BONNEVILLE POWER ADMINISTRATION

2015-2016

Implementation Manual

This document is available online at www.bpa.gov/Energy/N/implementation.cfm.
Measure information effective April 1, 2016

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! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

Changes & Corrections Summary

Change and Corrections Summary Introduction Letter VI

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Introduction Letter from the Vice President

April 1, 2016

Dear Customers:

Greetings, I'm pleased to introduce the Changes and Corrections Summary for the 2015-2016 Implementation Manual. As you know, in the Energy Efficiency Post-2011 Implementation Program, Bonneville Power Administration (BPA) agreed to publish the Implementation Manual (IM) once per year. Though we have moved to an "annual Manual", customers did request a small subset of changes be allowed off cycle in April: new measures, optional calculators, removal of a requirement and language clarifications. Rather than update the Implementation Manual, we have included these immediately effective changes in the Changes and Corrections Summary.

The new features for the Changes and Corrections Summary are as follows:

- The changes have been organized by the effective date – all of the April changes are grouped together first and those effective in October come after.
- We've replaced the referenced page number with the chapter section.
- There have been no language changes within the actual body of the IM. All are contained within the Change Summary, but we have italicized the language that has actually been changed for distinction.
- The only change we have made to the current IM, is to use an asterisk in the table of contents of each chapter to indicate that an update or edit can be found in the Changes and Corrections Summary

In addition to the Changes and Corrections Summary, there is another modification I want to draw your attention to. Effective October 1, 2016, there will be some significant changes to the way busbar savings are calculated for Unit Energy Savings (UES) measures. This is due to BPA adopting the new Regional Technical Forum methodologies stemming from the Council's 7th Power Plan. The updated version of Pro Cost (the tool used to estimate savings from the site level to busbar) has a new methodology to analyze the load shapes and determine a measure's contribution to peak load capacity reductions. Measures that reduce demand during peak have a higher busbar, while measures that do not (irrigation for example), have lower busbar savings. Please take a moment to read the "Significant Changes Coming to the UES Measure List in October 2016" which is enclosed.

We always strongly encourage customer engagement and feedback. This Change and Corrections Summary is our first attempt at a mid-year publication to supplement the annual Implementation Manual. We worked hard to incorporate your feedback, but if you would like to see course corrections or different processes in future iterations, we want to hear about it. If you have any suggestions for ways we can improve, please don't hesitate to share that with your Energy Efficiency Representative. In addition, we are still committed to a review of the potential for moving to a rate period IM. This is a commitment that we made as part of the Post-2011 Review. We will update you on that work and analysis before the end of FY16.

Thank you for your continued support and engagement. We value our relationships with you, our utility customers.

Sincerely,

Richard Génecé

Richard Génecé
Vice President, Energy Efficiency

April Changes and Corrections Summary for the 2015-2016 Implementation Manual

The following changes are effective April 1, 2016:

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
General			
There are no changes.			
Introduction			
There are no changes.			
Definitions			
Additional language added to "**Implementation Budget**". The definition now reads: "The amount of money BPA makes available to a customer (through its Energy Conservation Agreement) to expend on implementation costs during the implementation period. *This amount changes with every revised Exhibit A to the ECA. Performance Payments are calculated from the Implementation Budget."*	Provide clarity that the budget amount changes with every revised Exhibit A to the ECA.	Correction	Definitions
A definition has been added for **Low Energy Precision Agriculture (LEPA)**. The definition is: *Low energy precision agriculture for center pivot and linear move irrigation systems uses hoses that drag on the surface of the soil. This application reduces water evaporation and can provide more uniform water application; reduced water evaporation; and lower pressure requirements for greater energy reduction.*	This definition has been added to support a new measure.	Change - New Measure	Definitions
A definition has been added for **Low Elevation Sprinkler Application (LESA)**. The definition is: *Low elevation sprinkler application for center pivot and lateral move irrigation systems places the sprinkler within three (3) feet of the soil surface.*	This definition has been added to support a new measure.	Change - New Measure	Definitions
A definition has been added for **PTCS Commissioning, Controls and Sizing**. The definition is: *Refers to the PTCS installation procedures of commissioning an Air Source Heat Pump or Variable Speed Heat Pump for the proper sizing of the unit, refrigerant charge, the control of auxiliary heat, thermostat and air flow to ensure the system is installed to operate efficiently. PTCS Commissioning, Controls, and Sizing may be applied to any new heat pump that meets the federal minimum standards. This measure cannot be claimed in combination with any other heat pump measure.*	It was unclear to some customers that Commissioning, Controls and Sizing is a reportable measure in the PTCS program.	Correction	Definitions

