile any differences in savings and reimbursement reported during the interim period.

The Interim Invoice requires customers to total the energy savings and reimbursement amounts for completed measures/projects. The Interim Invoice is composed of three fields, each of which is described below: (1) deemed (and calculated) measures, (2) lighting calculator projects and (3) custom projects.

1. Deemed (and Calculated) Measures

    a. To report deemed measures, enter the sum of reimbursements ($) and busbar savings (kWh) on the Interim Invoice in the "Deemed Measures" field. Savings and reimbursements associated with non-lighting calculator projects (e.g., air compressors) may be included with deemed measures.

    b. The Interim Reference Deemed Measure List in the Document Library may assist customers in the calculation of deemed measure savings and reimbursements. This list is a simplified catalog of measures and, in some cases, a condensation of measures. Therefore, some reference numbers used in the past are not included in this list. The document has separate tabs for measures that are (1) "active as of April 1, 2012" and (2) "expired." Depending on the measure completion date, customers may need to reference both tabs (e.g., measures completed on or after April 1, 2012 should reference the corresponding tab and measures completed prior to April 1, 2012 should reference the "expired" tab.

        - On this list, locate the measure's savings and reimbursement. Use the filter or search by "Former PTR Reference Number." The "Full Measure Name" field contains all information necessary to determine the appropriate measure (e.g., building type, vintage, horsepower). New measures as of October 1, 2011 do not have reference numbers.
        - Using the energy savings and reimbursement amounts for each measure, multiply by the number of units installed. Sum across all measures and enter total numbers in the Interim Invoice. Do not report reference numbers, individual measure energy savings, or individual reimbursement amounts.
        - During the interim process, errors and/or improvements to the Interim Reference Deemed Measure List may be identified. If so, BPA will update the information in this document to reflect these changes and to ensure consistency with the Manual. If an update is made, BPA will inform customers that the revised document is available on the Energy Efficiency Web site. Any updates will clearly reflect and explain changes in the document.

2. Lighting Calculator Projects

    Complete and save BPA Lighting Calculators associated with each project. In the "Lighting Calculator Projects" field of the Interim Invoice, enter the total number of projects and the sum of reimbursements ($) and busbar savings (kWh). BPA does not require the associated lighting calculator to be submitted with the invoice, but BPA will review lighting calculators upon request. Such reviews are final, and the customers will not be required to resubmit the calculator in BPA's energy efficiency reporting system when it becomes available.

3. Custom Projects

    a. Option 1 customers: In proposing and completing custom projects, use the Interim Option 1 Custom Project Proposal; Interim Option 1 Custom Project B/C and Reimbursement Calculator; and Interim Option 1 Custom Project Completion Report. Once the completion report is accepted, use the "Custom Projects" field of the Interim Invoice to report the total number of custom projects accepted and the sum of the associated reimbursements ($) and busbar savings (kWh).

    When the new Option 1 Custom Project Calculator is available, use the following process:

    - In proposing and completing custom projects, use the Option 1 Custom Project Calculator to submit the Custom Project Proposal ("Proposal" tab), measure detail ("Measure Input" tab) and Completion Report ("Completion Report" tab).
    - Once the completion report portion of the Option 1 Custom Project Calculator is accepted, use the "Custom Projects" field of the Interim Invoice to report the total number of custom project completion reports accepted and the sum of the associated reimbursements ($) and busbar savings (kWh).

    b. Option 2 customers: Complete and save the Option 2 Custom Project Calculator, and use the "Custom Projects" field of the Interim Invoice to report the sum of the reimbursements ($) and busbar savings (kWh) for all completed custom projects.

### 3.2.2 BPA Energy Efficiency Reporting System

BPA Energy Efficiency is currently in the process of procuring a long-term reporting system. Before this system is procured, BPA will release interim reporting system IS2.0 (which will replace the Interim Invoice Process referenced above) and will provide a minimum of two weeks of notice before requiring customers to use this system, at which time the following requirements apply.

Customers must report to BPA (with and without requests for reimbursement) using the BPA Energy Efficiency reporting system available through the BPA Customer Portal. The following describes the reporting steps. All referenced documents are available in the Document Library.

1. Gather invoice package documents which may include, but are not limited to, the following:

    - Deemed Measure Upload Template
    - Performance Payment Form (only if requesting less than the total available performance payment on an invoice)
    - Progress Payment Request Form (only if requesting custom project progress payments)
    - Calculators

- Option 1 Custom Project Calculator (after COTR approval of project completion report, one calculator file for each COTR-approved competed project)
- Option 2 Custom Project Calculator (completed projects only, bulk reporting of multiple projects in one or more calculator files)
- RTF-approved Small Compressed Air Calculator
- Energy Management Calculators (Energy Project Manager, Track and Tune and High Performance Energy Management)
- Lighting Calculators

2. Use the File Naming Convention Tool to name all invoice package documents. Improperly named documents will not be processed by the system and may result in the customer having to resubmit the entire invoice package.
3. Use the Summarizer (optional) to estimate the totaled invoice package reimbursement and savings.
4. Upload invoice package documents (named using the File Naming Convention Tool) to the BPA Energy Efficiency reporting system.

BPA will review the submitted documents and create an invoice report showing the amount to be paid. BPA will work with the customer to resolve any errors in the invoice package and will approve payment upon resolution of any errors.

### 3.3 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, contact end users to verify reported measures, monitor or review the customer's procedures and records and conduct site visits to verify claimed energy savings and oversee implementation. The number, timing and extent of inspections is decided by BPA and coordinated with the customer. BPA shall normally 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 under this Manual.

   If, at any time, BPA finds noncompliance with the requirements of the Manual or the customer's ECA, it may make adjustments to the customer's invoices and/or reimbursements to achieve compliance.

2. Program Evaluations

   a. BPA may evaluate measures to assess the amount, cost-effectiveness and reliability of conservation. BPA will determine the timing, frequency and type of evaluations in consultation with the customer.

   b. BPA may require customers to provide billing data and contact information for participants. If so, billing data must be linked to the reported measure (e.g., through a unique identification) to allow BPA to assess savings by measure.

   c. BPA and/or regional participants will pay for evaluations initiated by BPA. In some cases, another party will manage the evaluation on behalf of BPA. BPA

recognizes that customers participating in the evaluation provide some resource/cost, but the cost is not eligible for BPA reimbursement.

### 3.4 Other Requirements

1. The customer must comply fully with all laws and regulations.
2. If the customer is non-compliant with a requirement of this Manual or there is a significant environmental, health or safety threat, BPA shall notify the customer in writing of the specific noncompliance and suspend implementation.
    a. The customer shall have a number of days, as agreed to in writing by BPA, to correct (at its own cost) the noncompliance.
    b. BPA shall not accept claims with suspended activity, and if the customer does not complete the required corrective actions, BPA may terminate all funding.
    c. BPA shall review completed corrective actions and reassess the suspension. If BPA lifts the suspension, the customer may begin implementation of the activity with the changes required by BPA.
3. If BPA determines a customer reported measures with false information, BPA may prohibit the customer from reporting measures to BPA. If the measure that contains false information was implemented with the assistance of a contractor, BPA may prohibit all customers from reporting measures implemented with the assistance of that contractor.[14]

### 3.5 Liability Requirements

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.

[14] BPA does not accept claims implemented in conjunction with AutoCell Electronics, Inc.

# 4. Custom Programs and Projects

## 4.1 Custom Programs and Projects General Requirements

Projects started as custom projects or as part of a custom program must be completed using the custom path under which they were started and cannot be submitted under a deemed option. Custom programs and projects may not result in fuel switching and may not include deemed measures (savings or reimbursement), unless otherwise provided in the Manual.

### 4.1.1 Custom Programs and Projects Reimbursement Levels

Projects are reimbursed at the rate in place at the time the custom project was approved (proposal approval for Option 1/project start date for Option 2) and cannot be canceled and resubmitted under a different reimbursement rate. For Option 1 custom projects, if BPA's reimbursement rate changes between the date the project proposal was submitted and the date the project proposal was approved by the COTR, the estimated BPA reimbursement amount in the proposal may not reflect the approved reimbursement rate.

Customers must pass through the entire BPA-reimbursement received to their end users if such reimbursement is for an Energy Smart Industrial project; a progress payment; or funded by large project funds. Reimbursement is currently calculated according to the tables below.

| Project Type | Measure Life (Years) | Sector | Reimbursement Rate (*$/kWh*) |
|---|---|---|---|
| Energy Smart Grocer | 1 | Commercial | $0.025 |
| | 2-3 | Commercial | $0.05 |
| | 4+ | Commercial | $0.17 |
| Non-Residential Lighting (excluding Energy Smart Grocer) | All | • Agricultural<br>• Commercial<br>• Industrial | $0.18 |
| Retrofit Construction (excluding Energy Smart Grocer and Non-Residential Lighting) | 1 | All | $0.025 |
| | 2-3 | All | $0.05 |
| | 4-19 | • Agricultural<br>• Industrial<br>• Utility Distribution | $0.25 |
| | | • Commercial<br>• Residential | $0.20 |
| | 20+ | All | $0.35 |
| New Construction and Major Renovation (excluding Energy Smart Grocer and Non-Residential Lighting) | 1 | All | $0.025 |
| | 2-3 | All | $0.05 |
| | 4-19 | • Agricultural<br>• Residential<br>• Commercial | $0.27 |
| | | • Industrial<br>• Utility Distribution | $0.25 |
| | 20+ | • Agricultural<br>• Commercial<br>• Industrial<br>• Residential | $0.35 |
| | | Utility Distribution | $0.25 |

Reimbursement for all sectors is capped at 70% of the project incremental cost, with the following exception for commercial new construction projects, if incremental cost data is not

available, incremental cost may be calculated as 2.86% of the whole building cost in order to achieve 2% of the whole building cost.

Though the total available reimbursement is calculated using the rates and cost caps noted above, customers may request less BPA reimbursement. To make this request, the customer must enter the amount of available reimbursement requested from BPA in the Custom Project Calculator.

Effective February 1, 2013, customers that request custom program and project reimbursement from BPA in an amount less than the total available must retain proof of payment in their files. This rule does not apply to programs or projects when the customer (1) does not request any BPA reimbursement or (2) requests the total available BPA reimbursement.

### 4.1.2 Custom Programs and Projects Progress Payments

Both custom programs (pre-approved M&V custom programs only) and projects (Custom Projects Process, Option 1 only[15]) may be eligible for progress payments. The customer must request progress payments in the proposal, and the request must include a schedule with estimated progress payments that coincide with incurred costs and measureable milestones.

Progress payments will be made after project milestones are achieved and verified in accordance with the BPA approved custom project proposal. The customer must document project milestone achievement (e.g., ordered, delivered or installed equipment) prior to receiving a progress payment.

The full progress payment amount paid by BPA must be passed through to the end user, and the customer must retain proof of payment. Customers will be required to repay BPA if the project is not completed within six months of the expected completion date (the expected completion date may be revised with BPA approval).

In order to qualify for progress payments, the project must have the following attributes:

1. The time period from the BPA custom project proposal approval date to the completion report submittal date meets or exceeds 12 months.
2. The amount of each progress payment is $100,000.00 or greater.
3. The estimated incentive for the project is $250,000.00 or greater.
4. 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.

### 4.1.3 Custom Programs and Projects Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| *Custom Programs* | | | |
| Custom Program Proposal Template | | X | X |
| Results from the Custom Program Calculator | | X | X |
| Evaluation Plan | | X | X |

[15] Option 2 customers may request progress payments for a project only if they use the Option 1 custom project process to secure BPA's approval of the project and the Large Project Fund request.

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Evaluation Report for completed evaluated program | | X | X |
| End-user payment documentation (e.g. canceled check), if pass-through is required and effective February 1, 2013, for all projects requesting less than the total available BPA reimbursement | | | X |
| *Option 1 Custom Projects* | | | |
| Interim Option 1 Custom Project Proposal, B/C and Reimbursement Calculator and Completion Report | | X | X |
| When the Option 1 Custom Project Calculator is available, the Option 1 Custom Project Calculator (in lieu of the above interim items) (Send to BPA (via eedocs@bpa.gov or fax) for proposal and completion report review. Submit to BPA Energy Efficiency reporting system after approval of project completion report.) | X | X | X |
| End-user payment documentation (e.g. canceled check), if pass-through is required and effective February 1, 2013, for all projects requesting less than the total available BPA reimbursement | | | X |
| *Option 2 Custom Projects* | | | |
| Responsible entity implementing M&V plan, M&V plan, pre and post measurement data, assumptions and any modeled or calculated data used to determine energy savings | | | X |
| Detailed project description, baseline conditions and operating conditions necessary to determine energy savings and if included for calculating the B/C ratio, documentation showing how the projected non-energy benefits and operations and maintenance costs were calculated | | X | X |
| Option 2 Custom Project Calculator | X | | X |
| End-user payment documentation (e.g. canceled check), if pass-through is required and effective February 1, 2013, for all projects requesting less than the total available BPA reimbursement | | | X |

## 4.2 Custom Programs

This section will provide information on (1) general requirements, (2) the approval and modification process and (3) reporting and reimbursement.

### 4.2.1 Custom Program Requirements

Customers may submit Evaluated Custom Programs or Pre-approved M&V Custom Programs. The requirements of both programs will be discussed together, and where differences between the programs exist, they will be clearly noted. The custom program must include multiple installations such that the installations are not suited for the custom project process. The custom program must be cost-effective (TRC B/C ratio > 1.0) on a prospective (planning) basis, and must be TRC cost-effective retrospectively, as outlined in reporting and reimbursement requirements.

The customer may cease its custom program participation at any time using the COTR Request and Acknowledgment Procedure. BPA shall have no obligation for costs incurred for unreported savings.

### 4.2.2 Custom Program Approval and Modification Process

The customer must secure BPA's approval of its custom program or any modifications thereto (e.g., new measures, measure exclusion, M&V approach change).

The customer's request for approval must be sent to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) and must include the following:

1. Custom Program Proposal Template (available in the Document Library)
2. Custom Program Calculator (available in the Document Library; results are entered into the measure tabs of Custom Program Proposal Template.)
3. Evaluation Plan

   Requirements differ for (a) Evaluated and (b) Pre-approved M&V Custom Programs, *but each evaluation plan must be customer funded*.

   a. Evaluation Plan for Evaluated Custom Programs

      1. Description of planned custom program evaluation
      2. Method for implementation (The custom program evaluation must be conducted by a third party unless BPA approves an exception (e.g., third party evaluation may not be warranted when the customer has internal staff experienced in performing final evaluations or the vendor estimates are proven reliable in BPA's service territory. Exceptions may be requested using the COTR Request and Acknowledgement Procedure.)
      3. General research questions to be addressed in the evaluation
      4. Program participants and selection criteria
      5. Schedule with key milestones for the evaluation
      6. Program costs and cost-effectiveness analyses, both prospective and retrospective
      7. Key program requirements, program design and logic model, if applicable
      8. Methods for estimating savings (e.g., regression model specifics, M&V approaches)
      9. Baseline determination
      10. Data to be collected
      11. Data cleaning methods
      12. For behavior-based programs, additional information required by RTF-approved evaluation protocol documents
      13. If the evaluation plan incorporates site-specific M&V, the M&V plan must follow the guidelines of sector specific M&V practices.

   b. Evaluation Plan for Pre-approved M&V Custom Programs

      The M&V Plan must follow the custom project M&V guidelines, and a separate plan must be submitted for each measure or combination of measures in the custom program.

BPA may ask the customer clarifying questions during the approval process. Within 30 working days of the receipt of all documents (as listed below), BPA will e-mail the customer with its decision or a time-frame for a decision.

### 4.2.3 Custom Program Reporting and Reimbursement Requirements

The reporting requirements differ depending on whether the custom program is (1) evaluated or (2) pre-approved M&V.

1. Evaluated Custom Program

   The customer must submit an evaluation report consistent with the previously approved evaluation plan.

   The evaluation report must document (a) program costs (i.e., measure, overhead and all evaluation costs); (b) the program as cost-effective (TRC > 1.0) and (c) estimates for the reimbursement, consistent with the date of program acceptance.

   Reimbursement will be based on savings produced after the custom program proposal is approved by BPA.

   Upon conclusion of the program and approval of the evaluation report, the COTR will direct the customer on how to report the program savings to BPA.

2. Pre-approved M&V Custom Program

   The customer must conduct M&V (in accordance with its approved M&V plan) before and after each project and must document the type and quantity of measures installed and any problems.

   Individual custom projects reported to BPA must have a minimum B/C ratio of 0.5, and the customer must manage its projects to ensure the program is TRC cost-effective (TRC > 1.0) on an annual basis.

   Completed projects may be submitted for reimbursement using the Custom Program Calculator for each project (including measure-specific results) no later than the reporting period immediately following project completion (i.e., when the project is installed and energy savings measured according to its M&V plan).The calculator will estimate the reimbursement level, consistent with the start date of each individual project.

## 4.3 Custom Projects

This section will provide information on (1) process options and enrollment procedures, (2) general requirements, (3) Custom Project Process, Option 1 (Option 1) and (4) Custom Project Process, Option 2 (Option 2).

### 4.3.1 Custom Project Process Option Overview and Enrollment

Customers may follow Option 1 or Option 2, but must finish projects under the option with which they were started.

- Option 1: The customer must submit a custom project proposal (to BPA for review and acceptance. If BPA determines the project is cost-effective and otherwise acceptable, it will accept the project and at completion, pay the amount due, not to exceed the available balance in the customer's implementation budget.
- Option 2: The customer need not submit individual custom project proposals (unless otherwise stated in the Manual); rather, the customer may determine the eligibility of projects itself. Completed projects must be submitted to BPA for review and acceptance. If BPA determines the projects are acceptable, BPA will pay the amount due, not to exceed the available balance in the customer's implementation budget.

Customers, by default, are enrolled in Option 1 but may elect Option 2 using the COTR Request and Acknowledgement Procedure. The request must include the proposed measure delivery approach (e.g., How does the customer engage the end user in these projects, and are there any criteria in addition to documentation? What is the end-user financial commitment process? How do customers determine acceptability of end-user proposed projects? What is the process for projects to be submitted and accepted? By what methods are funds obligated?). BPA may request additional information before notifying the customer of its approval/non-approval of Option 2 status. If a customer wishes to change its measure delivery approach, it must first secure BPA's approval of the changes.