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
BPA Funding			
The hyperlink title in the Performance Payment section has been changed to "Performance Payment" calculator.	This hyperlink title is now corrected.	Correction	2.1.3
General Requirements			
There are no changes.			
Custom Projects			
Correcting a typo in the **Custom Projects Payment Rate** table under the project type New Construction and Major Renovation. In the 4-19 Measure Life category, Residential will be included at the $0.27/kWh payment rate and Industrial will be included at the $0.25/kWh payment rate.	This correction will fix incorrect language and realign the IM with the Custom Project Calculator, which has accurately captured the Industrial measure's payment rates.	Correction	4.1
Custom Programs			
There are no changes.			
Agricultural Sector			
Agricultural Sector Payment Summary The Payment Summary table has been updated to include the new BPA Qualified LESA and LEPA measure incentives. The table section for Irrigation-Related Measures now includes: Low Energy Precision Agriculture (LEPA) — $100.00 Low Elevation Sprinkler Application (LESA) — $100.00	These measures are now available.	Change – New Measure	6.1
Irrigation-Related Measures The payment table has been updated to include the new BPA Qualified LESA and LEPA measures, and revise footnotes. All payment remains the same. Affected lines on the payment table now read: New multi-trajectory sprays that replace impact sprinklers[iii] New multi-trajectory sprays that replace low-pressure sprinklers.[iii] New goose-neck elbow for new drop tubes (to convert existing sprinkler equipment mounted on top of the pivot[ii] to low-pressure sprinkler package or LEPA or LESA.[iv]) The following footnotes have been added: [iii] Regular sprays allowed for LESA conversions. [iv] Allowed for LEPA or LESA conversions.	These measures are now available.	Change – New Measure	6.3.1

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Low Energy Precision Agriculture (LEPA) A new BPA Qualified measure for Low Energy Precision Agriculture (LEPA). The new language reads: **Basis for Energy Savings** The base case for this measure is a center pivot or lateral move system with low pressure sprinklers located at the mid elevation (e.g., 6 feet above the soil surface). This BPA Qualified measure is intended as an additional payment for conversion of a center pivot or lateral move irrigation system. LEPA can use a variety of methods to have the water delivered directly onto the soil using bubblers, hoses, and/or socks. Lowering the water delivery point directly onto the soil has been shown to reduce the water evaporation during the irrigation season, as well as reducing the pressure requirements of the irrigation system's overall pressure – and energy – required to efficiently water crops. LEPA may also provide more uniform water application, reduce incidence of disease, and may improve crop quality and yield. In BPA sponsored research, the water savings average of 5% to 15% has been observed. **Requirements and Specifications** This measure is an additional payment for each center pivot and lateral move irrigation system that is converted to LEPA. Sprinkler hardware measures such as goose necks, drop tubes, pressure regulators and sprinklers can also be claimed. **Documentation Requirements** End-user identifying information including unique site ID and address (e.g., field location, meter number, GPS coordinates, farm name, or legal property description). X BPA Reporting System X Customer File Equipment/contractor invoice is to include: manufacturer, model number, type or size of equipment or product installed/used and quantity, the order/purchase date and cost. X Customer File Completed Project Information Form for LEPA/LESA conversions (available in the Document Library). X eedocs@bpa.gov X Customer File **Payment** BPA will pay $100.00 for each system conversion and upon submission of the project information form. Customers can separately claim all qualifying irrigation measures installed for the LEPA conversion in the UES Measure Upload Template.	This measure is now available.	Change – New Measure	6.3.4

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Low Elevation Sprinkler Application (LESA) A new BPA Qualified measure for Low Elevation Sprinkler Application (LESA) has been added. The new language reads: **Basis for Energy Savings** The base case for this measure is a center pivot or lateral move system with low pressure sprinklers located at the mid elevation (e.g., 6 feet above the soil surface). This BPA Qualified measure is designed for center pivot and lateral move irrigation systems and places the sprinkler within 3 feet of the soil surface. LESA improves application efficiency, reduces direct evaporation from the sprinkler, and requires less pressure to operate; thus reducing the energy consumption. A LESA-equipped irrigation system can save water, save energy, reduce fertilizer requirements (and costs) and has the potential to improve crop yield. In BPA sponsored research, water savings average of 5% to 15% has been observed. **Requirements and Specifications** This measure is an additional payment for each center pivot and lateral move irrigation system that is converted to LESA. Sprinkler hardware measures such as goose necks, drop tubes, pressure regulators and sprinklers can also be claimed. **Documentation Requirements** End-user identifying information including unique site ID and address (e.g., field location, meter number, GPS coordinates, farm name, or legal property description). X BPA Reporting System X Customer File Equipment/contractor invoice is to include: manufacturer, model number, type or size of equipment or product installed/used and quantity, the order/purchase date and cost. X Customer File Completed Project Information Form for LEPA/LESA conversions (available in the Document Library). X eedocs@bpa.gov **Payment** BPA will pay $100.00 for each system conversion and upon submission of the project information form. Customers can separately claim all qualifying sprinkler hardware measures such as goose necks, pressure regulators and sprinklers installed for the LESA conversion in the UES Measure Upload Template.	This measure is now available.	Change – New Measure	6.3.5

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Commercial Sector			
Unitary Air Conditioning Equipment in Commercial Buildings Clarified former language "Heat pumps are excluded". The language now reads: Unitary air conditioning equipment refers to air-cooled, packaged, air conditioning equipment for both new construction and retrofits in commercial buildings. This equipment can be used in conjunction with gas or electric heating systems. *Heat pump installations are not eligible for this measure.*	Modified language for clarity.	Correction	7.4.1
Advanced Rooftop Unit Control (ARC) Retrofit Removed Type 1 ARC Retrofit requirement for operational economizer and continuous operation during occupied hours; removed Type 1 and Type 2 ventilation requirements. The language now reads: *Qualifying ARC Retrofit applications must meet the following requirements:* *The existing RTU must have the following qualities:* • *Greater than five tons of cooling capacity.* • *Unitary equipment (no split-systems).* • *Constant speed supply fan (no variable speed fans).* *The Type 1) Full ARC Retrofit must have the following qualities:* • *Either supply-fan variable speed, multi-speed or cycling, and* • *Digital, integrated economizer control.* *The Type 2) Lite ARC Retrofit must provide:* • *Either supply-fan variable speed, multi-speed or cycling.*	This change was made to expand measure eligibility.	Change - Removal of Requirement	7.4.2
Heat Pumps in Commercial Buildings Added language to clarify that heat pumps must meet all applicable CEE Tier 1 or Tier 2 performance specifications (e.g. both EER and IEER). The language now reads: Requirements and Specifications: *To qualify, the installed equipment must be an air to air heat pump system that meets all applicable CEE Tier 1 or Tier 2 performance specifications (e.g. both EER and IEER).*	This change is made to clarify that products must meet all tier specifications.	Correction	7.4.4
Door gasket replacement for walk-in and reach-in coolers and freezers Units in the payment table have been changed to "per door". The language now reads: Payment (*per Door*).	Units listed in the payment table have been corrected.	Correction	7.8.10
Electric Commercial Steam Cookers The payment table has been modified to apply to 10-pan "or greater". The language now reads: 10 pan or *greater.*	The payment table in Oct. 1, 2015 left out "or greater" in description of the 10-pan unit.	Correction	7.9.2

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Retrofit Windows for Commercial Buildings (BPA Qualified) While the IM clearly states that all electric heating types qualify for this measure, there is currently no option for electric forced air in the UES Measure List. Until this is added to the UES Measure List in October, utilities may report electric resistance forced air as zonal heat in the measure list. A footnote has been added to the payment table that reads: [1] *Existing conditions with electric forced air may be reported as zonal heat in the UES measure list*	This change is made to clarify measure eligibility.	Correction	7.5.2
Electric Water Heater Payment has been changed from "per unit" to clarify "per water heater." The language now reads: **Payment** BPA will pay $25.00 / *water heater.*	Clarification.	Correction	7.6
Heat Pump Water Heater (BPA Qualified) Language was added to clarify that all Tiers on the Northern Climate Specifications meet requirements. The language now reads: **Requirements and Specifications** *This measure is for the installation of Heat Pump Water Heaters in commercial buildings. To qualify, the product must be listed on NEEA's Northern Climate Specification HPWH qualified products list. All tiers on the Northern Climate Specification qualify.*	This change is to clarify measure requirements.	Correction	7.7
Energy Star Commercial Clothes Washers The requirement for laundromats was removed so that these savings apply to other types of businesses. The word "laundromat" has been removed from the payment table The language now reads: *"The clothes washer must be an ENERGY STAR product."*	This measure is no longer restricted to laundromats.	Change - Removal of a Requirement	7.10.2
Smart Power Strips The word "offices" has been removed from the description of Commercial Sector Smart Power Strips. The language now reads: **Requirements and Specifications** *Smart Power Strips must be distributed via Direct Install or By Request per the Measure Distribution Processes section in the Multi-Sector chapter and must automatically switch off power to peripheral plug loads, while preventing false switching through the use of resistor-capacitor circuit filters or equivalent.*	This measure is no longer required to be in offices only.	Change - Removal of a Requirement	7.10.3
Federal Sector			
There are no changes.			

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Industrial Sector			
Energy Project Manager The payment table for Payment No. 4 has been clarified to allow for multiple EPMs. The language now reads: Payment No. 4 The lesser of (a) $0.025 per kWh of **actual** verified busbar energy savings, (b) the total annual cost of the EPM(s) as described in the EPM Comprehensive Plan, or (c) $250,000.00 per EPM(s) *contracted*, less previous payments. The footnote [ii] has been modified and now reads: [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(s) as described in the EPM Comprehensive Plan, (c) $250,000.00 *per EPM(s) contracted*, or (d) an amount specified within the EPM agreement.	At the request of BPA utilities, this clarification provides greater flexibility for EPM cofunding, while reducing complexity, paperwork and the reducing the labor burden of needing multiple agreements for utilities, end users and BPA ESI.	Correction	9.3.1.1
SEM Projects (Optional Energy Management Feature) The language in the Requirements, Savings Reports table M&V Protocol section has been clarified. The section now reads: Both Option 1 and Option 2 customers must calculate verified energy savings following the M&V prescribed in the ESI MT&R Reference Guide (available in the Document Library). SEM energy savings may not include energy savings from other ESI program components BPA programs (e.g., custom projects or deemed projects). *SEM energy savings are relative to a baseline period immediately preceding the performance year.*	At the request of BPA utilities, this clarification addresses any confusion on how BPA determines SEM energy savings.	Correction	9.3.1.2
SEM Projects (Optional Energy Management Feature) The Milestone "BPA Approves Annual Completion Report Payment" language in the Requirements, Savings Reports table M&V Protocol has been changed. The language now reads: • Supporting Invoices provided Lesser of the following: o $0.075 per kWh of verified annual busbar adjusted energy savings. o 70% of documented action item costs. • No Invoice. o $0.025 per kWh of verified annual busbar-adjusted energy savings.	At the request of BPA utilities this clarification addresses any questions about SEM Project payment milestones.	Correction	9.3.1.2