Option 2 customers may switch to Option 1 (1) for any reason at the start of a new rate period[16] or (2) if customer circumstances change, making Option 2 unworkable.[17]

### 4.3.2 Custom Project General Requirements

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. The measures must be designed to result in improvements in the energy efficiency of electricity distribution or use and must have a savings life of at least one year. The proposed baseline annual energy usage for each measure must be documented and provide a basis for establishing annual energy savings.
3. Custom projects are limited to one sector each and must have a minimum B/C ratio of 0.5. Option 1 (proposal stage)/Option 2 (invoice stage).
    a. Under Option 1, BPA shall manage the B/C ratio at a program level[18] and reserves the right to reject individual custom projects with B/C ratios of less than 1.0 to ensure the aggregate B/C ratio for all custom project proposals/reports remains 1.0 or greater.
    b. Under Option 2, the customer must manage the B/C ratio at the invoice level and ensure that the B/C ratio is at least 1.0.
4. The measures have not been ordered, purchased or installed prior to approval of the custom project by BPA (Option 1) or the customer (Option 2).[19]
5. The expected project simple payback (project cost/annual energy cost savings) must be six months or greater.
6. The BPA M&V Protocol Selection Tool for custom projects must be used to select an appropriate M&V plan. The implemented plan will be either (i) Engineering Calculations with a Verification Plan or (ii) a Comprehensive M&V Plan. See the Document Library.
    *a. <u>Engineering Calculations with a Verification Plan</u>*

    Detailed guidance on preparing Engineering Calculations with a Verification Plan is included in the BPA Engineering Calculations with Verification Protocol. As directed in the BPA M&V Protocol Selection Tool, Engineering Calculations with a Verification Plan may be used for projects with an expected annual energy

[16] Customers wishing to return to Option 1 with the start of a new rate period must submit their request in the month no later than September 1 immediately preceding the new rate period.

[17] Customers may request opt out of Option 2 using the COTR Request and Acknowledgement Procedure, and the request must include an explanation of the changed circumstance.

[18] Program level means all custom projects accepted by BPA over the rate period.

[19] See the Utility Distribution sector for exceptions to this requirement.

savings less than 200,000 kWh per year that qualify under the BPA Engineering Calculations with Verification Protocol.

*b. Comprehensive M&V Plan*

Detailed guidance on preparing a Comprehensive M&V Plan is in the BPA M&V Protocols and Guidelines and RTF Standard Savings Estimation Protocols.

### 4.3.3 Custom Project Process, Option 1

To receive reimbursement for a custom project, a customer must submit to BPA (e-mail eedocs@bpa.gov or fax 1-888-535-7955) and receive BPA's approval of (1) the Interim Option 1 Custom Project Proposal, (2) Interim Option 1 Custom Project B/C and Reimbursement Calculator (proposal and completion report stages) and (3) the Interim Option 1 Custom Project Completion Report (available in the Document Library). At completion, the customer must include documentation supporting the costs and savings claimed and invoices showing the order/purchase date. BPA shall review the submitted documentation and during such review the documents are locked. If the custom project documentation is incomplete, BPA may reject the project or return it for modification. BPA will notify the customer when it accepts the project proposal or completion report.

BPA shall strive to provide the customer a written response within 10 working days of receiving custom project documentation. A customer may request technical advice from BPA regardless of the size of the project or the requirement for review and comment, unless the project is part of the Energy Smart Industrial or Energy Smart Grocer programs.

When the new Option 1 Custom Project Calculator is available, the following rules apply:

- To receive reimbursement for a custom project, a customer must submit and receive BPA approval of the Option 1 Custom Project Calculator (available in the Document Library) which includes tabs for all project components from proposal to completion. Refer to the Option 1 Custom Project Calculator instructions for calculator-specific instructions. Customers must follow the process described below to complete and submit the calculator. BPA shall review the Option 1 Custom Project Calculator and all supporting documentation. BPA shall strive to provide the customer a written response within 10 working days of receiving custom project documentation and will inform the customer in writing of acceptance, return for modification or rejection.
- A customer may request technical advice from BPA regardless of the size of the project or the requirement for review and comment, unless the project is part of the Energy Smart Industrial or Energy Smart Grocer programs.
- Option 1 customers may report non-reportable custom projects using the Option 2 Custom Project Calculator (available in the Document Library).

    1. Custom Project Proposal

        a. The customer must submit the Option 1 Custom Project Calculator to BPA by emailing it to eedocs@bpa.gov or faxing to 1-866-535-7955 with the following tabs completed: "Proposal" and "Measure Input" (all fields labeled "required for proposals"). Note that, at proposal stage, the calculator will calculate estimated reimbursement based on the date of project submittal, however actual reimbursement will be based on the reimbursements in place on the date of COTR approval.

b. BPA shall review the calculator and may comment on the project's ability to deliver the estimated energy savings at the estimated cost.

c. If the custom project proposal is incomplete (e.g., fails to provide an adequate M&V Plan or project description), BPA may reject the proposal or return it for modification.

d. When a proposal is approved, BPA shall notify the customer and email the approved Option 1 Custom Project Calculator to the customer. This file must be saved and used for submittal of the completion report.

2. Custom Project Completion Report

a. The customer must submit the Option 1 Custom Project Calculator with proposal approval to BPA by emailing it to eedocs@bpa.gov or faxing to 1-866-535-7955 with the following tabs completed: "Completion Report" and "Measure Input" (all fields labeled "required for completion reports"). Note that, at completion report stage, the calculator will calculate actual reimbursement based on the date of COTR approval.

b. The completion report must include actual project costs, verified energy savings and information on changes to the approved M&V plan. The customer must include documentation supporting the costs and savings claimed and invoices showing the order/purchase date.

c. BPA shall review the calculator. If the custom project completion report is incomplete, BPA may reject the proposal or return it for modification. Reimbursement is based on the accepted completion report data.

d. When a proposal is approved, BPA shall notify the customer and email the approved Option 1 Custom Project Calculator to the customer.

e. After COTR approval of project completion report, the customer may submit the Option 1 Custom Project Calculator to BPA for payment using the reporting system available.

### 4.3.4 Custom Project Process, Option 2

The following criteria apply to the Option 2 custom projects.

1. The customer is responsible for approving and managing custom projects.
2. If a custom project is approved by the customer, the reimbursement rate in place at the time of approval (assumed to be equivalent to project start date) will apply.
3. The customer must follow special rules for Non-Residential Lighting custom projects.
4. BPA provides limited technical advice since it assumes that Option 2 customers have access to some engineering support. Technical assistance is available in relation to Manual clarifications and M&V consultations only; project-specific technical assistance is not available unless provided by third party implementation contractors as part of a program (e.g., PECI through Energy Smart Grocer, Cascade Energy through Energy Smart Industrial or the Northwest Trade Ally Network).

5. An Option 2 customer may request project progress payments only if it used the Option 1 custom project process to secure BPA's approval of (1) the project and (2) a Large Project Fund request.

To receive reimbursement for a custom project, the customer must submit to BPA the Option 2 Custom Project Calculator (available in the Document Library).[20] (E-mail eedocs@bpa.gov or fax 1-866-535-7955 until the BPA Energy Efficiency reporting system is available, at which time the customer must submit the calculator through the BPA Energy Efficiency reporting system.) The calculator will calculate the B/C ratio based on savings, cost, load shape and non-energy benefits. The projects must demonstrate cost-effective savings based on the B/C ratio.

[20] Customers may have the option to work with BPA to create a unique upload template based on the customer's avoided costs.

# 5. Agricultural Sector

***Please check the changes summary to see if significant changes were made to any of the measures in this sector.***


Reimbursement Summary ..... 23
Freeze Resistant Stock Water Tanks/Fountains ..... 24
Irrigation-Related Measures ..... 24
- Irrigation System Upgrades ..... 24
- Scientific Irrigation Scheduling ..... 25
- Irrigation Pump Testing and System Analysis ..... 26

Variable Frequency Drives ..... 27
- Vacuum Pumps for Small Milking Machines in Dairies ..... 27
- Agricultural Turbine Pump Applications ..... 27

Transformer De-energization ..... 28
New Agricultural Construction ..... 29
Other Agricultural Measures ..... 29
Multi-Sector Opportunities ..... 29


The Agricultural Sector includes electrical energy used (1) 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 (2) 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-Related Measures | |
| o *Irrigation System Upgrades* | $0.75-$175.00 |
| o *Scientific Irrigation Scheduling* | $5.20/acre |
| o *Irrigation Pump Testing and System Analysis* | $50.00-$300.00/test or analysis |
| Variable Frequency Drives | |
| o *Vacuum Pumps for Small Milking Machines in Dairies* | $2,200.00/verified installation |
| o *Agricultural Turbine Pump Applications* | $80.00/horsepower |
| Transformer De-energization | See the custom programs and projects reimbursement table. |
| New Agricultural Construction | See the custom programs and projects reimbursement table. |
| Other Agricultural Measures | See the custom programs and projects reimbursement table. |
| Multi-Sector Opportunities | |
| o *Green Motors* | $2.00/hp |
| o *Lighting* | |
| ▪ *Non-Residential Lighting Program* | See the lighting calculators for deemed values and the custom programs and projects reimbursement table for custom project values. |
| ▪ *Stand-alone, Non-Residential Lighting Measures* | |
| - *ENERGY STAR CFLs* | $2.50-$5.00/CFL |
| - *LED Exit Signs or Retrofit Kits* | $50.00/unit |
| o *Limited Availability Emerging Technology Demonstration Field Test Projects* | See the custom programs and projects reimbursement table |
| o *Variable Frequency Drives in Small Compressed Air System* | See the custom programs and projects reimbursement table |

* 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 Document Library and cannot be home- or kit- made.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

### Reimbursement

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 current specifications as listed in the Interim Reference Deemed Measure List in the Document Library.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

### Reimbursement

| Sprinkler Equipment | Reimbursement | Est. kWh/yr Savings (busbar) |
|---|---|---|
| New flow controlling type nozzle for impact sprinklers | $4.00/nozzle[i] | 27 |
| Rebuilt or new impact sprinklers | $3.75/sprinkler[i] | 27 |

| Sprinkler Equipment | Reimbursement | Est. kWh/yr Savings (busbar) |
|---|---|---|
| New nozzle for impact sprinkler replacing existing worn nozzle of same flow rate or less[ii] | $1.50/nozzle[i] | 37 |
| New rotating type sprinklers that replace impact sprinklers (Entire pivot[ii] must be upgraded, and flow may not increase.) | $4.00/sprinkler[i] | 24 |
| New gasket for wheel-lines, hand lines or portable main line | $2.75/gasket | 22 |
| New low-pressure regulators (Entire pivot[iii] must be upgraded.) | $5.00/regulator[i] | 37 |
| New rotating type sprinklers that replace low-pressure sprinklers (Entire pivot[iii] must be upgraded. Flow may not be increased.)[iv] | $4.00/sprinkler[i] | 24 |
| New multiple configuration nozzles for low-pressure pivot[iii] sprinklers | $3.00/sprinkler[i] | 48 |
| New multi-trajectory sprays that replace impact sprinklers (Entire pivot[iii] must be upgraded. Flow may not increase.) | $4.00/sprinkler[i] | 36 |
| New multi-trajectory sprays that replace low pressure sprinklers (Entire pivot[iii] must be upgraded, and flow may not increase.) | $1.00/sprinkler[i] | 12 |
| New drain gaskets for wheel-lines, hand lines, or pivots[iii] (Entire line must be upgraded.) | $1.00/drain | 22 |
| New hubs for wheel-lines (Entire wheel-line must be upgraded.) | $14.50/hub | 63 |
| New goose-neck elbow for new drop tubes | $1.65/goose-neck | 7 |
| New drop tube for low-pressure pivot[iii] sprinklers (minimum three feet length) | $3.00/drop tube | 7 |
| New center pivot base boot gasket | $175.00/pivot | 1367 |
| Cut and pipe press repair of leaking hand lines, wheel-lines, and portable mainline | $10.00/pipe section | 44 |
| 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 |

[i] Rebate is limited to two units per sprinkled acre for solid set sprinklers.

[ii] The division of the equipment to sprinkler and nozzle allows the nozzle to be replaced separately from the sprinkler.

[iii] Lateral moves are also included.

[iv] 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.

## Scientific Irrigation Scheduling

### Requirements and Specifications

Scientific Irrigation Scheduling (SIS) 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 SIS M&V Calculator in the Document Library. 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.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed SIS M&V Calculator and data on measure costs, crop type, acreage and energy savings | | X | X |

**Reimbursement**

BPA shall reimburse customers $5.20 per acre per year.

## Irrigation Pump Testing and System Analysis (BPA Qualified)

**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 test[21] must be performed by an individual possessing pump testing knowledge and experience.[22]
- Customers and qualified vendors must use the BPA Screening Tool in the Document Library 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 and evaluate condition of the sprinkler nozzles.
  - Simple System Irrigation Pump Test (e.g. open discharge): Perform irrigation pump test and evaluate critical sprinklers.
  - Irrigation Pump Test and System Analysis:[23] Perform irrigation pump test and evaluate mainlines and critical sprinklers.
- Customers must deliver printed recommendation reports to the end user.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and | X | | X |

[21] The test is the process to measure various aspects of the pump's operation including pumping lift, discharge pressure, power input, and water flow. The results of the pump test estimate the overall efficiency of the pumping plant under the test conditions.

[22] Pump tests performed by BPA engineers do not qualify for reimbursement.

[23] 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.

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| address (Submittal is not required until BPA's reporting system is available.) | | | |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Irrigation pump test and recommendation report | | | X |
| Completed "Ag Irrigation Pump Testing" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library) (Submittal is not required until BPA's reporting system is available.) | | X | X |

**Reimbursement**

| 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 per main pump plus $50.00 per booster pump |

## Variable Frequency Drives

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

### Vacuum Pumps for Small Milking Machines in Dairies

**Requirements and Specifications**

VFDs on vacuum pumps 10 hp or less qualify as a deemed measure. VFDs larger than 10 hp must be submitted as a custom project.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

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. Customers may use the VFD Calculator to estimate savings (available in the Document Library).

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed "Ag Turbine Pump Applications" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library) (Submittal is not required until BPA's reporting system is available.) | | X | X |

**Reimbursement**

BPA shall reimburse $80.00 per installed horsepower.

## Transformer De-energization

**Requirements and Specifications**

Transformer De-energization (TRX-DX) is disconnecting a transformer from downstream load sources during extended periods of agricultural inactivity and reconnecting prior to the irrigation season startup. TRX-DX applies to systems that serve only an agricultural load and do not currently incorporate this practice. New TRX-DX projects must be submitted as custom projects and have a one-year measure life. Customers with a custom project proposal approved prior to April 1, 2012 must use the TRX-DX deemed measure (Legacy Ref. No. ATD00003) to report year three projects.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Documentation of number of transformers de-energized, location of transformers, length of outage period and energy savings associated with each unit | | | X |
| Labor and mileage costs | | | X |
| See the custom programs and projects documentation requirements. | | | |

**Reimbursement**

See the custom programs and projects reimbursement table. For projects approved prior to April 1, 2012, reimbursement is the lesser of $0.05/kWh or 70% of incremental project cost.

## 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.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the custom programs and projects documentation requirements. | | | |

### Reimbursement

See the custom programs and projects reimbursement table.

## Other Agricultural Measures

### Requirements and Specifications

These measures must be submitted as custom projects.

- Low pressure conversion with associated pump work
- Change to 40 foot spacing on hand and wheel lines to enable conversion
- 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.)

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the custom programs and projects documentation requirements. | | | |

### Reimbursement

See the custom programs and projects reimbursement table.

## Multi-Sector Opportunities

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

- Processes
- Measures and Initiatives
    1. Green Motors
    2. Lighting
    3. Limited Availability Emerging Technology Field Test Projects
    4. Variable Frequency Drives in Small Compressed Air Systems

# 6. Commercial Sector

***Please check the changes summary to see if significant changes were made to any of the measures in this sector.***


Reimbursement Summary ..... 31
Commercial Custom Projects – Existing Buildings ..... 33
Commercial Lighting ..... 33
LED Traffic Signals ..... 33
Commercial HVAC ..... 34
Unitary Air-Conditioning Equipment in Commercial Buildings ..... 34
Ductless Heat Pumps in Commercial Buildings ..... 35
Web-Enabled Programmable Thermostats in Modular Classrooms ..... 36
Heat-Pump Equipment Conversion and Upgrade in Commercial Buildings ..... 37
Commercial Shell Measures ..... 38
Insulation in Existing Buildings ..... 38
Retrofit Windows for Commercial Buildings ..... 39
Commercial Refrigeration ..... 40
BPA Energy Smart Grocer Program ..... 40
Deemed Refrigeration Retrofit Measures ..... 42
Commercial Kitchen and Food Service Equipment ..... 42
Commercial Food Service Reach-in Refrigerators and Freezers ..... 42
Commercial Ice Makers ..... 43
Commercial Kitchen Steamers ..... 44
Commercial Kitchen Hot Food Holding Cabinets ..... 44
Commercial Combination Ovens ..... 45
Commercial Convection Ovens ..... 45
Commercial Electric Fryers ..... 46
Commercial Dishwashers ..... 46
Pre-rinse Spray Wash Valves ..... 48
Additional Deemed Offerings ..... 48
Networked Computer Power Management ..... 48
ENERGY STAR Commercial Clothes Washers ..... 49
Smart Power Strips – Load Sensing ..... 49
Commercial Showerheads ..... 50
Commercial New Construction ..... 50
Energy Smart Design ® – Office and Trade-offs ..... 51
New Construction and Major Renovation ..... 52
Multi-Sector Opportunities ..... 53


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. The Commercial Sector includes multifamily buildings with five or more dwelling units within the same structure, and more than three stories.