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Residential Sector			
Linear Fluorescent Fixtures The requirement for a minimum ballast efficiency factor (BEF) has been removed. The following language and referenced table will be removed: *Linear fluorescent fixtures must be Energy Star Qualified High Performance T8 with a minimum ballast efficacy factor as shown in the table below. Qualified fixtures may be found on the Linear Fluorescent Fixture Qualified Products List in the Document Library.*	Measure savings do not require this additional information.	Change - removal of requirement	10.2.1
Simple Steps, Smart Savings Non-Participating Sales generated by the Simple Steps program will be reported by BPA for credit towards regional self-funding goals. The language now reads: The Simple Steps program results in energy efficiency savings that are distributed among the utility participants using the Retail Sales Allocation Tool (RSAT). Additionally, because the program model requires a commitment to all qualified sales of efficient products in active stores (including those that would be attributed to non-participating utilities) the program also acquires savings from these unclaimed sales. *These non-participating/unclaimed sales will be reported by BPA for credit towards regional self-funding goals to be consistent with the Implementation Manual requirements and utility ECA agreements.*	This policy for reporting Non-Participating Sales was approved by the BPA Management Team to be in alignment with the Implementation Manual and utility ECA Agreements.	Correction	10.4
Ductless Heat Pumps – all The note about a 208 voltage/230 volt circuit requirement has been removed from the Ductless Heat Pump qualified products list. The DHP Qualified Products List has been updated.	This voltage requirement was put in place for the launch of the NW DHP Project to help ensure equipment quality. The current HSPF specification eliminates the need for the voltage requirement.	Change - Removal of requirement	10.9.1
Ductless Heat Pumps – all Under Requirements and Specifications the requirement "Ducted indoor DHP units do not qualify for payment" has been modified. The language now reads: *"Ducted indoor DHP units do not qualify for payment as a DHP but may be claimed as a PTCS Variable Speed Heat Pump provided the installation meets all PTCS requirements."*	Mini-splits are simply small Variable Speed Heat Pumps (VSHP).	Correction	10.9.1
Ductless Heat Pumps – all Ductless Heat Pumps payments are one DHP per house. The language now reads: **Payment** *Payments are per home as listed in the table below.*	The energy savings does not support more than one DHP payment per house. This language was accidentally deleted in the October 2015 IM update.	Correction	10.9.1

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION

PTCS Heat Pumps – all
The CheckMe! form has met all requirements to be considered equivalent to the PTCS Air Source Heat Pump form. The language now reads:
 	
Documentation Requirements
Heat Pump forms / certificates (available in the Document Library)
• PTCS Air Source Heat Pump Form or CheckMe!® Heat Pump Protocol Data Entry Form for PTCS Summer and Winter (handwritten form completed by the technician);
• AHRI Certificate; and
• Technician documentation used to determine size of heat pump per PTCS specifications, by submitting either:
  • Both "heating load/heat loss calculations", and a "balance point worksheet," or
  • "PTCS Heat Pump and Central Air Conditioner Sizing Calculator."
 	
Additional information:
PTCS Air Source and Variable Speed Heat Pumps are subject to Quality Assurance oversight by a BPA-approved Quality Assurance Inspector. The PTCS Air Source and Variable Speed Heat Pump specifications require the PTCS technician to provide (and utilities to keep on file) the Technician's documentation of sizing calculations (e.g., Both the "Heating Load/Heat Loss calculations", and "Balance Point Worksheet," or "PTCS Heat Pump and Central Air Conditioner Sizing Calculator"). Installations lacking this information will fail to pass their Quality Assurance inspection. *The updated CheckMe!® Heat Pump Protocol Data Entry Form for PTCS -Summer and Winter forms are considered equivalent to the PTCS Heat Pump Form.*
	The PTCS Program has confirmed that the CheckMe!® Heat Pump Protocol Data Entry Form for PTCS (Summer and Winter) form captures all required PTCS data to meet PTCS requirements and specifications. This clarification is retroactive to the beginning of the current rate period October 1, 2015.	Correction	10.9.2.1

PTCS Heat Pumps – all A clarification of the PTCS Heat Pumps Installation specifications is provided. The specification language stating *"The heat pump system shall be sized, rounding up or down to the nearest 6000 Btu/hr capacity at AHRI rating conditions, using a balance point of 30°F or less"* does not specifically require that the Balance Point be 30°F or less. A range that includes less than 30°F or up to 35°F is acceptable to meet the Basis for Energy Savings.	The calculation of the Balance Point requires inputs about the Building UA of the home (envelope, tightness, etc.) the location of the home (Heating Zone/Cooling Zone), the size of the home and more. With all of these variables to consider, requiring a precise Balance Point does not match market practice. The savings assumptions support a Balance Point of less than 30°F up to 35°F as a reasonable range for a quality installation.	Correction	10.9.2.1
Montana House (ID/MT/NV/WY) These New Construction measures are also reportable by BPA utilities in Nevada and Wyoming.	The savings assumptions support the application of these measures in these neighboring states.	Correction	10.11.4
A new measure was added for **Insulated Exterior Doors Multifamily**.	This new measure is now available.	Change - new measure	10.12.3

<table>
<tr><th>DESCRIPTION</th><th>RATIONALE</th><th>CHANGE OR CORRECTION?</th><th>SECTION</th></tr>
<tr><td>Insulated Exterior Doors
Under Requirements and Specifications, the sentence “Multifamily does not qualify at this time” is void with the introduction of the new measure for Multifamily. The language now reads:

This measure is available for existing single-family or manufactured homes or multifamily homes.</td><td>This sentence is no longer required.</td><td>Change - removal of requirement</td><td>10.12.3</td></tr>
<tr><td>Whole House Air Sealing – all
Under Requirements and Specifications, the following is added: “This measure is available for existing single family or manufactured homes. Multifamily does not qualify at this time.” The language now reads:

<u>Requirements and Specifications</u>
• This measure is available for existing single family or manufactured homes. Multifamily does not qualify at this time.
• Whole house air sealing requires the use of a blower door to measure and identify air leakage locations in the home. Mechanical ventilation may be required.
• If PTCS duct sealing is performed at the same time as air sealing, the baseline blower door CFM50 reading for the whole house air sealing and testing 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.
• 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 present or be installed.</td><td>This information was inadvertently not included in a past update.</td><td>Correction</td><td>10.12.4</td></tr>
<tr><td>A new measure was added for Low Income Insulated Exterior Door Multifamily. The payment for measure costs is capped at $400/door. The multifamily section in the payment table now reads:
<table>
<tr><td>Prime Window</td><td>Dollar for dollar, not to exceed $20.00/ square foot.</td><td rowspan="3">Examples include: address dry-rot in window framing, replace rotten threshold, repair cracked header.</td></tr>
<tr><td>Patio Door</td><td>Dollar for dollar, not to exceed $20.00/ square foot.</td></tr>
<tr><td>Insulated Exterior Door</td><td>Dollar for dollar, not to exceed $400.00/ door.</td></tr>
</table></td><td>This new measure is now available.</td><td>Change - new measure</td><td>10.12.6</td></tr>
</table>

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Utility Distribution Sector			
There are no changes.			
Multi-Sector			
Measure Distribution Processes Language has been added to the By Request and Direct Install sections to clarify that the end-user survey is only for Residential Advanced Power Strips and does not apply to Commercial Smart Power Strips. The language now reads: Additional requirements such as: documenting water heater fuel for showerheads and distributing a Customer Survey for Advanced Power Strips may apply. *The Customer survey is not required for Commercial Smart Power Strips.*	This change is made to clarify requirements.	Correction	12.2.2
Multi-Sector Non-residential Lighting Added clarification to the batch submission process. The language now reads: *The following requirements are for submitting batch lighting projects. Using the batch submission format is intended to streamline large-scale projects and is optional. Individual lighting calculators may be submitted instead of using the batch format.* *Requirements: The project addresses or locations shall be entered in the notes section of the lighting calculator or in a customer-generated spreadsheet. When applicable, the customer address may be entered as the site address. In cases where a street address is not applicable, enter the nearest street intersection.*	Clarified that the batch submission process is optional for multiple installations.	Correction	12.3.3

Significant Changes Coming to the UES Measure List in October 2016

Now that the dust from the Council's 7th Power Plan is settling, BPA is working to adopt the new Regional Technical Forum (RTF) methodologies. This has resulted in some significant changes to the BPA Unit Energy Savings (UES) measure list: the majority of UES measures will have slightly different busbar savings and reimbursement values, which will go into effect on October 1, 2016. Below is a preview of what's to be expected.

The Cost Effectiveness Methodology has Changed

The 7th Power Plan identifies many future scenarios where the region is capacity constrained. The least cost method to ease the capacity constraints include both energy efficiency and demand response. Therefore the new cost effectiveness methodology places more rigor in its analysis of the capacity value of energy efficiency and its relation to cost effectiveness. The result of this is that benefit/cost ratios for some key measures have increased.

There are some significant changes to the way that we now estimate an energy efficiency measure's effect on the generation system during heavy load hours (generally 6pm on week nights). The updated version of Pro Cost (the tool used to estimate savings from the site level to the system wide busbar level) has new load shapes from the last Residential Building Stock Assessment (RBSA) metering sample. In addition, the RTF has changed the methodology used to analyze the load shapes and determine a measure's contribution to peak load capacity reductions. These values increase the cost effectiveness for measures that are saving energy during heavy load hours, and decrease the cost effectiveness for measures that do not save energy during heavy load hours. More information on the new cost effectiveness methodology can be found from a recent RTF presentation here.

Every UES Measure has New Busbar Savings

The RTF has moved to the new version of Pro Cost as well as newly developed Total Resource Cost Test (TRC) benefit-cost ratios. The site vs busbar relationship now depends on the measure's load shape and the extent to which that measure saves energy during heavy load hours. A measure that saves energy during heavy load hours has greater busbar savings than a measure that does not save as much energy during peak hours. Essentially, busbar savings will reflect measure savings during regional peak load hours.

This change required the BPA Planning team to update every current and new UES measure with the new version of Pro Cost, meaning every measure will have slightly updated busbar savings in the October 1, 2016 UES Measure List. This BPA Implementation Manual (IM) Change Summary Notice published on April 1, will be accompanied by an Excel workbook which will list every reference number in the current measure list along with current and new payment and savings. Start with the introductory "READ ME" tab and click through them to see what's coming in October.