**Reimbursement Summary***

| Program Component or Measure | Reimbursement |
|---|---|
| Commercial Custom Projects – Existing Buildings | See the custom programs and projects reimbursement table. |
| Commercial Lighting | See Multi-Sector chapter (except for LED Traffic Signals). |
| o *LED Traffic Signals* | $50.00-$115.00 |
| Commercial HVAC | |
| o *Unitary Air-Conditioning* | $45.00-$1,500.00/unit |
| o *Ductless Heat Pumps in Commercial Buildings* | $250.00/ton |
| o *Web-Enabled Programmable Thermostats in Modular Buildings* | $100.00-$275.00/unit |
| o *Heat-Pump Equipment Conversion and Upgrade in Commercial Buildings* | $100.00-$250.00/ton |
| Commercial Shell Measures | |
| o *Insulation in Existing Buildings* | $0.13/kWh |
| o *Retrofit Windows for Commercial Buildings* | $3.00-$6.00/square foot |
| Commercial Refrigeration | |
| o *BPA Energy Smart Grocer Program* | See the PECI ESG Program rebate worksheet. |
| o *Deemed Refrigeration Retrofit Measures* | See the Document Library. |
| Commercial Kitchen and Food Service Equipment | |
| o *Commercial Food Service Reach-in Refrigerators and Freezers* | $50.00-$350.00/refrigerator or freezer |
| o *Commercial Ice Makers* | $100.00-$300.00/ice maker |
| o *Commercial Kitchen Steamers* | $100.00-$200.00/steamer |
| o *Commercial Kitchen Hot Food Holding Cabinets* | $200.00-$400.00/cabinet |
| o *Commercial Combination Ovens* | $1,750.00/oven |
| o *Commercial Convection Ovens* | $200.00/oven |
| o *Commercial Electric Fryers* | $125.00/installation |
| o *Commercial Dishwashers* | $100.00-$750.00/dishwasher |
| o *Pre-rinse Spray Wash Valves* | $100.00/installation |
| Additional Deemed Offerings | |
| o *Network Computer Power Management* | $10.00/workstation |
| o *ENERGY STAR Commercial Clothes Washer* | $25.00-$200.00/washer |
| o *Smart Power Strips – Load Sensing* | $15.00/strip |
| o *Commercial Showerheads* | $30.60/showerhead |
| Commercial New Construction | |
| o *Energy Smart Design® - Office and Trade-offs* | $0.25-$0.50/square foot |
| o *New Construction/Major Renovation* | See the custom programs and projects reimbursement table. |
| Multi-Sector Measures | |
| o *Electric Storage Water Heaters* | $25.00/unit |
| o *Refrigerator and Freezer Decommissioning* | $100.00/unit |
| o *Green Motors* | $2.00/hp |
| o *Lighting* | |
| ▪ *Non-Residential Lighting Program* | See the lighting calculators for deemed values and the custom programs and projects Reimbursement Table for custom project values. |
| ▪ *Stand-alone, Non-Residential Lighting Measures* | |
| - *ENERGY STAR CFLs* | $2.50-$5.00/CFL |
| - *LED Exit Signs or Retrofit Kits* | $50.00/unit |
| o *Limited Availability Emerging Technology Demonstration Field Test Projects* | See the custom programs and projects reimbursement table |

| Program Component or Measure | Reimbursement |
|---|---|
| o *Variable Frequency Drives in Small Compressed Air System* | See the custom programs and projects reimbursement table |
| o *Multifamily, Multi-Sector Measures* | See the measure specific section. |

* 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.

## Commercial Custom Projects – Existing Buildings

Many Commercial Sector efficiency opportunities are complex, involve site-specific installations and savings or interaction between energy consuming systems in a building. These opportunities include, but are not limited to, HVAC, shell measures, existing building commissioning, high performance new building design and, in rare circumstances, some lighting projects.

### Requirements and Specifications

These measures must be submitted as custom projects (as long as deemed measures are unavailable).

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the custom programs and projects documentation requirements. | | | |

### Reimbursement

See the custom programs and projects reimbursement table. The incremental cost for retrofit of existing equipment is the fully installed measure cost. The incremental cost for replacement of burned out/failing/failed equipment is the cost above code or its equivalent (e.g., 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

Refer to Non-Residential Lighting in the Multi-Sector Section for details on the lighting program, and stand-alone lighting measures.

## LED Traffic Signals

### Requirements and Specifications

LED traffic signals must be installed and replace functioning incandescent signals.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

### Reimbursement Strategies and Levels

BPA shall reimburse between $50.00 and $115.00 per traffic signal, depending on size, color and application. For details, see the Interim Reference Deemed Measure List in the Document Library.

Effective April 1, 2013 BPA shall reimburse between $25.00 and $30.00 per qualifying traffic signal. Savings for the 12-inch green LED turn signal will decrease from 245 kWh to 90 kWh. The following table represents the savings and reimbursement levels BPA will support as of April 1, 2013.

| Traffic Signal Type | Effective October 1, 2012 | | Effective April 1, 2013 | |
|---|---|---|---|---|
| | Reimbursement | kWh Savings | Reimbursement | kWh Savings |
| Thru Lane 12-inch Red | $60.00 | 637.00 | $30.00 | 714.00 |
| Thru Lane 12-inch Green | $115.00 | 539.00 | $30.00 | 560.00 |
| Left Turn Bay 12-inch Red | $60.00 | 881.00 | $30.00 | 1,021.00 |
| Left Turn Bay 12-inch Green | $60.00 | 245.00 | $30.00 | 93.00 |
| Thru Lane 8-inch Red | $50.00 | 316.00 | $25.00 | 401.00 |
| Thru Lane 8-inch Green | $60.00 | 267.00 | $25.00 | 309.00 |
| Left Turn Bay 8-inch Red | $50.00 | 437.00 | $25.00 | 437.00 |
| Left Turn Bay 8-inch Green | $50.00 | 121.00 | $25.00 | 121.00 |
| Don't Walk Large | $90.00 | 928.00 | $30.00 | 1,320.00 |
| Don't Walk Small | $70.00 | 543.00 | $30.00 | 924.00 |

## Commercial HVAC

Non-deemed HVAC opportunities are available only as custom projects.

### 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.

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).

Additional information is also available on the CEE and AHRI Web sites.

If regional installations are insufficient to support RTF simplified M&V approval, this measure will no longer be available effective October 1, 2014.

#### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed Unitary Air-Conditioning Business Owner Information Form (available in the Document Library) or other BPA-approved customer form | | X | X |

#### Reimbursement

Measure reimbursements by efficiency level and unit size are detailed in the table below. Though reimbursements are the same across all cooling zones, each has a different reference number.

| Category by Efficiency Tier and Unit Size Range (Btu/h; Tons) | CEE Tier | Reimbursement ($/unit) |
|---|---|---|
| <65,000; <5.4 | Tier 1 | $45.00 |
| ≥65,000 and <135,000; 5.4-1.3 | Tier 1 | $125.00 |
| ≥135,000 and <240,000; 11.3-0.0 | Tier 1 | $250.00 |
| ≥240,000 and <760,000; 20-3.3 | Tier 1 | $700.00 |
| ≥760,000; >63.3 | Tier 1 | $1,250.00 |
| <65,000; <5.4 | Tier 2 | $75.00 |
| ≥65,000 and <135,000; 5.4-1.3 | Tier 2 | $200.00 |
| ≥135,000 and <240,000; 11.3-0.0 | Tier 2 | $400.00 |
| ≥240,000 and <760,000; 20.0-3.3 | Tier 2 | $1,200.00 |
| ≥760,000; >63.3 | Tier 2 | $1,500.00 |

## Ductless Heat Pumps in Commercial Buildings (BPA Qualified)

Ductless Heat Pumps (DHPs) are provisionally qualified by BPA to allow regional installations, sufficient to support data collection, for continued offer research and potential future RTF simplified M&V approval. If regional installations are insufficient to support RTF simplified M&V approval, this measure will expire on October 1, 2014, and will no longer be available. BPA will request customer billing data from qualified installations for purposes of program evaluation.

### Requirements and Specifications

Qualifying applications for DHPs include those installed in commercial areas that meet the following requirements:

- The building (thermally isolated space) conditioned by the DHP have the following characteristics:
  - Less than 20,000 square feet of conditioned floor area
  - A construction date before 2007
  - Individual metering by an electric utility or the ability to meter electric usage separately from other adjoining occupied building(s)
- The zone conditioned by the DHP must have the following characteristics:
  - Electric resistance heat
  - Operation hours of at least 40 hours/week
  - No commercial kitchens, commercial refrigeration or process loads (including data or server rooms), where the total connected load is over five watts per square foot
- Installed DHPs must have the following characteristics:
  - An inverter driven outdoor compressor unit and a variable speed fan or indoor blower
  - Fully ductless
  - Installation per the manufacturer's specification and code by a qualified contractor

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed Ductless Heat Pump Business Owner Information Form (available in the Document Library) or other BPA-approved customer form | | X | X |

**Reimbursement Strategies and Levels**

Reimbursement is $250.00 per ton of installed outdoor unit heating capacity for each DHP unit serving a qualified indoor space. To determine tonnage, divide installed BTU capacity by 12,000 and round up or down to the nearest tenth.

## Web-Enabled Programmable Thermostats in Modular Classrooms (BPA Qualified)

If regional installations are insufficient to support RTF simplified M&V approval, this measure will expire on October 1, 2013.

**Requirements and Specifications**

Qualifying applications for Web-Enabled Programmable Thermostats (WEPT) include those installed in commercial areas that meet the following requirements:

- The building controlled by the WEPT must be a modular building.
- The zone served by the WEPT must be used for educational purposes (e.g., classroom).
- Web-enabled programmable thermostats (WEPT) must do the following:
    - Be installed in accordance with the manufacturer's instructions
    - Control the electric heating unit (electric resistance or heat pump)
    - Be programmed for the following:
        - One-hour maximum occupied-period override
        - Set-back and set-up temperature set-points a minimum of five degrees Fahrenheit during unoccupied periods (e.g., holidays and breaks)
    - Allow remote, web-based monitoring and programming
    - Have battery back-up to retain settings during power loss

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed Web-enabled Programmable Thermostat Classroom Information Form (available in the Document Library) or other BPA-approved customer form | | X | X |

**Reimbursement**

| WEPT Type | Reimbursement |
|---|---|
| New WEPT | $275.00 |
| Upgrade to existing programmable thermostat | $100.00 |

## Heat-Pump Equipment Conversion and Upgrade in Commercial Buildings (BPA Qualified)

If regional installations are insufficient to support RTF provisional approval, this measure will expire on October 1, 2015.

Customers may continue to use the custom project path for all heat pump equipment conversions and upgrades until April 1, 2013. After April 1, 2013, customers are required to use this deemed measure unless the installations meet one of the conditions listed below:

1. The measures are part of a multi-measure project of measures that have interactive effects with each other in which non-heat pump savings are responsible for at least 30% of the energy saved (use the multiple measures category) and savings from different measures cannot be disaggregated.
2. The measures are included as part of a whole building energy model.
3. The projects involve complex control strategies (e.g., projects that utilize comprehensive controls).
4. The project is estimated to provide more than 200,000 kWh in annual energy savings.
5. Project does not fit within the measure scope or tool provided by BPA.
6. The projects are pursued by an Option 2 customer. For custom projects pursued by Option 2 customers, BPA may (1) review and approve savings calculation methodologies and/or tools and (2) request measure-level data on individual projects and the parameters used to calculate project savings and cost-effectiveness. This data includes, but is not limited to, the following:
    a. Baseline condition (equipment type, quantity)
    b. Installed efficient condition (equipment type, size, efficiency rating and quantity)
    c. Hours of operation
    d. Building use - primary (formerly referenced as building type)

**Requirements and Specifications**

Qualifying applications for heat pump equipment include those installed in commercial areas that meet the following requirements:

- The building must have the following characteristics:
  - Be an existing building (not new construction)
  - 50,000 square feet or less conditioned building area
  - Consume less than 600,000 kWh annually
  - Be electrically heated (buildings with gas heat are excluded)
  - Existing HVAC equipment must be functional.
- The installed equipment must be an air to air heat pump system that meets CEE Tier 1 minimum efficiency level.

Site information will be collected in a heat pump tool (available the Document Library) and used to calculate savings.

As a BPA Qualified offering, BPA will perform evaluation on the measure which may require pre- and post-install billing data for this purpose and possible post-installation metering.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-888-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Heat Pump Tool | | X | X |
| Equipment specification sheet (or BPA-approved alternative) | | | X |
| Contractor Invoice | | | X |
| End-user signed billing data release form | | X | X |

**Reimbursement**

| Measure Category | Reimbursement ($/ton) |
|---|---|
| Resistance Heating to Tier 1 Premium Efficiency Heat Pump | $250.00 |
| Heat Pump to Tier 1 Premium Efficiency Heat Pump | $100.00 |

## Commercial Shell Measures

BPA reimburses for insulation and windows in small commercial buildings.

### Insulation in Existing Buildings

**Requirements and Specifications**

Attic, wall and floor insulation measures are available for spaces that are electrically-heated, less than 5,000 square feet and used for office or retail activities.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

See the Interim Reference Deemed Measure List in the Document Library.

## Retrofit Windows for Commercial Buildings (BPA Qualified)

**Requirements and Specifications**

Window retrofits must be performed in an existing commercial building that has the following characteristics:

- Electrically-heated
- Residential style wood-frame construction
- A total floor area under 5,000 square feet
- Pre-existing windows that are single pane or single pane with storms

The replacement windows must have a National Fenestration Rating Council rated U-value of 0.30 or lower.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed Window Retrofit Program Business Owner Information Form (available in the Document Library) or other BPA-approved customer form | | X | X |
| Documentation of U-value (specification sheets, NFRC stickers or other documentation) | | | X |

**Reimbursement**

| Heating Zone | Reimbursement/Square Foot of Window Replaced |
|---|---|
| 1 | $3.00 |
| 2 | $6.00 |
| 3 | $6.00 |

## Commercial Refrigeration

### BPA Energy Smart Grocer Program

**Requirements and Specifications**

The BPA Energy Smart Grocer Program (ESG Program), implemented by Portland Energy Conservation, Inc. (PECI), installs energy efficiency measures in commercial refrigeration equipped facilities (see EnergySmart). PECI processes and delivers rebate checks to end users, performs post-installation checks as required, manages required back-up documentation and reports installations to BPA.

BPA funds the program delivery contract with PECI. Customers receive credit for savings achieved in their service territory.

Participating customers must (1) sign a participation agreement with PECI and (2) deliver a completed Energy Smart Grocer Program Sign-up Form[24] (available in the Document Library) to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955). The sign-up form requires selection of the program option, funding amount[25] and program scope, described below.

| Program Component | Description | |
|---|---|---|
| Program Option | BPA Turnkey | BPA will reduce the customer's ECA implementation budget by the allocated amount and will pay PECI for program incentives using these funds. BPA will review PECI data for acceptability. |
| | Self-funded Turnkey | The customer will pay PECI for program incentives using its own funds and will review PECI data for acceptability after BPA performs an initial review. |
| | Combined BPA Turnkey and Self-funded Turnkey | Customers will initially be enrolled in the BPA Turnkey Option, and at the point at which a measure cannot be fully supported under the BPA Turnkey option, the customer will transition to Self-funded Turnkey. Any ECA implementation budget funds remaining will be returned to the customer's ECA budget. |
| Funding Amount[26] | $50,000.00 and above | PECI will (1) perform a minimum of two visits per fiscal year (to contractors and/or end users) in customer's service territory, (2) perform requested audits within 60 days of request, (3) provide deemed and calculated measures and (4) provide inspections for projects with total costs over $10,000.00. |
| | $49,999.99 and under | PECI may perform one visit (to a contractor/end user) in customer's service territory and will provide (1) a minimum of one outreach training for customer staff (at customer's request), (2) deemed measures only and (3) audits, calculated measures and post installation inspections on a case-by-case basis at PECI's discretion. Customers must commit a minimum of $25,000 or be approved for participation by PECI. Approved customers will receive a Utility Participation Agreement from PECI. Non-approved customers will |

[24] Customers already enrolled in the ESG Program that wish to continue their participation must immediately complete and submit the ESG Sign-up Form. EERs will outreach to utilities' to assist enrollment into the ESG program, and coordinate with PECI to inform them a Utility Participation Agreement is needed.

[25] For assistance determining funding potential, please contact Jessica Kramer at PECI or Gary Smith at BPA.

[26] Funding amounts are for the rate period.

| Program Component | Description |
|---|---|
| | be notified by BPA, and BPA engineers will help customers deliver deemed refrigeration measures outside the ESG Program. |
| Program Scope | In addition to core refrigeration measures, including lighting in refrigerated spaces, the customer may select one or more of the following program scope add-ons:<br>• Interior and exterior lighting in other areas if a refrigeration project is completed or pursued<br>• New construction (only buildings equipped with refrigeration)<br>• Existing building commissioning (only buildings equipped with refrigeration)<br>• HVAC (only buildings equipped with refrigeration)<br>By selecting one or more scope add-ons, the customer may work with PECI to implement custom projects in the selected areas. Custom projects completed under the ESG Program must follow the Option 1 requirements in the custom programs and projects chapter, and PECI will act in the role of the customer in approving, reviewing and submitting custom project documentation to BPA. |

After the initial sign-up and funding commitment, a customer may later make ESG Program changes (under the parameters of the table below) by submitting a revised Energy Smart Grocer Program Sign-up Form to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955).

| Change Type | Frequency Allowed | Effective Date |
|---|---|---|
| Program Option | Once per fiscal year | Within 30 days after request |
| Funding Increase | Twice per fiscal year | Within 30 days after request |
| Funding Decrease | Once per fiscal year | Within 60 days after request |
| Program Scope | Once per fiscal year | Within 60 days after request |

If customers decrease their funding amount or withdraw from a program component, they must notify PECI at least 60 days in advance to verify that in-process projects have secured rebates.

Customers will receive a monthly accounting of the funds spent in their service territories.

If BPA Turnkey Option funds allocated to the program have not been spent on the first day of the final quarter of the rate period, the customer may use the COTR Request and Acknowledgement Procedure to request that BPA (1) add all or a part of unspent funds to the customers' ECA implementation budget, (2) add all or a part of the unspent funds to the Unassigned Account or (3) use all or part of the unspent funds for work under the ESG Program. Requests must be received no later than the 15th day of the first month of the final quarter. If the customer does not make a request, BPA will determine the use of unspent funds.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Self-funding customers must retain proof of payment for rebates on their behalf to end users in their service territory. | | | X |

**Reimbursement**

Reimbursement rates for deemed projects are in available in PECI's ESG Program rebate worksheet. Reimbursement rates for custom projects follow the custom programs and projects reimbursement table.

Customers using BPA funds are eligible for a performance payment.

## Deemed Refrigeration Retrofit Measures

**Requirements and Specifications**

Deemed refrigeration retrofit 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. Customers should work with PECI to ensure these measures are incremental to the ESG Program.

Deemed calculated measures remain available exclusively through the ESG Program.

Please refer to the Interim Reference Deemed Measure List (in the Document Library) for requirements and specifications.