Numerous RTF Measure Updates Affected in the October 2016 UES Measure List

The update impacts all UES measures. Because the Residential Sector has the most UES measures, the impact on this sector is the greatest. Some of the biggest savings changes will occur in manufactured home weatherization, ductless heat pumps, air source heat pumps, and duct sealing. Some of the RTF updates will result in a measure set with new reference numbers, and some will not. BPA will try to keep the same reference numbers wherever possible. Measure sets that will have new reference numbers will be thoroughly documented. BPA will produce a cross walk table from the old set of reference numbers to the new set of reference numbers for each changing measure set at the same time we release the October 1, 2016 UES measure list.

The Measure List Will Look Different

With stakeholder input, last year BPA significantly reduced the number of columns in the measure list and rearranged the order to a more logical format where possible. BPA also changed the key characteristics and other language presentation for measures that changed in October 2015. This has created inconsistencies between measure sets that are sometimes confusing. BPA has been documenting feedback from utilities and stakeholders on how to improve the presentation of measures. From April until late May we will be informally collecting additional feedback to address these inconsistencies more comprehensively in time for the October 2016 update. Please send comments to your Energy Efficiency Representative.

What does this mean for all the IS2.0 calculators?

BPA is developing an approach to evaluate the impacts on calculators used in programs, including the custom project calculator. Modifying each of the calculators to reflect the updated methodology will be complicated to implement and considering detailed notice to customers could not be provided in time, additional time and research is needed to analyze the scope of the impact. We realize this puts the UES Measure List and programmatic calculators slightly out of sync but an internal decision was made to take the necessary time to review the calculators and determine where modifications may need to be made. Please know that this issue is on our radar but we have limited additional information to provide at this point. Watch for utility collaboration and discussion opportunities in the near future.

Additional Support is Available

If you have any questions or concerns, please don't hesitate to reach out to your Energy Efficiency Representative or check out the bpa.gov/ee website for more information.

October Changes and Corrections Summary for the 2016-2017 Implementation Manual

The following changes are effective October 1, 2016:

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
General			
There are no changes.			
Introduction			
There are no changes.			
Definitions			
Definition of "Busbar Energy Savings" has been modified. The definition now reads: *Energy that did not have to be produced at the generator. The site energy savings plus any transmission and distribution losses that would have occurred had the energy been generated. The site and busbar relationship depends upon the particular measure being implemented and its associated load shape.*	The multiplier now varies based on the measure type.	Correction	Definitions
BPA Funding			
There are no changes.			
General Requirements			
There are no changes.			
Custom Projects			
There are no changes.			
Custom Programs			
There are no changes.			
Agricultural Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data.	Change	6

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Commercial Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data.	Change	7
Unitary Air Conditioning Equipment in Commercial Buildings BPA will retire this measure.	This measure is expiring.	Change: Expiration of Measure	7.4.1
Advanced Rooftop Unit Control (ARC) Retrofit Type 1 ARC Retrofit will be updated to require web-enabled monitoring and alarms.	This change is to enhance functionality and end-user control.	Change: New Requirement	7.4.2
Ductless Heat Pumps in Commercial Buildings Clarify that areas conditioned by Air Source Heat Pumps do not qualify for DHP payments and adding clarification to requirements and specifications.	This clarification was made to refine measure eligibility based on existing conditions.	Correction	7.4.3
Ductless Heat Pumps in Commercial Buildings The payment will change to $800 per ton.	This change will be made to increase program uptake.	Change: Payment up or down	7.4.3
Ductless Heat Pumps in Commercial Buildings A Qualified Products List will be published.	This change will be made to streamline implementation.	Change: New Requirement	7.4.3
New Measure for Heat Pump Upgrades Effective October 1, 2016, a new measure will be created for Heat Pump Upgrades. This measure will be applicable to both existing buildings and new construction. Note that the Commercial Heat Pump Tool will no longer be required for this measure.	This measure will be available.	Change: New Measure	New
Web-Enabled Programmable Thermostats (Connected Thermostats) The payment will change to $200 per qualified thermostat.	This change will be made to simplify measure implementation.	Change: Payment up or down	7.4.5
EnergySmart Grocer Section 7.8.1 will be removed. ESG ended March 31, 2016, and will be largely removed from the IM October 1, 2016, except for the section concerning ESG Performance Payments which will continue to apply through September 30, 2017.	The ESG program has ended.	Change: Expiration of Program	7.8.1
Display Case – Evaporator Fan Motor Shaded Pole to ECM savings will increase.	Energy savings will increase per recent RTF decision.	Change: Savings up	7.8.8
Demand Controlled Kitchen Ventilation This measure will apply to retrofits only, and will no longer apply to new construction.	This change is due to numerous variations in state codes.	Change: new requirement	7.9.1
Commercial Insulation The requirement for pre-existing insulation levels will be changed from R-0 to less than or equal to R5 (≤R5).	This change was made to expand measure eligibility so that it is applicable to conditions where there is no or very little existing insulation.	Change: Removal of a requirement	7.5.1