Effective April 1, 2013, the reimbursement for Refrigeration Control Improvements (non-VFD) Anti-Sweat Heat Control Low Temp Any Commercial Building will be reduced from $50.00 to $40.00.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

Please refer to the Document Library for reimbursement levels.

## Commercial Kitchen and Food Service Equipment

BPA reimburses 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. All equipment must be new. Reimbursements are also available for recycling of residential-style refrigerators and freezers from commercial buildings.

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

**Requirements and Specifications**

ENERGY STAR 2.0[27] is the specification for this measure. Information on qualifying units may be found at the Consortium for Energy Efficiency (CEE) and ENERGY STAR.

[27] Note that ENERGY STAR 2.0 is substantially the same as the previous CEE Tier 2 specification.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the ENERGY STAR product list showing the product or the product information insert or packaging that includes the ENERGY STAR logo (In the event that ENERGY STAR specifications change, BPA will accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.) | | | X |

**Reimbursement**

| Size (cubic feet)[28] | Refrigerator | Freezer |
|---|---|---|
| 0-29.9 | $50.00 | $100.00 |
| 30-50+ | $150.00 | $350.00 |
| Chest | $75.00 | $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. Information on qualifying units is listed at CEE.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the CEE list with the installed model highlighted | | | X |

**Reimbursement**

Reimbursement is between $100.00 and $300.00 based on the amount of ice production per day. Additionally, higher reimbursements are offered for premium efficiency CEE Tier 3 qualifying machines. See the Document Library for the complete list of reimbursement amounts.

[28] Size is the interior volume of the equipment as listed by ENERGY STAR.

## Commercial Kitchen Steamers

### Requirements and Specifications

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

| No. of Pans Per Steamer | Idle Energy Rate | Cooking Efficiency |
|---|---|---|
| 3 pan | 220 W or less | 65% or greater |
| 5 pan | 230 W or less | 65% or greater |
| 6 pan | 250 W or less | 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.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

### Reimbursement

| 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 meet CEE's Qualified Hot Food Holding Cabinets Tier 2 requirements or have an idle energy rate of 20 watts per cubic foot or less.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the CEE list with the installed model highlighted or equipment cut sheet showing idle energy rate | | | X |

### Reimbursement

| Size (cubic feet) | Reimbursement |
|---|---|
| under 12 | $200.00 |
| 12-20 | $300.00 |

| Size (cubic feet) | Reimbursement |
|---|---|
| 20 or larger | $400.00 |

## Commercial Combination Ovens

### Requirements and Specifications

Electric combination ovens must have a cooking efficiency of 70% or greater and an idle energy rate of 3.5 kW or less. Qualified units are listed below.

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

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

### Reimbursement

BPA will reimburse $1,750.00 per qualified unit.

## Commercial Convection Ovens

### Requirements and Specifications

Model must be an ENERGY STAR commercial electric convection oven.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the ENERGY STAR product list showing the product or the product information insert or packaging that includes the ENERGY STAR logo (In the event that ENERGY STAR specifications change, BPA will accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.) | | | X |

**Reimbursement**

Half and full size convection ovens are reimbursed at $200.00 each.

## Commercial Electric Fryers (BPA Qualified)

**Requirements and Specifications**

The electric fryer must meet RTF eligibility requirements. Eligibility is based on cooking energy efficiency and the idle energy rate of the unit. Qualified units are listed below.

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

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed "Commercial Electric Fryers" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library) (Submittal is not required until BPA's reporting system is available.) | | X | X |

**Reimbursement**

BPA shall reimburse $125.00 per qualified installation.

## Commercial Dishwashers

**Requirements and Specifications**

Dishwasher must meet the RTF efficiency standard. Qualified units are listed below.

| Make | Model | Temperature |
|---|---|---|
| | | |
| | **Under Counter** | |
| Hobart | LXiC, LXiGC | Low |
| Auto-Chlor System | U34, U34 PT-10, U38 | Low |

| Make | Model | Temperature |
|---|---|---|
| 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 |

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

| Type | Reimbursement |
|---|---|
| Low temp, electric water heater | $750.00 |
| High temp, electric water heater | $750.00 |
| Low temp, gas water heater | $100.00 |
| High temp, gas water heater | $350.00 |

## Pre-rinse Spray Wash Valves

### Requirements and Specifications

Qualified installations require electrically heated dishwashing water in a facility that (1) serves 10 or more meal shifts per week (e.g., a facility that serves lunches and dinners, five days a week) or (2) has a documented rinse system that uses the equivalent amount of energy as 10 or more meal shifts (e.g., 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 measure requires direct installation (per the Measure Distribution Processes section in the Multi-Sector chapter) of a new nozzle with a flow rate of 0.65 gallons per minute or lower.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| See the Measure Distribution Processes section in the Multi-Sector chapter. | | | |

### Reimbursement

BPA shall reimburse $100.00 per installation.

## Additional Deemed Offerings

BPA reimburses customers for computer power management solutions, certain efficient commercial appliances and shell measures and is developing additional deemed measures.

## Networked Computer Power Management

### Requirements and Specifications

Networked Computer Power Management software must be installed in a commercial setting and must do the following:

1. Give the IT administrator easily-accessible, central control over the power management settings of networked workstations, with the capability to override user settings.
2. Have the capability to (a) cause a workstation's power-energy savings mode to be remotely enabled or disabled for centrally distributed software updates (e.g., wake on LAN capability); (b) monitor disk and central processing unit activity in determining whether a workstation is idle; and (c) apply specific power management policies to network groups.
3. Be compatible with multiple operating systems and hardware configurations in the same network

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Documentation of software specifications demonstrating software meets requirements | | | X |

**Reimbursement**

BPA reimburses $10.00 per workstation (i.e., the computer monitor and box).

## ENERGY STAR Commercial Clothes Washers

**Requirements and Specifications**

The clothes washer must be on the ENERGY STAR commercial list (includes commercial laundries and multifamily common area coin-operated machines).

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the ENERGY STAR product list showing the product or the product information insert or packaging that includes the ENERGY STAR logo (In the event that ENERGY STAR specifications change, BPA will accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.) | | | X |

**Reimbursement**

| 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 |

## Smart Power Strips - Load Sensing

**Requirements and Specifications**

Smart Power Strips must (1) be installed in a commercial office setting and used in accordance with the manufacturer's instructions, (2) automatically switch off peripheral plug load from the control plug outlet and (3) prohibit false switching by incorporating resistor-capacitor circuit filters or equivalent.

**Additional Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

BPA shall reimburse $15.00 per Smart Power Strip.

## Commercial Showerheads (Provisionally Deemed)

**Requirements and Specifications**

The showerhead must have a rated flow rate at 2.0 gallons per minute, use electrically heated hot water and be installed in qualified commercial facilities: hospitality buildings (hotels/motels), health care facilities (including hospitals) and small commercial facilities (including office showers). Showerheads must be distributed via direct install per the Measure Distribution Processes section in the Multi-Sector chapter.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the ENERGY STAR product list showing the product or the product information insert or packaging that includes the ENERGY STAR logo (In the event that ENERGY STAR specifications change, BPA will accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.) | | | X |
| Completed "Commercial Showerheads" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library) (Submittal is not required until BPA's reporting system is available.) | | X | X |
| See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements. | | | |

**Reimbursement**

BPA shall reimburse $30.60 per qualified installation.

## Commercial New Construction

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

## Energy Smart Design ® – Office and Trade-offs

### Requirements and Specifications

Qualifying buildings must meet the following characteristics:

- The building type must be one of the following: a new office building, an office addition to an existing building, or 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% of the conditioned space:
  - Packaged variable-air-volume (VAV) with electric reheat
  - Packaged VAV with a non-electric reheat
  - Heat pump (only Package C is available)
  - Packaged or split system single zone equipment with non-electric heat
- The building must be three stories or less, have 100,000 square feet or less of conditioned area and 30% or less window to wall area ratio.

Packages A and B are not available for buildings with heat pump systems, and packages A and C are not available for buildings in the City of Seattle.

Energy Smart Design ® – Office information is on the BPA Energy Efficiency Web site. All items in the reimbursement table, below, must be included in the new office building. 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 and exceeds code for the package incentive. Customers must ensure a professional familiar with the project (e.g., a qualified customer representative, a registered architect, licensed engineer or commissioning agent) submits items in the Technical Specification and Trade-off forms (if trade-offs occurred).

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Technical Specifications and Trade-off Forms (if trade-offs occurred) (available in the Document Library) | | | X |

### Reimbursement

BPA shall reimburse according to the chart below.

| Description | Requirements | $/square foot By Package A, B or C | | |
|---|---|---|---|---|
| | | A: $0.50 | B: $0.25 | C: $0.25 |
| Cooling system minimum efficiency level | CEE Tier 2 Specifications | √ | √ | |
| Effective window U-value | Fixed 0.35 maximum<br>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 recommended by IESNA | √ | | √ |
| Lighting Controls | Occupancy sensors-install when lighting loads are over 100 watts and sensors are not required by code; exempts emergency fixtures | √ | | √ |

Effective, October 1, 2013, this measure will be removed due to expected non-residential energy code changes.

## New Construction and Major Renovation

### Requirements and Specifications

Commercial new construction and major renovation projects must be submitted as custom projects. The following table summarizes recommended M&V strategies.

| Project Type | Predicted Savings | M&V Strategy |
|---|---|---|
| New Construction | ≥ 200,000 kWh/yr | IPMVP Option D: Calibrated Model Simulation |
| | ≤ 200,000 kWh/yr | BPA Protocols: Energy Calculations with Verification (ECwV) |
| Major Renovation | ≥ 200,000 kWh/yr | IPMVP Option D: Calibrated Model Simulation or<br>The following BPA Protocols:<br>• Energy Modeling<br>• Verification by Energy Use Indexing |
| | ≤ 200,000 kWh/yr | BPA Protocols:<br>• End Use Equipment<br>• Verification by Energy Use Indexing<br>• ECwV |
| New Equipment | > 200,000 kWhr/yr | BPA Protocols:<br>• Equipment in New Construction<br>• End Use Equipment<br>• Verification by Energy Use Indexing |
| | ≤ 200,000 kWh/yr | BPA Protocols: |

| Project Type | Predicted Savings | M&V Strategy |
|---|---|---|
| | | • Equipment in New Construction<br>• End Use Equipment<br>• Verification by Energy Use Indexing<br>• ECwV |

The project baseline annual energy usage helps establish the annual energy savings. The baseline for commercial new construction and major renovation is based on the following:

- The baseline is the local energy code, if local energy code applies.
- If there is no local energy code, the baseline is the applicable state energy code.
- If there are no applicable codes or standards for the specific end-use application, common practice is the baseline.
- The final baseline is determined by the BPA engineer.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the custom project documentation requirements. | X | | X |

**Reimbursement**

See the custom programs and projects reimbursement table.

## Multi-Sector Opportunities

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

- Processes
- Measures and Initiatives
    1. Electric Storage Water Heaters
    2. Refrigerator and Freezer Decommissioning
    3. Green Motors
    4. Lighting
    5. Limited Availability Emerging Technology Field Test Projects
    6. Variable Frequency Drives in Small Compressed Air Systems
    7. Multifamily, Multi-Sector Measures

# 7. Federal Sector

Unlike other sectors, the Federal Sector does not have a unique set of measures. Rather, this sector incorporates the offerings of all other sectors. As such, a federal project is any energy efficiency project (available elsewhere in this Manual) installed in a qualifying federal facility.

A qualifying federal facility is one that meets the following requirements:

1. The site is (a) owned or leased by the federal government or (b) uses electric energy paid for by the federal government.
2. The site is (a) utility served or (b) direct served.
    a. Utility Served: The site uses electricity purchased from a BPA customer.
    b. Direct Served: The site uses electricity purchased directly from BPA.

Federal projects must follow the requirements of the sector under which they are offered. Customers must report new projects under "federal," and customers, rather than BPA, must provide incentive payments to end users.

For federal custom projects, see the custom programs and projects chapter, and for deemed measures, see the specific sector section.

# 8. Industrial Sector

***Please check the changes summary to see if significant changes were made to any of the measures in this sector.***


Reimbursement Summary ..... 56
Industrial Sector Overview ..... 57
Energy Smart Industrial ..... 57
- Energy Management Pilot ..... 58
  - *Energy Project Manager* ..... 58
  - *Track and Tune Projects* ..... 61
  - *High Performance Energy Management* ..... 64
- Trade Ally Delivered Small Industrial Measures ..... 66
- BPA Funded Technical Service Providers ..... 66
- Variable Frequency Drives for Fans in Spud and Onion Storage Facilities ..... 67

Multi-Sector Opportunities ..... 67


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 are 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 |
|---|---|
| Custom Projects | See the custom programs and projects reimbursement table. |
| Energy Management Pilot | |
| o *Energy Project Manager* | See the reimbursement section of this offering. |
| o *Track and Tune Projects* | See the reimbursement section of this offering. |
| o *High Performance Energy Management* | See the reimbursement section of this offering. |
| Trade Ally Delivered Small Industrial Measures | See the custom programs and projects reimbursement table. |
| Northwest Trade Ally Network (Non-Residential Lighting) | See the custom programs and projects reimbursement table for custom project rates and lighting calculators for deemed levels. |
| BPA Funded Technical Service Providers (TSP) | Not applicable |
| Variable Frequency Drives for Fans in Spud and Onion Storage Facilities | $200.00/hp |
| Multi-Sector Measures | |
| o *Green Motors* | $2.00/hp |
| o *Lighting* | |
| ▪ *Non-Residential Lighting Program* | See the lighting calculators for deemed values and the custom programs and projects reimbursement table for custom project values. |
| ▪ *Stand-alone, Non-Residential Lighting Measures* | |
| - *ENERGY STAR CFLs* | $2.50-$5.00/CFL |
| - *LED Exit Signs or Retrofit Kits* | $50.00/unit |
| o *Limited Availability Emerging Technology Demonstration Field Test Projects* | See the custom programs and projects reimbursement table |
| o *Variable Frequency Drives in Small Compressed Air System* | See the custom programs and projects reimbursement table |

* 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) and Multi-Sector opportunities.

Customers must enroll in ESI 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 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 (Non-Residential Lighting)
- Technical Service Providers (TSP)
- VFDs for Fans in Spud and Onion Storage Facilities

### Requirements and Specifications

Enrollment: A customer may request enrollment in ESI using the COTR Request and Acknowledgment Procedure. BPA acceptance of the request is discretionary.

ESI program partner: The customer must meet with the ESI program partner (in person or over the phone) to outline its intended level of program engagement and end-user communication expectations for the ESI program partner. The customer may engage the ESI program partner on any other pertinent topic including the customer's industrial load, savings goals and desired program component rollout. The ESI program partner will e-mail an acknowledgement to the customer documenting the decisions made during the meeting.

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 submittals
- Helps the customer identify custom projects and secure BPA approval

Custom Projects: Customers must pass the full incentive to the end user. The end user must design and construct 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 | |
|---|---|---|
| | Option 1 | Option 2 |
| Develop M&V Plan. | ESI Partner, TSP or Customer | ESI Partner, TSP or Customer |
| Prepare Option 1 custom project proposal documents. | ESI Partner or Customer | n/a |
| Submit Option 1 custom project proposal documents. | Customer | n/a |
| Review Option 1 custom project proposal documents. | BPA ESI Engineer, ESI program partner Quality Control Engineer and COTR | n/a |
| Provide technical advice to customer. | ESI Partner | ESI Partner |
| Develop custom project results data. | ESI Partner, TSP or Customer | ESI Partner, TSP or Customer |
| Prepare custom project completion documentation. | ESI Partner or Customer | ESI Partner or Customer |
| Submit custom project completion documentation to BPA. | Customer | Customer |
| Review custom project completion documentation. | BPA ESI Engineer, ESI program partner Quality Control Engineer and COTR | BPA ESI Engineer, ESI program partner Quality Control Engineer and COTR |

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Proof of 100% incentive pass-through to end users (e.g. a copy of the check) | | | X |
| See the custom project documentation requirements. | | | |

**Reimbursement**

See the custom programs and projects reimbursement table.

## 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.

### *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 may 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 approval using the COTR Request and Acknowledgment Procedure. The customer must send to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) its Year-1 executed EPM agreement between itself and the end user that, at a minimum, identifies an energy savings goal of at least 1,000,000 kWh of verifiable annual busbar energy savings per year 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 verifiable annual busbar energy savings and should do so within one year of the EPM funding Commencement Date (but is allowed up to 18 months from the Commencement Date). The Commencement Date is the date the final of the following actions occur: (1)

customer sends its Year-1 executed EPM agreement to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955), (2) an EPM is hired or designated by the end user and (3) BPA approves the EPM.

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 (e.g., T&T, deemed lighting and HPEM). The EPM must be familiar with, and have experience in, industrial electric energy efficiency and 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 verifiable annual industrial busbar energy savings. These savings must be verified, i.e., the savings must be reportable to and approved by BPA.

c. The end user may replace the EPM; however, the customer must inform BPA in writing, within 30 days of replacement, and the replacement EPM must meet the requirements of this Manual.

d. No later than 90 days after the Commencement Date, the EPM must submit an EPM Comprehensive Plan to the customer and BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955). The EPM Comprehensive Plan must be approved by BPA and include, at a minimum, the following:

    i. Projected verifiable annual busbar energy savings (at least 1,000,000 kWh) (Eligible project status shall precede completion of post-project M&V at time of Commencement Date.)

    ii. Name of the EPM

    iii. Total annual cost of the EPM, which includes base salary, benefits, costs associated with attendance at ESI-sponsored annual EPM meeting, and associated direct costs (e.g., travel and training[29]), if known.[30]

    iv. Itemized summary of planned electrical energy efficiency projects (including participation in either HPEM or T&T) that will comprise the verifiable 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 (a) six months after the Commencement Date and (b) over the life of the plan

    vii. If applicable, participation plans for T&T and/or HPEM.[31]

[29] EPM training costs must be pre-approved by BPA (confirmed in writing by the COTR) based on the customer's budget, EPM costs and the relevancy of the training. EPM costs include only qualifying costs incurred between the EPM Commencement Date and the date the last project in the EPM Comprehensive Plan is approved by the COTR. BPA will not reimburse customers for EPM time in a custom or Track and Tune project if that project was included in the EPM Comprehensive Plan.

[30] Prior to the final payment, the customer must adjust the EPM cost to reflect the total actual costs. The total EPM co-funding amount may not exceed the total annual EPM cost as specified in the EPM Comprehensive Plan. Documentation of actual EPM costs must accompany the final EPM status report, which precedes final payment. Where an EPM term is less than 12 months, the eligible EPM costs must be based on pay records from the period between the EPM commencement date and COTR acceptance of the final project. Customers may include a performance incentive as a portion of the EPM's salary.