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Retrofit Windows for Commercial Buildings (BPA Qualified) A new measure will be created in the measure list to enable reporting of buildings with electric forced air heat.	The new measure will be added to increase ease of measure reporting.	Change: New measure	7.5.2
Retrofit Windows for Commercial Buildings (BPA Qualified) The building space requirement will be changed from 5,000 sq. ft. or less to 20,000 sq. ft. or less.	This change is intended to increase the amount of businesses that would benefit from window retrofits.	Change: Substitution of a Requirement	7.5.2
Retrofit Windows for Commercial Buildings (BPA Qualified) The "wood frame construction" requirement will be removed from this measure making all building types applicable.	This change will be made to expand measure eligibility.	Change: Removal of a Requirement	7.5.2
Electric Water Heater The incentive will be $50/water heater.	The incentive and savings will increase as a result of the RTF updating the analysis for existing baselines.	Change: Savings and Payment	7.6
Heat Pump Water Heater (BPA Qualified) New measures will be created for all HPWH Tiers.	New measures for new tiers will have new savings.	Change: New Measure	7.7
Heat Pump Water Heater (BPA Qualified) Existing water heaters must be electric. Existing gas water heaters will not qualify for payment.	This change will be made to clarify measure eligibility.	Change: New Requirement	7.7
Networked Computer Power Management This measure will no longer be eligible for incentives.	This measure has expired.	Change: Expiration of Measure	7.10.1
Energy Star Commercial Clothes Washers Required information on the product documentation will be replaced.	This change is to align documentation requirements with other EnergyStar product documentation requirements.	Change: Substitution of a Requirement	7.10.2
Energy Star Commercial Clothes Washers The savings for this measure will change.	The savings will change due to an RTF action.	Change: Savings	7.10.2
Smart Power Strips "Load sensing" will be removed from the measure title so that motion sensing power strips also qualify for payment.	The RTF savings estimate for Smart Power Strips was based on both load sensing and motion sensing power strips.	Change: Removal of a Requirement	7.10.3
Federal Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data.	Change	8

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Industrial Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data.	Change	9
Residential Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates. This update impacts nearly every measure in the Residential portfolio. All measure changes are documented in the October 2016 Measure Changes available in the Document Library.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data. Measures below impacted are denoted with "7th Plan UES update.	Change	10
ENERGY STAR CFLs Savings and payments will be reduced for CFL measures. Measure changes are documented in the October 2016 Measure Changes available in the Document Library.	The reduction of payment is the result of decreased savings and incremental costs and the 7th Plan UES update. The lumen bins for these measures were also updated.	Change	10.2.1
ENERGY STAR CFL Fixture measures will expire on September 30, 2016.	These measures are no longer supported by the RTF and CFLs are expected to significantly decline in the retail marketplace in 2016.	Change	10.2.1
Linear Fluorescent Fixtures Savings will change for these measures. Measure changes are documented in the October 2016 Measure Changes available in the Document Library.	The change in savings is a result of the 7th Plan UES update.	Change	10.2
ENERGY STAR LEDs Savings and payments will change for LED bulbs. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of review by the RTF of all measure inputs, an update of the lumen bins, and the 7th Plan UES update.	Change	10.2.2
ENERGY STAR LED Fixtures Savings will change for these measures. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of correction in the hours of use and the 7th Plan UES update.	Change	10.2.2
Showerheads Savings and payments will change for these measures. See the October 2016 Measure Changes available in the Document Library for details.	The measures were updated by the RTF and the 7th Plan UES Update.	Change	10.3
Simple Steps, Smart Savings program CFL Fixtures, Refrigerators and Freezers will be removed from the Simple Steps program offer will be removed from the program offer effective September 30, 2016.	These measures will expire on September 30, 2016.	Change	10.4

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Advanced Power Strips Savings will decrease. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The measures were updated by the RTF and the 7th Plan UES Update.	Change	10.5
Clothes Washers Savings will change. Payments for most measures have been reduced. See the October 2016 Measure Changes available in the Document Library for details.	The measures were updated by the RTF and the 7th Plan UES Update.	Change	10.6
Clothes Dryers The Any Dryer measure will be expired. New Dryer measures will be available October 1, 2016. See the October 2016 Measure Changes available in the Document Library for details.	In response to utility feedback BPA will create tiered Dryer measures to simplify reporting. The change in savings is a result of the 7th Plan UES update.	Change	10.6
Refrigerator measures will expire on September 30, 2016.	The recent Federal Appliance Standard update raised the baseline. These measures are no longer cost effective.	Change	10.7
Freezer measures will expire on September 30, 2016.	The recent Federal Appliance Standard update raised the baseline. These measures are no longer cost effective.	Change	10.7
Refrigerator and Freezer Decommissioning The savings for these measures will decrease. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The measures were updated by the RTF incorporating new data on age of units and the 7th Plan UES Update.	Change	10.7
Heat Pump Water Heaters These measures will be expired and replaced with "Any tank size" measures with updated savings and payments. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the updated Federal Standard and the 7th Plan UES Update.	Change	10.8.1
Heat Pump Water Heaters The HPWH form will be updated. This form will be available in the Document Library.	The number of required fields has been reduced and both the signature block and release statement have been updated for consistency.	Change	10.8.1
Pipe Insulation Savings will change for these measures. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.8.2
Ductless Heat Pumps – all DHP requirements and specifications will be updated to also require the use of a vacuum pump during installation and that the DHP system shall be installed on a dedicated electrical circuit.	The DHP specifications updates will provide additional safety measures on lower voltage units and pre-charged line-sets.	Change	10.9.1
Ductless Heat Pumps - all The DHP form will be updated. This form is available in the Document Library.	Required fields have been updated to reflect the change in DHP Specifications and both the signature block and release statement have been updated for consistency.	Change	10.9.1