[31] T&T and HPEM first year savings and subsequent years' incremental savings may be applied toward the EPM savings goal.

The EPM must submit status reports to the customer and BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) describing (1) energy savings achieved and projected and (2) projects completed, in-process or planned. Status reports are due no later than (1) six months from the Commencement Date and (2) 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 (i.e., BPA-approved custom project proposals (Option 1), customer-approved custom projects (Option 2) or in-progress T&T and/or HPEM projects) described in the six-month status update section of the EPM Comprehensive Plan. If energy savings achievements differ significantly from savings predictions, BPA may revise the savings goal and use the revised goal for reimbursement calculations.

Upon completion of the Year-1 EPM Agreement, the customer may elect to extend the agreement for an additional 12-18 months using the COTR Request and Acknowledgement Procedure. The request must include the Year-2 executed agreement between the customer and end user for the second 12-18 month period that identifies an additional energy savings goal of at least 1,000,000 kWh of verifiable annual busbar energy savings and the end user's obligation to employ a qualified EPM. The customer must repeat the same process for the second period including creating a new EPM Comprehensive Plan.

A customer may use the COTR Request and Acknowledgement Procedure to request that BPA contract directly with its end users to provide EPM funding. The request must include the following:

2. Documentation of the direct contract qualification, either because (a) the customer is prevented by charter or policy from contracting with its end users or (b) the EPM will be assigned to multiple facilities served by multiple customers
3. End-user information (name, address and contact information)
4. Amount to be allocated to that end user under a direct EPM contract (The allocated amount must be capped at the lesser of $0.025 per kWh of the energy savings goal; the total annual cost of the EPM as described in the EPM Comprehensive Plan; or $250,000.00.)

If a customer's request is approved, BPA will (1) reduce the customer's ECA implementation budget by the allocated amount, (2) hold the funds to pay the EPM reimbursement to the end user and (3) execute a contract with the end user to pay for an EPM. The allocation may not be changed without approval from BPA, the customer and the end user. At the end of the EPM contract period, if the customer's allocation exceeds the amount BPA reimbursed the end user, the remaining budget will be returned to the customer's ECA implementation budget.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Executed EPM agreement between customer and end-user | | X | X |
| EPM comprehensive plan and status reports | | X | X |
| EPM Calculator | X | | X |

**Reimbursement**

To receive reimbursement, the customer must invoice BPA upon the end user reaching the milestones in the chart below. If the customer elects to renew the EPM for an additional period, the payment schedule repeats with the first payment starting with Payment No. 2. Customers are not obligated to return money already received.

Use the EPM Calculator (available in the Document Library) to calculate reimbursement amounts.

| Payment No. | Funding Amount | Milestone |
|---|---|---|
| 1 | $25,000.00[i] | Commencement Date |
| 2 | 1/3 of the funding[ii] less previous payments | BPA approves the EPM Comprehensive Plan |
| 3 | 2/3 of the funding[ii] 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 cost of the EPM as described in the EPM Comprehensive Plan or (c) $250,000.00, less previous payments | End user meets, exceeds, or fails to meet (as certified by BPA) the EPM Comprehensive Plan projected Verified Energy Savings |

[i] 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.

[ii] Funding is based on the lesser of (a) $0.025 per kWh of the verified energy savings goal, (b) the total annual cost of the EPM as described in the EPM Comprehensive Plan or (c) $250,000.00.

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

**Requirements and Specifications**

Track and Tune (T&T) Projects are a combination of site or sub-system tune-ups that focus on operations and maintenance opportunities for increased energy efficiency. Option 1 and 2 customers must follow the M&V requirements addressed in the ESI Monitoring, Targeting and Reporting (MT&R) Reference Guide. A performance tracking system (PTS)[32] 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.

The customer must report savings to BPA and sign a T&T agreement with the end user that includes a three-year or five-year sustained savings period.[33] Depending on the period selected, the measure life varies.

[32] 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.

[33] Customers who signed T&T agreements prior to April 1, 2011 may revise their agreements once to reduce the performance period to three years. Customers who sign T&T agreements on or after April 1, 2011 may not revise their agreements to change the performance period.

| Sustained Savings Period | Measure Life by Year | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 3-year Period | 1-year measure life | 1-year measure life | 3-year measure life | n/a | n/a |
| 5-year Period | 1-year measure life | 1-year measure life | 1-year measure life | 1-year measure life | 6-year measure life |

The executed agreement must be sent to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955). The customer must ensure that its end user assigns an Energy Champion to (a) serve as the primary contact for T&T Providers[34] and (b) implement and track 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 tracking 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 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 (e-mail eedocs@bpa.gov or fax 1-866-535-7955) and customer that summarizes the activities and results of the tune-up and includes a plan to implement specific energy efficiency project action items[35] 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.

   vi. T&T Completion Report - Submit a T&T Completion Report to customer and BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955)) 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:

[34] T&T providers may include a TSP, outside expert or in-house end user personnel. Separate TSP funding is available for the listed TSP activities per BPA's established TSP program.

[35] 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.

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.[36]

vii. Sustained Savings Reports - Submit annual Sustained Savings Reports to customer and BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) that demonstrate energy savings 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.

Customers will be credited with 75% of the verified energy savings as reported in the T&T Completion Report. Customers also receive credit for sustained savings (as verified by BPA and documented in the Sustained Savings Report) in excess of 75% of the T&T Completion Report verified energy savings.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Executed T&T agreement between customer and end user | | X | X |
| Tune-up and monitoring plan | | X | X |
| Action Plan, T&T Completion and Sustained Savings Reports | | X | X |
| T&T Calculator (Submittal is not required until the BPA Energy Efficiency reporting system is available.) | X | | X |

**Reimbursement**

The customer must invoice BPA upon the end user reaching the milestones chart below. Use the T&T Calculator (available in the Document Library) to calculate reimbursement amounts.

| Payment No. | Funding Amount | Milestone |
|---|---|---|
| 1 | Lesser of (1) documented PTS costs, (2) $0.0025 per kWh of estimated annual energy usage of system baseline or (3) PTS cost cap set by customer; allowable exceptions of up to $10,000.00 for system baseline of 4,000,000 kWh or less, capped at $50,000.00 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 exceed 70% of implementation costs identified in the T&T Completion Report | BPA reviews and approves end-user submitted T&T Completion Report.[i] |
| 3 through 5/7[ii] | $0.025 per kWh of actual verified energy savings, plus documented PTS costs[iii] | BPA reviews and approves end-user Sustained Savings Report for prior year. |

[36] The end user does not have to implement every implementable action item.

[i] The first year concludes the date the end user completes the implementation action items, no later than nine months following tune-up. After the performance period (typically 90 days), the T&T Completion Report is submitted to the customer and BPA.

[ii] Three-year performance periods have five payments, and five-year performance periods have seven payments.

[iii] The upper limit on allowable ongoing PTS costs are capped at the lesser of $50,000.00 or (a) $0.0025 per kWh of baseline energy use of the whole facility or the energy using systems(s) that are being addressed by a five-year performance period T&T project, or (b) $0.0015 per kWh of baseline energy use of the whole facility or the energy using system(s) that are being addressed by a three-year performance period T&T project. These caps apply to the cumulative expenditures for the 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. T&T verified sustained savings may be fully eligible for a calculated incentive, or subject to a cap (e.g., based on 10% of system baseline) as specified within the T&T agreement.

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

**Requirements and Specifications**

High Performance Energy Management (HPEM) is designed to generate more (a) T&T Projects, (b) custom projects and (c) savings via Monitoring, Targeting and Reporting (MT&R) analysis. Annual sustained savings incentives are available from BPA for verified savings from the MT&R Completion Report. Option 1 and 2 customers must follow the M&V requirements addressed in the ESI MT&R Reference Guide.

A customer may enroll in HPEM using the COTR Request and Acknowledgment Procedure. The customer must report savings to BPA and sign an HPEM agreement with the end user for a three-year or five-year performance period.[37] The measure life differs depending upon the performance period selected.

| Performance Period | Measure Life by Year | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 3-year Period | 1-year measure life | 1-year measure life | 3-year measure life | n/a | n/a |
| 5-year Period | 1-year measure life | 1-year measure life | 1-year measure life | 1-year measure life | 6-year measure life |

The executed agreement must be sent to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955).

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

a. The end user must assign (1) two staff members to attend one year of monthly BPA HPEM training sessions and (2) an executive sponsor to support the HPEM effort at a management level. End-user attendees must 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 must 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?)

[37] Customers who signed HPEM agreements prior to April 1, 2011 may revise their agreements once to reduce the performance period to three years. Customers who sign HPEM agreements on or after April 1, 2011 may not revise their agreements to change the performance period.

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 projects, 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

The 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). The customer must send the end user's annual MT&R Completion Report to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955). The report must track 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.

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). BPA will automatically allocate customers 75% of the calculated first-year savings unless requesting 100% by using the COTR Request and Acknowledgment Procedure prior to invoicing BPA for Year 1 funding. If 75% is allocated, then Year 2 savings will be adjusted to include the unreported Year 1 savings. Savings selections apply to all facilities in a cohort.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Executed HPEM agreement with end user | | X | X |
| MT&R Completion Reports and documentation that requirements have been met | | X | X |
| HPEM Calculator (Submittal is not required until the BPA Energy Efficiency reporting system is available.) | X | | X |

**Reimbursement**

Annual incentive payments are paid according to the chart below. Use the HPEM Calculator (available in the Document Library) to calculate reimbursement amounts.

| Funding Period[i] | Funding Amount | Milestone |
|---|---|---|
| Year 1 | $0.025 per kWh of BPA verified MT&R energy savings for previous year[ii] | End user completes HPEM training, 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[ii] | End user implements a continuous improvement process program for energy management, and BPA receives annual MT&R Completion Report |

| Funding Period[i] | Funding Amount | Milestone |
|---|---|---|
| Year 3 or Years 3-5[iii] | $0.025 per kWh of BPA verified MT&R energy savings for previous year[ii] | End user implements a continuous improvement process program for energy management, and BPA receives annual MT&R Completion Report |

[i] The first year HPEM performance period starts no earlier than the date of the BPA HPEM kick-off workshop and no later than the first full monthly billing cycle following the kick-off workshop. Payments are made at the conclusion of each year based upon the BPA verified savings in the MT&R Completion Report.

[ii] Verified MT&R energy savings may be fully eligible for a calculated incentive or subject to a cap (e.g., based on 10% of site baseline) as specified within the HPEM agreement.

[iii] Three-year performance periods are funded through year three, and five-year performance periods are funded through year five.

## 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.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| There are no documentation requirements. | | | |

### Reimbursement

See the custom programs and projects reimbursement table.

## 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 funding of technical services is based on the cost-effectiveness of the proposal and the likelihood of implementation by end user.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| There are no requirements. | | | |

### Reimbursement

No reimbursement is paid to the customer as BPA funds the TSP consultants directly.

## Variable Frequency Drives (VFD) for Fans 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.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| See the custom project documentation requirements. | | | |

### Reimbursement

BPA shall reimburse $200.00 per hp. To calculate the reimbursement, the customer will add the total fan VFD hp installed on a per building basis.

## Multi-Sector Opportunities

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

- Processes
- Measures and Initiatives
    1. Green Motors
    2. Lighting
    3. Limited Availability Emerging Technology Field Test Projects
    4. Variable Frequency Drives in Small Compressed Air Systems (If customer does not enroll in ESI, it may use the RTF-approved NW Regional Small Compressed Air Calculator without technical assistance from BPA or ESI program partner.)

# 9. Residential Sector

***Please check the changes summary to see if significant changes were made to any of the measures in this sector.***


Reimbursement Summary ..... 69
Lighting ..... 70
ENERGY STAR CFLs and Fixtures ..... 70
Showerheads ..... 71
BPA *Simple Steps, Smart Savings* Retail Promotion ..... 71
Appliances (new) ..... 72
Electric Water Heating ..... 73
Heat Pump Water Heater ..... 73
Gravity-film Heat Exchangers ..... 74
Pipe Insulation ..... 75
HVAC Measures ..... 75
Ductless Heat Pumps ..... 75
Ducted Systems with PTCS ..... 76
Line-Voltage Thermostats ..... 79
New Construction ..... 79
New ENERGY STAR Manufactured Homes ..... 79
New ENERGY STAR/Built Green Site-Built Homes ..... 80
Montana House (v 2.0) ..... 81
New Multifamily Construction ..... 82
Weatherization (Standard Income) ..... 83
Insulation ..... 83
Prime Window and Door Replacement ..... 84
Air Sealing ..... 84
Low-income Weatherization and Duct Sealing ..... 85
Residential Custom Projects ..... 86
Multi-Sector Opportunities ..... 87


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 and all common areas within multifamily housing are considered commercial.)

**Reimbursement Summary***

| Program Component or Measure | Reimbursement |
|---|---|
| Lighting | |
| o *Specialty CFLs* | $2.25-$5.50 |
| o *Standard Twister CFLs* | $1.00-$4.00 |
| o *ENERGY STAR Fixtures* | $10.00 |
| Showerheads | $12.00-$20.00/unit |
| BPA *Simple Steps, Smart Savings* Retail Promotion | See the reimbursement section of this measure. |
| Appliances (New) | |
| o *ENERGY STAR Clothes Washers* | $20.00-$70.00/washer |
| o *ENERGY STAR Freezers* | $15.00/freezer |
| o *ENERGY STAR Refrigerators* | $15.00/refrigerator |
| Electric Water Heating | |
| o *Heat Pump Water Heaters* | $300.00-$500.00 |
| o *Gravity-Film Heat Exchangers* | $159.77-$228.24 |
| o *Pipe Insulation* | $4.31-$12.92 |
| HVAC Measures | |
| o *Ductless Heat Pumps* | $1,500.00/unit |
| o *Ducted Systems with PTCS* | |
| ▪ *PTCS Air-Source Heat Pump Upgrade* | $500.00-$1,000.00/unit |
| ▪ *PTCS Air-Source Heat Pump Conversions* | $1,400.00-$1,900.00/unit |
| ▪ *PTCS Heat Pump Commissioning and Controls* | $300.00/unit |
| ▪ *PTCS Geothermal (Ground-Source) Heat Pump Systems (new)* | $2,400.00-$3,500.00/unit |
| ▪ *PTCS Duct Sealing* | $400.00-$500.00/unit |
| Line Voltage Electronic Thermostats | $115.00-$160.00/unit |
| New Construction | |
| o *New ENERGY STAR Manufactured Homes* | $850.00-$1,450.00/unit |
| o *New ENERGY STAR/Built Green Site-Built Homes* | $200.00-$1,800.00/unit |
| o *Montana House (v 2.0)* | $200.00-$1,500/unit |
| o *New Multifamily Construction* | $80.00-$140.00/unit |
| Weatherization (Standard Income) | |
| o *Insulation* | See the Interim Reference Deemed Measure list in the Document Library. |
| o *Prime Window Replacement* | $6.00/square foot |
| o *Air Sealing* | See the Interim Reference Deemed Measure list in the Document Library. |
| Low-income Weatherization and Duct Sealing | Dollar for dollar reimbursement (up to $20.00 per square foot for Prime Window Replacement) |
| Residential Custom Projects | See the custom programs and projects reimbursement table |
| Multi-Sector Measures | |
| o *Electric Storage Water Heaters* | See the reimbursement section in the Multi-Sector chapter. |
| o *Refrigerator and Freezer Decommissioning* | $100/00/unit |
| o *Limited Availability Emerging Technology Demonstration Field Test Projects* | See the custom programs and projects reimbursement table |
| o *Variable Frequency Drives in Small Compressed Air System* | See the custom programs and projects reimbursement table |
| o *Multifamily, Multi-Sector Measures* | See the measure specific section. |

* 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

### ENERGY STAR CFLs and Fixtures

**Requirements and Specifications**

Compact Fluorescent Lamps (CFLs) and fixtures must be ENERGY STAR qualified, installed in a residential setting and claimed only once (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).

Standard twister and specialty CFLs are both eligible. Specialty CFLs are defined as the following screw-base bulbs: candelabra, G-lamp (globe), R-lamp and PAR-lamp (reflector), torpedo, dimmable and three-way. *Note: T-2s and A-lamps are standard twisters, not specialty CFLs.*

CFLs must also be more than five watts and, if replacements, replace incandescent or halogen bulbs. Customers may distribute CFLs and fixtures via retail markdown, direct mail by request, non-requested direct mail (limited to four CFLs per household per fiscal year), direct install, over-the-counter or another distribution method[38] per the Measure Distribution Processes section in the Multi-Sector chapter.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| A copy of the ENERGY STAR product list showing the product or the product information insert or packaging that includes the ENERGY STAR logo (In the event that ENERGY STAR specifications change, BPA will accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.) | | | X |
| See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements. | | | |

**Reimbursement**

| Type | Retail Markdown | Direct Mail/Other Distribution | Direct Install |
|---|---|---|---|
| Standard Twister CFL *(CFLs not defined as specialty)* | $1.00 | $2.50 | $4.00 |
| Specialty CFL *(screw-base candelabra, G-lamp (globe), R-lamp and PAR-lamp (reflector), torpedo, dimmable and three-way)* | $2.25 | $4.00 | $5.50 |
| ENERGY STAR Fixture | $10.00 | n/a | n/a |

[38] Other distribution method applies to CFLs distributed via a coupon or through online fulfillment. Customers must contact their COTRs to confirm documentation requirements.

## Showerheads

### Requirements and Specifications

This measure is available for all types of residential buildings (multifamily, single-family and manufactured homes). Showerheads must have a gallon per minute (GPM) flow rate of 2.0 or less and may be distributed via retail markdown, mail by request, direct install or over-the-counter (which includes showerheads left at the customer's residence at the customer's request) per the Measure Distribution Processes section in the Multi-Sector chapter. Showerheads mailed/distributed by request or directly installed must be used in homes with electric water heat and are limited to two showerheads per residence.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Fuel source documentation (mailed or directly installed showerheads) | | | X |
| See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements. | | | |

### Reimbursement

| Retail Markdown, Mail by Request and Over-the-Counter | Direct Install |
|---|---|
| $12.00 | $20.00 |

## BPA *Simple Steps, Smart Savings* Retail Promotion

### Requirements and Specifications

The BPA *Simple Steps, Smart Savings* Retail Promotion, implemented by Fluid Market Strategies (Fluid) provides regional coordination of the implementation of retail CFLs, lighting fixtures and showerhead measures. Participating customers receive credit for savings achieved in their service territory. Customers may participate by either signing a contract directly with Fluid or by allocating ECA funds to the promotion through BPA. The participation options are described in the table below.

| Participation Option | Requirements |
|---|---|
| Signing a contract directly with Fluid | • Customers must sign a Promotion Services Agreement with Fluid Market Strategies and pay Fluid directly for qualified sales under that agreement. Interested<br>• Customers must contact Ryan Crews, (503) 688-1569.<br>• Customers may use any funding source available under this option and may invoice BPA for eligible measures. |
| Allocating ECA funds to the promotion through BPA | • Customers must send to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) (1) a completed *Simple Steps, Smart Savings* ECA Implementation Budget Release Form (available in the Document Library) and (2) a Fluid sales projection (Contact Ryan Crews at Fluid, (503) 688-1569 for this projection).<br>• Customers must commit to a funding period of a minimum of six months, or be approved for participation by Fluid. The funding period may not exceed the rate period. |

| Participation Option | Requirements |
|---|---|
| | • BPA will reduce the customer's ECA implementation budget by the allocated amount in the budget release form and will pay Fluid for program incentives using these funds.<br>• BPA will track savings, and Fluid will send the customer monthly savings reports.<br>• If actual sales are below the sales projection at the mid-point of the customer's selected funding period, BPA, Fluid and the customer may work together to recommend corrective action. If sales are still below the sales projection at the third quarter of the funding period, at the customer's request, BPA will return the unused funds to the ECA implementation budget. If actual sales are above the sales projection at the mid-point or at the third quarter of the customer's funding period, the customer may elect to add funds by submitting a new budget release form; if no funds are added, work in its service territory may be subject to curtailment.<br>• If Fluid fails to deliver according to its projection, the customer may terminate participation with 30 days notice to BPA using the COTR Request and Acknowledgement Procedure.<br>• If allocated funds have not been spent at the conclusion of the funding period, they will be returned to the customer's ECA implementation budget. |

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Proof of payment to Fluid for sales in service territory (self-funded customers, only) | | | X |

**Reimbursement**

Customers are reimbursed according to the established reimbursement levels for ENERGY STAR CFLs and fixtures and showerheads (retail markdown).

## Appliances (new)

**Requirements and Specifications**

Appliances must be ENERGY STAR rated with deemed energy savings. Clothes Washers must have a Modified Energy Factor (MEF) of 2.0 or greater and a Water Factor of 6.0 or lower. See also Refrigerator and Freezer Decommissioning in the Multi-Sector chapter.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| A copy of the ENERGY STAR product list showing the product or the product information insert or packaging that includes the ENERGY STAR logo (In the event that ENERGY STAR specifications change, BPA will accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured and shipped.) | | | X |
| Documentation of water heater fuel and clothes dryer fuel (for washers, only) | | | X |

**Reimbursement**

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

| Appliance | Reimbursement |
|---|---|
| Clothes Washer MEF 2.0-2.19 | $30.00 |
| Clothes Washer MEF 2.20-2.45 | $50.00 |
| Clothes Washer MEF 2.46+ | $70.00 |
| Clothes washers with gas water heater | $20.00 |
| Freezers 7.75 cubic feet or greater | $15.00 |
| Refrigerators 7.75 cubic feet or greater | $15.00 |

## Electric Water Heating

BPA will reimburse customers for heat pump water heaters, gravity-film heat exchangers and pipe insulation. See also Electric Storage Water Heaters in the Multi-Sector chapter.

### Heat Pump Water Heater (provisionally deemed)

**Requirements and Specifications**

- Only new construction and existing single family homes qualify for the heat pump water heater (HPWH) reimbursement. In existing homes, the HPWH must replace an electric storage water heater.
- HPWHs must be (1) listed on NEEA's HPWH qualified products list as meeting Tier 1 or Tier 2 requirements of the Northern Climate Specification and (2) installed, according to manufacturer's specifications, by an installer who received installation training from the manufacturer of the installed HPWH equipment.
- Customers who report Tier 2 HPWHs in heating zones 2 and 3 may be contacted about a field study to validate savings for ducted heat pumps, which is required to remove the provisional status of the measure.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Manufacturer's installation checklist | | | X |
| Heat Pump Water Heater Form (available in the Document Library) | | X | X |

**Reimbursement**

| Tier, HPWH Tank Size | Installation Location and Ducting,[i] Home Heating Source | Busbar Energy Savings (kWh/yr) | Reimbursement |
|---|---|---|---|
| Tier 1, 50-75 gallons | Unheated buffer space,[ii] any heating system | 960 | $300.00 |
| | Interior, non-electric home heat | 1687 | |
| | Interior, heat pump | 1297 | |
| | Interior, zonal electric resistance | 707 | |
| | Interior, electric forced air furnace | 607 | |
| Tier 1, greater than 75 gallons | Unheated buffer space, any heating system | 1975 | $500.00 |
| | Interior, non-electric home heat | 2366 | |
| | Interior, heat pump | 1839 | |
| | Interior, zonal electric resistance | 1044 | |
| | Interior, electric forced air furnace | 908 | |
| Tier 2, 50 gallons or greater | Unheated buffer space, any heating system | 1947 | $500.00 |
| | Interior with ducting, non-electric home heat | 1882 | |
| | Interior with ducting, heat pump | 1382 | |
| | Interior with ducting, zonal electric resistance | 1084 | |
| | Interior with ducting, electric forced air furnace | 964 | |

[i] Measures are installed without ducting unless otherwise specified. Tier 2 HPWHs installed in interior locations without ducting must use the Tier 1 measures.

[ii] Unheated buffer space includes any space adjacent to the thermal boundary of the house and that has no positive heat supply under thermostatic control. This may include, but is not limited to, garages and basements.

## Gravity-film Heat Exchangers

**Requirements and Specifications**

Gravity-film heat exchangers must be cost-effective applications in homes with electric water heat.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Fuel source documentation | | | X |

**Reimbursement**

| Residence Type | Retrofit/New Construction | Application | kWh /yr | Reimbursement |
|---|---|---|---|---|
| Single-Family and Multifamily | Retrofit/New | DHW and Shower Preheat | 652 | $228.24 |
| | | DHW Preheat | 522 | $182.60 |
| Multifamily | New | Shower Preheat | 456 | $159.77 |

## Pipe Insulation

**Requirements and Specifications**

Pipe insulation reduces standby losses best within the first three to fifteen feet of the water heater. Both hot and cold pipes must be wrapped with minimum of R-3 closed cell foam insulation at least 3 feet from the water heater. Exposed plumbing runs of 15 feet or greater (from water heater) may claim the 15 foot measure. Customers may claim only one measure per project.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

| Application | kWh saved/yr | Reimbursement |
|---|---|---|
| Short wrap (3-foot minimum) | 22 | $4.31 |
| Long wrap (15-foot minimum) | 65 | $12.92 |

# HVAC Measures

This section covers the following:

- Ductless Heat Pumps (DHP)
- Ducted Systems with PTCS Certification

## HVAC Measures - Ductless Heat Pumps (provisionally deemed)

**Requirements and Specifications**

- BPA will reimburse customers for one DHP per existing single-family residence with permanently installed zonal electric[39] resistance heating as the primary heating system.
- The DHP must be (1) a split system heat pump employing inverter-driven outdoor compressor, with inverter-driven or variable-speed indoor blowers, (2) listed as compatible on BPA's list of qualified DHPs and (3) installed, according to

[39] Zonal hydronic heating systems may be claimed for BPA reimbursement as zonal electric heat.

manufacturers' specifications and the Northwest DHP Project Best Practices Guides, by a contractor who attended a Northwest Ductless Orientation and received installation training from the manufacturer of the installed DHP equipment.

- Ducted indoor units and newly constructed homes (i.e., homes less than one year old) do not qualify. Unqualified DHP applications may be pursued as a custom project (i.e., homes with electric forced-air furnaces or new construction, excluding New ENERGY STAR Homes).

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Ductless Heat Pump Homeowner Installation Form (or other form(s) that contain the same information) (available in the Document Library) (Submitted forms will be shared with NEEA for quality assurance purposes.) | | X | X |

**Reimbursement**

Reimbursement is $1,500.00 per DHP.

## HVAC Measures - Ducted Systems with Performance Tested Comfort Systems (PTCS)

Measures include new high-efficiency heat pump upgrades; heat pump conversions; geothermal heat pump systems installed to PTCS specifications; PTCS commissioning and controls for heat pumps of any efficiency; and PTCS duct sealing (available for both new and existing systems).

**Requirements and Specifications**

- Installations may be in new construction single-family, existing single-family or existing manufactured homes with electric or non-electric auxiliary heat systems as long as the electric heat pump is the primary home heating system.
- PTCS work must be performed by a PTCS certified technician and must be certified as PTCS. PTCS specifications and forms are available here.
- Heat pump equipment must be AHRI tested and certified. Manufacturer claims of "equivalent to AHRI certified equipment" are not accepted.
- BPA has adopted the April 15, 2007 version of "Performance Tested Comfort Systems® – Air Source Heat Pump System Installation Standards" and the April 2009 version of "Performance Tested Comfort Systems® Duct Technical Specifications." Work must be installed to these standards.
- Effective April 1, 2013, "Appendix I, Performance Tested Comfort Systems – Geothermal Heat Pump Design and Installation Standards" dated April 15, 2007 will be replaced with "Ground Source Heat Pump System Installation Standards" adopted October 4, 2011. Under the new standards, open loop systems are ineligible, so customers must claim

open loop systems installed to the standard dated April 15, 2007 using BPA-qualified measures.

- Duct systems sealed with aerosol sealant equipment according to the BPA-provided specifications will be considered PTCS-compliant.
- Customers must inspect 10% of PTCS projects in their territory, in compliance with BPA's "PTCS Program Requirements."

Additional requirements apply to air-source heat pump upgrades and conversions, commissioning and controls, geothermal heat pump systems and PTCS duct sealing. See the table, below. All documentation and requirements are also posted online.

| | |
|---|---|
| **Air-Source Heat Pump Upgrades and Variable Speed Heat Pump Upgrades** | • Heat pump must be rated as having a minimum of 9.0 HSPF and 14 Seasonal Energy Efficiency Ratio (SEER).<br>• Heat pump upgrades include adding a heat pump to a system with gas back-up, replacing an existing heat pump, replacing the heat pump portion of a geothermal heat pump system, or upgrading from zonal to air-source heat pump.<br>• 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.<br>• When more than 50% of the heating ducts run through unconditioned space, ducts must be sealed and PTCS certified unless the ducts were previously certified or a PTCS duct leakage test indicates that the pre-existing duct leakage is too low to qualify for the PTCS duct sealing reimbursement. |
| **Electric Forced-Air Furnace to Air-Source Heat Pump Conversions and Variable Speed Heat Pump Conversions** | • Heat pump must be rated as having a minimum of 9.0 HSPF and 14 SEER.<br>• The installation must convert an electric forced air furnace to a high efficiency heat pump.<br>• 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.<br>• When more than 50% of the heating ducts run through unconditioned space, ducts must be sealed and PTCS certified unless the ducts were previously certified or a PTCS duct leakage test indicates that the pre-existing duct leakage is too low to qualify for the PTCS duct sealing reimbursement. |
| **Commissioning and Controls** | • The PTCS technician must correctly size the system to a 30-35 degree balance point, test for sufficient air flow across the coils and install an auxiliary heat lockout for when the outdoor temperature is above 35 degrees Fahrenheit. Exception: If the minimum setting on the thermostat is 40 degrees, 40 degrees may be used.<br>• This measure may be applied to any new heat pump that meets federal standards, including federal minimum HSPF and SEER ratings.<br>• This measure cannot be claimed in conjunction with any other heat pump measure, but may be combined with PTCS duct sealing. |
| **Geothermal Heat Pump Systems** | • This measure is only available for existing and new construction single-family homes in heating zones 2 and 3.<br>• For existing homes, only geothermal heat pumps replacing an electric forced air furnace or an air source heat pump qualify. For new construction homes, the baseline is considered to be an electric forced air furnace.<br>• All system components must be newly installed. The replacement of an existing geothermal heat pump unit or the thermal exchange loop does not qualify.<br>• Geothermal heat pump systems must be ENERGY STAR qualified and installed according to the International Ground Source Heat Pump Association (IGSHPA) specifications available at the time of installation by a |

| | |
|---|---|
| | PTCS and IGSHPA certified technician. Click here for a list of qualified PTCS trainers.<br>• Only one geothermal heat pump per home qualifies for BPA reimbursement. Geothermal heat pumps may be connected to hydronic heating systems in residential end-use applications if all PTCS and IGSHPA specifications are met. |
| **Duct Sealing Site built and Manufactured homes** | • For manufactured homes, pre-existing duct leakage to the outside must be greater than 100 $CFM_{50}$ for single-wide homes or 75 $CFM_{50}$ leakage per section for multi-section homes (e.g., double wide 150 $CFM_{50}$, triple wide 225 $CFM_{50}$).<br>• For existing single-family homes, pre-existing duct leakage to the outside must be greater than 250 $CFM_{50}$ or 15% of the floor area, whichever is less.<br>• For new single-family homes, the home must be new construction and occupied for less than a year. Pre-existing duct leakage test is not required. |

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | Site Registry | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Proof that the required PTCS form(s) for the claimed measure have been accepted in the PTCS registry of certified systems | | X | |
| Manufacturer's heat pump start-up form provided by the manufacturer (geothermal heat pumps only) | | | X |
| PTCS heat pump measures (blank forms are available in the Document Library):<br>• PTCS Heat Pump Form*<br>• PTCS Duct Sealing Form (if duct sealing is required)<br>• AHRI certificate<br>• Customer-approved sizing documentation, which may include one of the following:<br>o Whole-house heating and cooling calculation (ACAA Manual J or Easy J) and balance-point worksheet<br>o PTCS Heat Pump Sizing Calculator | | | X |

* For geothermal measures, this form must be submitted to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955).

**Reimbursement**

| Measure category | Details | Reimbursement |
|---|---|---|
| Air-Source Heat Pump Upgrade | Duct sealing required | $1,000.00 |
| | Duct sealing NOT required | $500.00 |
| Electric Forced-Air Furnace to Air-Source Heat Pump Conversion | Duct sealing required | $1,900.00 |
| | Duct sealing NOT required | $1,400.00 |
| Variable Speed Heat Pump Upgrade | Duct sealing required | $1,000.00 |
| | Duct sealing NOT required | $500.00 |
| Electric Forced-Air Furnace to Variable Speed Heat Pump | Duct sealing required | $1,900.00 |
| | Duct sealing NOT required | $1,400.00 |

| Measure category | Details | Reimbursement |
|---|---|---|
| Commissioning and Controls | May be applied to any new heat pump meeting the federal minimum standard | $300.00 |
| Geothermal Heat Pump Systems | Single-family homes only – HZ 2-3 (for cost-effective applications) | $3,000.00 |
| | Add desuperheater to a qualified geothermal heat pump installation (HZ 2-3 only) | $500.00 |
| Duct Sealing | Manufactured and new single-family homes | $400.00 |
| | Existing single-family homes | $500.00 |

## Line-Voltage Thermostats

### Requirements and Specifications

Customers must replace bi-metal line voltage thermostats in existing electrically heated single-family homes with line-voltage electronic thermostats. All existing thermostats, except those in bathrooms, must be replaced with thermostats in accordance with the current electronic thermostat specifications available in the Document Library.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Written statement from end user that all thermostats (except those in bathrooms) have been replaced | | | X |

### Reimbursement

Reimbursements are per home as listed in the table below.

| Heating Zone | Reimbursement |
|---|---|
| 1 | $115.00 |
| 2 | $160.00 |
| 3 | $160.00 |

## New Construction

## New ENERGY STAR Manufactured Homes

### Requirements and Specifications

Manufactured homes must be electrically-heated, new and 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.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| NEEM Certificate of compliance | | | X |

**Reimbursement**

| Measure | Heating Zone | Reimbursement |
|---|---|---|
| NEEM home or NEEM Eco-rated home | 1 | $850.00 |
| | 2 | $1,150.00 |
| | 3 | $1,450.00 |

## New ENERGY STAR/Built Green Site-Built Homes

**Requirements and Specifications**

Site-built homes must be new and certified compliant with Northwest ENERGY STAR Homes standards by the state certifying organization. Built Green opportunities meet Northwest ENERGY STAR Homes standards.

BPA will accept claims for homes built to the following standards:

- ENERGY STAR Builder Option Package #1 for homes with gas heat or a heat pump(s)
- Builder Option Package #2 for homes with zonal electric heat
- Built Green 4 and 5 Star specification (in Washington)

Qualifying measures differ by state.

Northwest ENERGY STAR site built homes may use, but are not required to use, one of the approved Technical Compliance Options (TCO) listed in the table below. All TCOs in the table below must use Building Option Package #1.

| State | Home Type | TCO |
|---|---|---|
| OR | Gas | Natural-Gas-Fired Hydronic Heating System |
| | Heat Pump | Hybrid "Ductless-Split" Heat Pump/Electric Resistance Zonal Heat |
| | | Packaged Terminal Heat Pump/Electric Resistance Zonal Heat |
| | Heat Pump or Gas | Raised Heel Truss & Advanced Framing Trade-Off |
| ID/MT | Gas | Natural-Gas-Fired Hydronic Heating System |
| | Heat Pump | Hybrid "Ductless-Split" Heat Pump/Electric Resistance Zonal Heat |
| | Heat Pump or Gas | Unvented Crawlspaces |
| | | Reduced Thermal Bridging Trade-Off |
| WA | Gas | Natural-Gas-Fired Hydronic Heating System |
| | Heat Pump | Hybrid "Ductless-Split" Heat Pump/Electric Resistance Zonal Heat |
| | Heat Pump or Gas | Mechanically Exhausted, Sealed Crawlspaces |
| | | Integrated Ventilation & Forced Air System |
| | | Exhaust Ventilation w/ Air Blending Strategy |
| | | Reduced Thermal Bridging Trade-Off |

In multiplex units where each unit is thermally separated from ground-to-roof, the units may be classified as single-family units (i.e., townhouses, condominiums or row houses).

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Certification label for the state certifying organization that includes the name of the ENERGY STAR/Built Green home certifier | | | X |

**Reimbursement**

BPA shall provide reimbursements as shown in the table below.

| Home Type | State | Specification | Reimbursement |
|---|---|---|---|
| Northwest ENERGY STAR Homes | ID, MT, OR, WA | • Zonal Electric Heat<br>• DHP/Zonal Electric Heat TCO**<br>• PTCS Heat Pump | $1,500.00 |
| | | Gas Heat (electric savings only) | $200.00 |
| Built Green 4 Star Homes* | WA | • Zonal Electric Heat<br>• PTCS Heat Pump | $1,500.00 |
| | | Gas Heat (electric savings only) | $200.00 |
| Built Green 5 Star Homes | WA | • Zonal Electric Heat<br>• PTCS Heat Pump | $1,800.00 |
| | | Gas Heat (electric savings only) | $200.00 |

* Built Green 4 Star Homes, in WA, are equivalent to Northwest ENERGY STAR Homes and should be claimed as such, until such time as a distinct Built Green 4 Star Home is available.

** Homes built to the DHP/Zonal Electric Heat TCO should be claimed as Heat Pump Home built to BOP1.

## Montana House (v 2.0)

**Requirements and Specifications**

Homes must be new, electrically heated and compliant with the Montana House specifications (available in the Document Library). This measure is available only for homes built in Montana and Heating Zones 2 and 3 of Idaho, Wyoming and Nevada.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Builder information (name and contact information) | | | X |
| HVAC system details (type of equipment, ventilation system, specific measures installed including rated CFM); foundation type; and home square footage | | | X |
| Report of inspections performed by the customer, including any substantial findings and documentation of any corrective actions taken | | | X |

### Reimbursement

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 Upgrade 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 residential[40] multifamily construction may be made more efficient than code or standard practice per current RTF Multifamily New Construction Low Rise Technical Specifications available in the Document Library and summarized below.[41]

| Component | | Specification |
|---|---|---|
| Ceilings | Attic | R-38 Std. |
| | Vaults | R-30 |
| Walls | Above Grade | R-21, Inter.[i] |
| | Below Grade Inter.[i] w/R-5 thermal break[iii] | R-21 |
| Floors | Over Crawlspaces and Unheated Basements | R-30 |
| | Slab-on-Grade Perimeter | R-15 |
| Glazing[ii] | Maximum NFRC rated U-value | U-0.30 |
| Exterior Doors | | U-0.19 |
| Duct Insulation | Rigid | R-11 |
| | Flexible | R-8 |
| Water Heaters | See the Interim Reference Deemed Measure List in the Document Library. | |
| Mechanical ventilation and pollutant source control in all climate zones. | | |

[i] Inter. indicates intermediate framing techniques

[ii] An area weighted U-value for windows which meets the component requirement of this table is acceptable.

[iii] A thermal break having a minimum value of R-5 is required between slab floors and all walls and footings.

Projects that do not meet the prescriptive specifications but qualify as above code or standard practice efficiency must be submitted as custom projects.

Effective, April 1, 2013, this measure will no longer available.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Architect or engineering plans documenting that the building meets or exceeds the component specifications listed above | | | X |

[40] Residential multifamily is defined as five or more dwellings within the same structure, no more than three stories. Multifamily housing above three stories is considered commercial construction and must be submitted as a custom project proposal under the Commercial Sector.

[41] This is a summary only, and the RTF specifications must be followed in full.

**Reimbursement**

| Measure | Heating Zone | Reimbursement (per unit) |
|---|---|---|
| Residential Multifamily New Construction | 1 | $80.00 |
| | 2 | $115.00 |
| | 3 | $140.00 |

## Weatherization (Standard Income)

Weatherization measures must be installed in homes with a permanently-installed electric heating system and follow the current, site-built or manufactured home weatherization specifications in the Document Library. Measures include insulation, prime window replacement and air sealing.

### Insulation

**Requirements and Specifications**

| Insulation | Home Type | Existing is: | Installed will be: |
|---|---|---|---|
| Attic Insulation | Single-family | 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 |
| | Multifamily | 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 |
| | Manufactured | Less than R-11 | R-19 |
| | | Less than R-11[i] | R-30[i] |
| | | R-11 to R-19[ii] | R-30[ii] |
| Wall Insulation | Single-family | Closed cavity – none present | Closed cavity – R-11 or fill cavity |
| | | Open cavity – none present | Open cavity – R-15[iii] |
| | Multifamily | Closed cavity – none present | Closed cavity – R-11 or fill cavity |
| | | Open cavity – none present | Open cavity – R-15[iii] |
| | Manufactured | n/a | n/a |
| Floor Insulation | Single-family | Less than R-11 | R-19 or R-30 |
| | | R-11 to R-19 | R-30 |
| | Multifamily | Less than R-11 | R-19 or R-30 |
| | | R-11 to R-19 | R-30 |
| | Manufactured | Less than R-11 | R-11 |

[i] This measure is not cost-effective in heating zones 1; therefore, no credit is available for this zone.

[ii] This measure is not cost-effective in heating zones 1 and 2; therefore, no credit is available for these zones.

[ii]Open cavity or unfinished walls (e.g., knee walls in attic spaces ) must fill to R-15. Refer to RTF specifications.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Audit or field notes detailing pre and post conditions | | | X |
| Documentation of R-value and square footage of installed insulation | | | X |

**Reimbursement**

Reimbursements and busbar energy savings for specific measures are available in the Interim Reference Deemed Measure list in the Document Library.

## Prime Window and Patio Door Replacement

**Requirements and Specifications**

Pre-existing windows and patio doors must be (1) single pane with/without storms, any frame type (e.g., metal, wood, vinyl), or (2) double pane, metal frame only. The weighted average of replacement windows must have a National Fenestration Rating Council (NFRC) rated U-value of 0.30 or lower; 0.35 or lower for patio doors.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| NFRC stickers or other verifications of U-value | | | X |
| Documentation of number of windows or patio doors and square footage of windows or patio doors replaced | | | X |
| Audit or field notes detailing pre and post conditions | | | X |
| Description of home (site-built or manufactured) and original window or patio door and frame | | | X |

**Reimbursement**

Reimbursement is $6.00 per square foot of glazing area of windows replaced.

## Air Sealing

**Requirements and Specifications**

- If combustion appliances are present (e.g., fireplace, wood or gas stove, gas range, gas water heater), a UL- or CUL-approved carbon monoxide detector must be installed.
- Mechanical ventilation may be required. See the RTF Air-Sealing specifications in the Document Library.
- If PTCS duct sealing is performed at the same time as air sealing, the baseline blower door $CFM_{50}$ reading for the air sealing measure must be taken with all the supply and return duct registers temporarily sealed off, so that house air leakage can be measured independently from duct leakage.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system | X | | X |

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| is available.) | | | |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Audit or field notes detailing the following:<br>• Pre and post conditions $CFM_{50}$ (CFM at -50 pascals)<br>• Total square footage of the pressure zone tested and sealed (typically this is the interior heated floor area of the home)<br>• Building volume<br>• Notes on mechanical ventilation requirement | | | X |

**Reimbursement**

BPA reimbursement is based on the reduction in air infiltration per reduction in $CFM_{50}$, rounded to the nearest whole number. Reimbursements and busbar energy savings are available in the Interim Reference Deemed Measure list in the Document Library.

Total Reimbursement = Quantity x Reimbursement

*Quantity = Difference between pre and post $CFM_{50}$*

## Low-income Weatherization and Duct Sealing

**Requirements and Specifications**

Low-income eligibility is defined in the Federal Weatherization Assistance Program as 200% of the poverty income levels. Approved statewide eligibility definitions substitute for federally established low income levels, if provided. All low-income weatherization funds must generate reportable, cost-effective savings in the customer's service territory.[42] Customers may run low-income weatherization programs themselves or through contractors, but must, at all times, retain responsibility for and control over the program.

Funds may be used for repair work (i.e. health and safety or to ensure efficacy of measure) directly associated with the installation of cost-effective weatherization measures, but repair costs must be reported separately. Customers may combine funding sources within a residence, but may not combine funding from multiple BPA sources for the same measure.

Measures must be RTF defined as TRC cost-effective and approved by BPA.[43] The table below summarizes eligible measures, which must be individually reported to BPA.

| Home Type | Qualifying Measures |
|---|---|
| Single-family | • Infiltration control<br>• Attic insulation (up to R49)<br>• Floor insulation (up to R30)<br>• Wall insulation (up to R11)<br>• PTCS duct sealing for heat pumps and electric forced air furnaces<br>• Prime window or patio door replacement* |
| Multifamily | • Attic Insulation (up to R49)<br>• Floor Insulation (up to R30)<br>• Wall Insulation (up to R11) |

[42] Under a separate BPA program BPA funds low income energy efficiency activities through grants to states and tribes.

[43] Note that BPA eligible measures might differ from eligible measures defined using the U.S. Department of Energy's Savings to Investment Ratio (SIR) method.

| Home Type | Qualifying Measures |
|---|---|
| | • Prime window or patio door replacement* |
| Manufactured Homes | • Infiltration control<br>• Attic insulation (HZ1: up to R19, HZ2: up to R30, HZ3: up to R30)<br>• Floor insulation (up to R11)<br>• Forced-air electric furnace - PTCS duct sealing<br>• PTCS duct sealing for heat pumps and electric forced air furnaces<br>• Prime window or patio door replacement* |

* Homes must have permanently-installed electric heat and follow the site-built or manufactured home weatherization specifications in the Document Library. Pre-existing windows or patio doors must be (1) single pane with/without storms, any frame type (e.g., metal, wood, vinyl), or (2) double pane, metal frame only. The weighted average of replacement windows must have a National Fenestration Rating Council (NFRC) rated U-value of 0.30 or lower; 0.35 or lower for patio doors.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Insulation (if installed): square feet and R-value documentation | | | X |
| Prime window replacement (if installed): description of the home (site-built or manufactured) and original window and frame; documentation of number and square footage of windows replaced; and NFRC stickers or other verification of U-value | | | X |
| Audit or field notes detailing pre and post conditions | | | X |

**Reimbursement**

All costs directly attributable to the installation of the measure are eligible for dollar-for-dollar reimbursement (prime windows are capped at $20.00 per square foot of glazing area of windows replaced), not to exceed 100% of actual cost) including costs for low-income weatherization that protects the integrity of the measure (e.g., manufactured home EPDM roofing membrane over rigid insulation; attic and crawl space ventilation; under-floor moisture barrier; and insulation of exposed water lines).

## Residential Custom Projects

**Requirements and Specifications**

Residential custom projects may be submitted using the custom project process.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the custom project documentation requirements. | | | |

**Reimbursement**

See the custom programs and projects reimbursement table.

## Multi-Sector Opportunities

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

- Processes
- Measures and Initiatives
    1. Electric Storage Water Heaters
    2. Refrigerator and Freezer Decommissioning
    3. Limited Availability Emerging Technology Field Test Projects
    4. Variable Frequency Drives in Small Compressed Air Systems
    5. Multifamily, Multi-Sector Measures

# 10. Utility Distribution Sector

BPA acquires Utility Distribution Sector energy savings through Energy Smart Utility Efficiency, which includes Voltage Optimization (VO) and Electrical Distribution System Improvements (SI). VO is a technique for improving the efficiency of the electrical grid by reducing voltage on the feeder lines running from substations to retail loads, while SI improves the energy efficiency of the electrical distribution system.

Customers must submit VO and SI as custom projects and may combine SI and VO in one custom project when SI improvements increase the amount the voltage can be reduced or improve monitoring of reduced voltage.

**Requirements and Specifications**

The custom project process requirements apply with one exception: equipment in stock may be used if the customer documents that the equipment was installed after acceptance of the custom project proposal by BPA (Option 1) or the customer (Option 2).

The requirements of (1) VO, (2) SI and (3) custom project steps are discussed below.

1. Voltage Optimization (VO)

   The Simplified VO Measurement & Verification Protocol, based on RTF guidelines, focuses on residential and small commercial end-use loads and requires that specific system stability thresholds are met prior to lowering service voltages.

   All VO projects require a BPA-approved scoping study, and if the results of the scoping study indicate a cost-effective project, a detailed study. Customers should limit scoping and detailed study requests (via the TSP Portal) to a maximum of three substations and 12 feeders. These studies require the customer to collect data from feeders and the substations. Failure to provide requested substation, feeder, and voltage control data will delay scoping and detailed studies. Costs incurred prior to the acceptance of the custom project proposal (by BPA for Option 1 or the customer for Option 2) to gather required data, including additional metering and load flow analysis programs, are allowable project costs.

2. Electrical Distribution System Improvements (SI)

   BPA will not provide TSP support for SI without VO.

   SI 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)

- Power factor improvement to reduce line losses
- Volt-Amperes-Reactive (Reactive Power) Management
- Fixed and switched capacitors
- Service distribution transformer
    - Replacing an existing or proposed transformer with a higher efficiency transformer
    - Multiple transformers versus single transformer based on system analysis
    - Voltage management

1. VO and SI Custom Project Process Chart

   The following chart outlines the custom project tasks and responsible parties.

| Custom Project Process Step | VO | | Stand Alone System Improvements | |
|---|---|---|---|---|
| | Option 1 | Option 2 | Option 1 | Option 2 |
| TSP request | Customer | Customer | Customer | Customer |
| Utility questionnaire | Customer | Customer | n/a | n/a |
| Scoping Study | TSP | TSP | n/a | n/a |
| Detailed Study | TSP | TSP | n/a | n/a |
| Custom project proposal entry | TSP | n/a | Customer or TSP | n/a |
| Custom project proposal submittal | Customer | n/a | Customer | n/a |
| Custom project proposal review | COTR and ESUE engineer | n/a | COTR and BPA Field Engineer | n/a |
| Estimated savings verification | TSP | TSP | Customer or TSP | Customer or TSP |
| Custom project entry/completion report development | TSP | TSP | Customer or TSP | Customer or TSP |
| Custom project/ completion report entry | TSP | TSP | TSP or Customer | TSP or Customer |
| Custom project/ completion report submittal | Customer | Customer | Customer | Customer |
| Custom project/ completion report review | COTR and ESUE Engineer | COTR and ESUE Engineer | COTR and BPA Field Engineer | COTR and BPA Field Engineer |

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the custom project documentation requirements. | | | |

**Reimbursement**

See the custom programs and projects reimbursement table.

# 11. Multi-Sector

***Please check the changes summary to see if significant changes were made to any of the measures in this sector.***


Reimbursement Summary ..... 91
11.1 Processes ..... 92
COTR Request and Acknowledgement Procedure ..... 92
Direct Acquisition ..... 92
Measure Distribution Processes ..... 92
11.2 Measures and Initiatives ..... 93
Electric Storage Water Heaters ..... 93
Refrigerator and Freezer Decommissioning ..... 95
Green Motors Initiative ..... 95
Non-Residential Lighting Program ..... 95
Stand-alone, Non-residential Lighting Measures ..... 98
*ENERGY STAR CFLs* ..... 99
*LED Exit Signs or Retrofit Kits* ..... 99
Limited Availability Emerging Technology Field Test Projects ..... 100
Variable Frequency Drives in Small Compressed Air Systems ..... 101
Multifamily, Multi-Sector Measures ..... 101


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

**Reimbursement Summary***

| Program Component or Measure | Reimbursement |
|---|---|
| Electric Storage Water Heaters | See the reimbursement section. |
| Refrigerator and Freezer Decommissioning | $100.00/unit |
| Green Motors | $2.00/hp |
| Lighting | |
| o Non-Residential Lighting Program | See the lighting calculators for deemed values and the custom programs and projects reimbursement table for custom project values. |
| o Stand-alone, Non-Residential Lighting Measures | |
| ▪ *ENERGY STAR CFLs* | $2.50-$5.00/CFL |
| ▪ *LED Exit Signs or Retrofit Kits* | $50.00/unit |
| Limited Availability Emerging Technology Field Test Projects | See the custom programs and projects reimbursement table |
| Variable Frequency Drives in Small Compressed Air System | See the custom programs and projects reimbursement table |
| Multifamily, Multi-Sector Measures | See the specific measure section. |

* 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.

## 11.1 Processes

### COTR Request and Acknowledgement Procedure

Under the COTR Request and Acknowledgement Procedure, customers must send a written request to their COTRs to participate or make changes to participation in certain programs and processes. If the procedure is required, it will be listed in the specific section. The specific section may also require the customer to include supporting information with its request.

If approved, the COTR shall confirm the request by written notice. A customer request is not effective until the COTR approves the request in writing.

### Direct Acquisition[44]

Under Direct Acquisition (DA), BPA contracts directly with a third party to implement energy efficiency activities within a participating customer's service area. The third party reports activity 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.

BPA allocates energy savings to the customer or EEI, 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.

Customers must enroll in DA by using the COTR Request and Acknowledgment Procedure.

The customer may withdraw from DA by providing 30 days written notice using the COTR Request and Acknowledgment Procedure. If the customer withdraws 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.

### Measure Distribution Processes

Measures requiring distribution may allow one or more of the following distribution methods: direct install, retail markdown, end-user reimbursement, direct mail/mail by request and other. Allowable distribution methods are listed in the specific measure section, and the requirements herein apply.

| Distribution Type | Requirements and Specifications | Documentation Description (Retain in Customer File) |
|---|---|---|
| Direct Install | Customers must (1) physically install measures, (2) witness installation or (3) visually inspect a representative sample after installation by another party.[45] | Completed Measure Distribution Documentation form (available in the Document Library) or equivalent form with required information |
| Retail Markdown | • Customers may use in-store markdown or end-user coupons.<br>• For in-store markdown, customers must submit a store sales report for each participating store with the date, manufacturer, model number, measure type and any other identifying elements of each sale generated by the promotion. Reports | Store sales reports or, for coupons, other documentation that product meets BPA's requirements[46] |

[44] DA is available for the Green Motors program, only.

[45] Installation, witness or verification may be conducted by a customer program employee or an agent/contractor of the customer.

[46] The store sales report may substitute for invoices.

| Distribution Type | Requirements and Specifications | Documentation Description (Retain in Customer File) |
|---|---|---|
| | must document the allocation methodology when a store serves multiple utility customers.<br>• Coupons must contain the (utility) customer name and end-user address and require the customer to (1) document that the product meets BPA's requirements or (2) create store sales reports | |
| End-user Reimbursement | Customers must reimburse end users for the purchase, installation and operation of measures that meet BPA's requirements. | Completed Measure Distribution Documentation form (available in the Document Library) or equivalent form with required information |
| Direct Mail/ Mail by Request | The requirements and reimbursement levels in place on the date the product enters the mail stream apply (i.e., for drop shipments, the "round stamp" date on United States Postal Service (USPS) form 8125 and for straight mailings, the "statement certification date" of USPS form 3607R).[47] | Completed Measure Distribution Documentation form (available in the Document Library) or equivalent form with required information |
| Over-the-Counter (e.g., distribution at customer events or customer's office or left a customer's house upon request) | Customer representatives must distribute measure to verified end users. | Completed Measure Distribution Documentation form (available in the Document Library) or equivalent form with required information |
| Other | See your COTR for requirements and specifications. | See your COTR for requirements. At a minimum, required documentation includes date of distribution, distribution recipients and quantity. |

## 11.2 Measures and Initiatives

### Electric Storage Water Heaters

**Requirements and Specifications**

See the residential application and commercial application tables in the reimbursement section for current specifications.

Effective February 1, 2013, electric storage water heaters in residential applications must conform to the requirements in the table below.

| Residential Applications (Effective February 1, 2013) | | |
|---|---|---|
| **Tank Type** | **Tank Size (Gallons)** | **Minimum Requirements** |
| Residential | 25-54.99 | Energy Factor of 0.94 or higher |
| | 55-74.99 | Energy Factor of 0.93 or higher |
| | 75-99.99 | Energy Factor of 0.92 or higher |
| | 100-119.99 | Energy Factor of 0.85 or higher |

[47] If using a non-United States Postal Service delivery service, contact your COTR for requirements and specifications.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |

**Reimbursement**

Currently reimbursement differs for residential and commercial applications according to the tables below, but effective February 1, 2013, reimbursement for all installations in all applications is $25.00 per unit.

| Residential Applications | | | |
|---|---|---|---|
| **Tank Type** | **Tank Size (Gallons)** | **Minimum Requirements** | **Reimbursement** |
| Residential | 50 | Energy Factor of 0.93 or higher | $25.24 |
| | | Energy Factor of 0.94 or higher* | $46.62 |
| | 65 | Energy Factor of 0.91 or higher | $26.48 |
| | | Energy Factor of 0.94 or higher* | $71.77 |
| | 75 | Energy Factor of 0.92 or higher* | $61.93 |
| | 80 | Energy Factor of 0.91 or higher | $45.32 |
| | | Energy Factor of 0.92 or higher* | $75.32 |
| | 85 | Energy Factor of 0.92 or higher* | $76.11 |
| | 105 | Energy Factor of 0.91 or higher* | $105.77 |
| | 119 | Energy Factor of 0.85 or higher | $41.59 |

* A minimum warranty period of 20 years is required. Currently, only Marathon water heaters qualify

| Commercial Applications | | | |
|---|---|---|---|
| **Tank Type** | **Tank Size (Gallons)** | **Minimum Requirements** | **Reimbursement** |
| Commercial | 25-34.99 | Standby loss of 157 or lower | $25.00 |
| | 35-44.99 | Standby loss of 185 or lower | $25.00 |
| | 45-54.99 | Standby loss of 201 or lower | $25.00 |
| | 55-74.99 | Standby loss of 238 or lower | $25.00 |
| | 75-99.99 | Standby loss of 249 or lower | $25.00 |
| | 100-119.99 | Standby loss of 287 or lower | $25.00 |
| Residential-Type | 25-34.9 | Energy Factor of 0.94 or higher | $25.00 |
| | 35-44.9 | Energy Factor of 0.94 or higher | $25.00 |
| | 45-54.9 | Energy Factor of 0.94 or higher | $25.00 |
| | 55-74.99 | Energy Factor of 0.93 or higher | $25.00 |
| | 75-99.99 | Energy Factor of 0.92 or higher | $25.00 |
| | 100-119.99 | Energy Factor of 0.85 or higher | $25.00 |

## Refrigerator and Freezer Decommissioning

### Requirements and Specifications

The existing appliance for decommissioning and recycling must be a residential-style appliance, verified as functional and have a minimum capacity of 10 cubic feet. The unit must be decommissioned and its components recycled.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Disposal/recycling documents (from recycler) for each unit | | | X |
| Disposal/recycling summary (from recycler) | | | X |

### Reimbursement

BPA shall reimburse $100.00 per unit.

## Green Motors Rewind Initiative

### Requirements and Specifications

The Green Motors Rewind Initiative uses Direct Acquisition. Qualified motors include National Electric Manufacturers Association (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.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Third-party provided reports | | | X |

### Reimbursement

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

## Non-Residential Lighting Program

### Requirements and Specifications

The Non-Residential Lighting Program applies to existing building (retrofit/upgrade) and new construction agricultural, commercial and industrial projects. Program busbar energy savings, reimbursement levels and equipment specifications are in the Lighting Calculators (available in the Document Library), and the calculators capture the completed information during the invoicing process.

BPA strongly encourages customers to pre- and post-inspect all jobs to verify the baseline system power as well as the completed project. The Northwest Lighting Trade Ally Network may be available to assist in this process. For Energy Smart Industrial Projects, customers may enlist the Northwest Lighting Trade Ally Network, to provide onsite lighting walk-throughs; onsite meetings and/or technical development with an end user, trade ally and/or customer representative; and review of end-user trade ally proposals and recommendations

for enhancing lighting efficiency technology. For all non-Energy Smart Industrial Projects, the Northwest Lighting Trade Ally Network is available to assist contractors and customers with training, project support and recommendations for enhancing lighting efficiency technology.

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. Lighting measures are generally deemed, but custom projects may be acceptable in limited circumstances. See (1) deemed lighting, (2) non-standard deemed lighting and (3) custom sections, below.

a. Deemed Lighting

Deemed lighting measures are listed in Lighting Calculator version 2.1, 2.2, or 2.3 (combined existing buildings and new construction).

BPA plans to release Lighting Calculator 3.0 in the fall/winter of 2012 to incorporate the new federal minimum efficiency standards that took effect July 14, 2012, which change baseline assumptions and reduce incentives for certain linear fluorescent lamps. Lighting Calculator 3.0 will include negative changes to the Measure Category A savings and incentives; eliminate Measure Category B; and eliminate incentives for Pulse Start Metal Halides under Measure Category I as they are required by standard ( Incentives will still be available for electronically ballasted metal halides). Lighting Calculator 3.0 will also require the following input requirements:

- Utility name
- Unique identifier or account code (to identify end user)
- Project completion date
- Funding source

Lighting Calculators 2.1, 2.2 and 2.3 will be retired October 1, 2013, and from that point forward, Lighting Calculator 3.0 will be the only accepted lighting calculator.

All projects must be cost-effective and result in a minimum energy usage reduction of 25%. The default reduction of hours of operation from occupancy sensors and lighting controls is 25%. Greater reductions must be justified in the notes column of the lighting calculator.

b. Non-standard Deemed Lighting

If a measure is not listed in the deemed section of the lighting calculator and has not been ordered, purchased or installed, the customer may use the COTR Request and Acknowledgement Procedure to request a one-time, project specific non-standard measure approval. Non-standard deemed lighting requests are entered into the lighting calculator and sent to BPA for review (lighting@bpa.gov). If the customer's request is approved, BPA will establish a one-time measure and reimbursement.

c. Custom Lighting

BPA will determine the acceptability of a custom project path. Lighting custom projects may be acceptable when one of the following is true:

1. The measures are part of a multi-measure project that includes other measures that have interactive effects with each other where non-lighting savings are responsible for at least 30% of the energy saved (use the multiple measures category) and savings from different measures cannot be disaggregated.

2. The measures are included as part of a whole building energy model for a custom new construction project.
3. The projects involve complex control strategies (e.g., projects that utilize comprehensive control approaches such as whole building networked systems, or dual technology sensors).
4. The project is pursued as part of NEEA's Commercial Lighting pilot.
5. The projects are industrial and estimated to provide more than 200,000 kWh in annual energy savings.
6. The projects are pursued by an Option 2 customer. For custom projects pursued by Option 2 customers, BPA may (1) review and approve savings calculation methodologies and/or tools and (2) request measure-level data on individual projects and the parameters used to calculate project savings and cost-effectiveness. This data includes, but is not limited to, the following:

    a. Baseline lighting condition (fixture type, wattage and quantity)

    b. Installed efficient lighting condition (fixture type, wattage and quantity)

    c. Hours of operation and any reduction in hours in operation from controls

    d. Building use - primary (formerly referenced as building type)

    e. Building HVAC type

    f. Project cost and reimbursements

Custom lighting projects must abide by the following requirements:

1. The custom project must include a completed lighting calculator (BPA-provided or an equivalent, including vendor-supplied lighting audits).
2. If the measures contain new fixtures (not replacements) that are required to meet operating requirements, the measures must be identified as new fixtures in the custom project, and incremental cost and savings information must be provided. The baseline description must contain the justification for the additional fixtures (e.g., required for safety, change in equipment layout or change in use of area).
3. Power Measurements:
    a. Power measurements for new induction and fluorescent fixtures are not required; customers may use manufacturers' published wattage specifications (e.g., cut sheets) to determine energy savings.
    b. The actual input power of all new or existing LED and HID fixtures must measure true root-mean-square power.
    c. Customers may use the manufactures stated wattage or lighting power estimates in the form of the submitted lighting calculator for existing all other non-high intensity discharge (HID) or non-LED lights.
4. Data Logging:
    a. Fixed schedule controls (e.g. time-based and photo cells) must have a fixed control operating schedule which documents commissioning and clearly

outlines programmed hours of operation. These types of controls do not require logging.

b. Non-fixed schedule controls (e.g., occupancy sensors and day lighting) require a minimum two weeks of data logging to accurately determine hours of operation. Foot candle measuring is acceptable.

**Documentation Requirements**

| Deemed Lighting Projects Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Reporting System or Lighting Calculator | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Equipment/contractor invoice showing final project cost (The final project cost may include the price of materials, labor, permits and disposal fees.) | | | X |
| Lighting Calculator showing a proper listing and labeling of actual equipment installed with validated counts (Submittal is not required until BPA's reporting system is available.) | X | | X |
| High performance model numbers for lamps and ballasts in the "notes" column of the Lighting Details Page (Each model only needs to be listed once in the "notes" column.) | X | | |
| Cut sheets for non-standard lighting measures* | | | X |
| Corrected/completed Lighting Calculator with date of completion (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Field notes from inspection; pictures and/or drawings with lighting counts by specific areas[48] (recommended) | | | X |

* Cut sheets are no longer required to verify high-performance deemed lighting measures when products are not listed on the CEE list. Measure Category A still requires high-performance equipment to be installed.

| Custom Lighting Projects Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Custom projects must follow the custom project documentation requirements. | | | |

**Reimbursement**

- Deemed Lighting: For lighting calculators 2.1 and 2.2, reimbursement is capped at 70% of the project incremental cost and for lighting calculators 2.3 and beyond, reimbursement is capped at the lesser of $0.50/kWh at the total project level or 70% of the project incremental cost.
- Custom Lighting: See the custom programs and projects reimbursement table.

## Stand-alone, Non-Residential Lighting Measures (BPA Qualified)

Stand-alone, non-residential lighting measures do not require a Lighting Calculator. This section includes ENERGY STAR CFLs and LED exit signs and retrofit kits.

Effective April 1 2013, BPA will no longer offer Stand-alone, Non-Residential Lighting Measures. Reimbursement for both CFLs and LED Exit Signs will still be available through the BPA lighting calculators.

[48] Detailed lighting counts will provide greater accuracy in oversight.

## *ENERGY STAR CFLs (BPA Qualified)*

### Requirements and Specifications

CFLs must replace existing incandescent lamps and have a minimum of five watts. CFLs may be distributed via a direct install or end-user reimbursement per the Measure Distribution Processes section in the Multi-Sector chapter.

Effective April 1, 2013 this measure will no longer be available.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Primary building use | | | X |
| Installed CFLs hours of operation | | | X |
| For end-user reimbursement, documentation that installed CFLs replaced incandescent bulbs (End-user attestation suffices for requests of 100 and fewer CFLs. Customers must visually inspect requests of more than 100 bulbs to certify requirements were met). | | | X |
| Completed "Non-Res Energy Star CFLs" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library) (Submittal is not required until BPA's reporting system is available.) | | X | X |
| See also the Measure Distribution Processes section in the Multi-Sector chapter. | | | |

### Reimbursement

BPA shall reimburse according to the table, below.

| Installation Location | Direct Install | End-user Reimbursement |
|---|---|---|
| Hotel/motel room or other limited occupancy area | $4.00 | $2.50 |
| Retail/foodservice | $5.00 | $2.50 |
| Office | $5.00 | $2.50 |
| Industrial | $5.00 | $2.50 |

## *LED Exit Signs or Retrofit Kits (BPA-qualified)*

### Requirements and Specifications

Signs or kits must replace incandescent signs, use LED technology, have a maximum of five watts and be distributed via direct install per the Measure Distribution Processes section in the Multi-Sector chapter.

Effective April 1, 2013 this measure will no longer be available.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique Site ID and address | | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed "Non-Res LED Exit Signs & Retrofit Kits" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library) (Submittal is not required until BPA's reporting system is available.) | | X | X |
| See also the Measure Distribution Processes section in the Multi-Sector chapter. | | | |

**Reimbursement**

BPA shall reimburse $50.00 per new LED exit sign or retrofit kit.

## Limited Availability Emerging Technology Field Test Projects

**Requirements and Specifications**

Emerging Technology Field Test Projects allow BPA to collect detailed data to more accurately estimate savings and potential performance to create future deemed and BPA-qualified measures. BPA may contract with third parties to deploy the emerging technology, evaluate performance and verify energy savings

On the BPA Emerging Technologies Web site, BPA maintains a list of available emerging technology projects with defined eligibility requirements, number of installations targeted, participation obligations, savings and reimbursement.

If a customer is eligible for and wishes to participate in a project, it must use the Option 1 custom project process and submit a custom project proposal that uses the Engineering Calculations with Verification Protocol for measurement and verification. BPA will provide the information necessary to complete the custom project documentation and will provide staff assistance in the development of the proposal and completion report.

BPA may require metering to continue after project completion and may require customers to perform additional duties to support the research efforts (e.g., customers may be asked to provide access to end-user billing history and contact information). If additional metering is required, it will not change customers' reimbursement or savings.

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| Customers must follow the Option 1 custom project documentation requirements and may be required to provide end-user billing information and contact information. | | | |

**Reimbursement**

See the custom programs and projects reimbursement table.

## Variable Frequency Drives in Small Compressed Air Systems

### Requirements and Specifications

VFDs applied to a single air compressor 75 hp or less must use the RTF-approved NW Regional Small Compressed Air Savings Calculator. Each VFD compressor must be submitted as an individual project (i.e., compressors may not be combined or divided).

The calculator will determine energy savings.

### Documentation Requirements

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| End-user identifying information including unique Site ID and address (Submittal is not required until BPA's reporting system is available.) | X | | X |
| Equipment/contractor invoice showing (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost | | | X |
| Completed NW Regional Compressed Air Savings Calculator (available in the Document Library) | | X | X |

### Reimbursement

Though this is not a custom project, reimbursement is paid according to the custom programs and projects reimbursement table.

## Multifamily, Multi-Sector Measures

Multifamily housing is defined as five or more dwelling units within the same structure. Multifamily housing may be either residential or commercial. Residential multifamily housing includes structures no more than three stories. Commercial multifamily housing includes structures more than three.

The table below provides opportunities and guidance for measures that may be used in multifamily applications by using existing measures contained elsewhere in the Manual.

### Requirements and Specifications

Multifamily measures may be (1) non-envelope/HVAC or (2) envelope/HVAC as listed in the tables below. All measures must meet requirements and specifications found in the noted sector section.

1. Non-envelope/HVAC Measures

Non-envelope/HVAC measures may be applied to multifamily structures regardless of number of stories as provided in the table below.

| Measure | Measure Installation Location | |
|---|---|---|
| | Residential Unit | Common Area |
| Lighting | Residential Sector<br>• ENERGY STAR CFLs and Fixtures | Multi-Sector<br>• Non-Residential Lighting |

| Measure | Measure Installation Location | |
|---|---|---|
| | Residential Unit | Common Area |
| Appliances | Residential Sector<br>• ENERGY STAR Refrigerator and Freezer<br>• ENERGY STAR Clothes Washer<br>Multi-Sector<br>• Refrigerator and Freezer Decommissioning | Commercial Sector<br>• Commercial Food Service Reach-in Refrigerators and Freezers<br>• Commercial Ice Makers<br>• Commercial Combination and Convection Ovens<br>• Commercial Dishwashers<br>• Commercial Clothes Washers<br>Multi-Sector<br>• Refrigerator and Freezer Decommissioning |
| Showerheads | Residential Sector<br>• Showerheads | Commercial Sector<br>• Commercial Showerheads |
| Water Heating | Multi-Sector<br>• Residential Electric Storage Water Heaters | Multi-Sector<br>• Commercial Electric Storage Water Heaters |

2. Envelope/HVAC Measures

Envelope/HVAC measures shall be applied based on the definition of Residential multifamily or Commercial multifamily as found in the Definitions section.

| Measure | Residential measures | Commercial measures |
|---|---|---|
| Weatherization | Custom Projects<br>Residential Sector<br>• Insulation<br>• Prime Window Replacement | Custom Projects |
| HVAC | Custom Projects | Custom Projects<br>Commercial Sector<br>• Unitary Air-Conditioning Equipment in Commercial Buildings<br>• Ductless Heat Pumps in Commercial Buildings |

**Documentation Requirements**

| Documentation Description | Retention/Submittal Locations | | |
|---|---|---|---|
| | BPA Energy Efficiency Reporting System | eedocs@bpa.gov or fax 1-866-535-7955 | Customer File |
| See the measure specific information in the section referenced in the table, above. | | | |

**Reimbursement**

See the measure specific information in the sector section referenced in the table, above.

# 12. 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.

| Change Description | Effective Date (Posted Date) | Location |
|---|---|---|
| **General** | | |
| | | |
| **Introduction** | | |
| | | |
| **Funding** | | |
| | | |
| **General Requirements** | | |
| | | |
| **Custom Programs and Projects** | | |
| | | |
| **Agricultural Sector** | | |
| | | |
| **Commercial Sector** | | |
| | | |
| **Federal Sector** | | |
| | | |
| **Industrial Sector** | | |
| | | |
| **Residential Sector** | | |
| | | |
| **Utility Distribution Sector** | | |
| | | |
| **Multi-Sector** | | |
| | | |