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Ductless Heat Pumps – Single Family and Manufactured Homes (Zonal) Measure savings will change. The DHP zonal measures will be expanded to include measures by Heating Zone (HZ) and Cooling Zone (CZ). See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update. The measures were expanded by Cooling zones (CZ) based on the RTF UES Measure Guidelines.	Change	10.9.1
Ductless Heat Pumps – Single Family and Manufactured Homes (EFAF) Measure savings and payment will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.1
PTCS Air Source Heat Pumps (ASHP) –Conversions and Upgrades, Single Family Measure savings will change. There is no change to payment.See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.2.1
PTCS Air Source Heat Pump (ASHP) Conversion – Manufactured Homes Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.2.1
PTCS Air Source Heat Pump (ASHP) Upgrades – Manufactured Homes Measure savings will change. There is no change to payment. Measures based on cooling zones (CZ) have been simplified to heating zone (HZ) only. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.Measures have been simplified to HZ only in response to customers' request for measure simplification.	Change	10.9.2.1
PTCS Air Source Heat Pump (ASHP) Commissioning & Controls, Single Family and Manufactured Homes Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.2.1
PTCS Variable Speed Heat Pumps (VSHP) Conversions, Single Family Homes Measure savings and payments will change. Measures with CAC, based on cooling zones (CZ) have been simplified to heating zone (HZ) only. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update. Measures have been simplified to HZ only in response to customers' request for measure simplification.	Change	10.9.2.1
PTCS Variable Speed Heat Pumps (VSHP) Upgrades - Single Family Homes Measure savings and payments will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.2.1
Ground Source Heat Pumps – Conversions and Upgrades, Single Family Homes Measure savings will change. There is no change to payment. The list of measures has been simplified combining open and closed loop ground source heat pumps. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update. Measures have been simplified in response to customers' request for measure simplification.	Change	10.9.2.2

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
PTCS & Prescriptive Duct Sealing – Single Family Homes Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.2.3
PTCS & Prescriptive Duct Sealing – Manufactured Homes Measure savings and payments will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.9.2.3
Line Voltage Thermostats - Single Family Measure savings and payment will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.10
New ENERGY STAR Manufactured Homes Measure savings and payments will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.11.1
New High Performance Manufactured Homes Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.11.2
New ENERGY STAR/Built Green Single-Family Homes (Oregon) Measure savings and payments will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.11.3
New ENERGY STAR/Built Green Single-Family Homes (Washington) Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.11.3
New ESTAR/Built Green Single Family Homes (Idaho and Montana) Measure for Idaho and Montana will expire.	New ENERGY STAR Homes measures for Idaho and Montana are now equivalent to code and no longer supported by the RTF. NEEA is in the process developing a New Construction protocol for Idaho and Montana. In the meantime, customers may use the Montana House (ID/MT) or contact NEEA to be part of their New Standard Protocol pilot.	Change	10.11.3
Montana House (ID/MT/NV/WY) Measure savings and payments will change. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.11.4
New ENERGY STAR Multifamily Construction Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.11.5

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
The **BPA Residential Weatherization Specifications and Best Practices Field Guide** will be updated. A summary of changes to both documents (updated for 2016) is available in the Document Library.	Over the past two years, BPA staff have collected feedback from customers and other stakeholders to inform minor updates and corrections to the Specifications and the Field Guide. These updates were reviewed by a group of utility representatives.	Change	10.12
Insulation – Single Family Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.1
Insulation – Manufactured Homes Measure savings will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.12.1
Insulation – Multifamily Homes Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.1
Prime Windows/Patio doors – Single Family Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.2
Prime Windows/Patio Doors – Manufactured Homes Measure savings will change. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.12.2
Prime Windows/Patio Doors – Multifamily Homes Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.2
Insulated Exterior Doors – Single Family Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.3
Insulated Exterior Doors – Manufactured Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.12.3
Whole House Air Sealing – Single Family Measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.4
Whole House Air Sealing – Manufactured Measure savings and payments will change. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.4

DESCRIPTION	RATIONALE	CHANGE OR CORRECTION?	SECTION
Prescriptive Air Sealing – Single Family Effective October 1, 2016 measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	The change in savings is a result of the 7th Plan UES update.	Change	10.12.5
Low Income Weatherization All Low Income Weatherization measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.12.6
Low Income Weatherization The **BPA Residential Weatherization Specifications and Best Practices Field Guide** will be updated. A summary of changes to both documents (updated for 2016) is available in the Document Library.	Over the past two years, BPA staff have collected feedback from customers and other stakeholders to inform minor updates and corrections to the Specifications and the Field Guide. These updates were reviewed by a group of utility representatives.	Change	10.12
Low Income Ductless Heat Pumps All Low Income Ductless Heat Pump measure savings will change. There is no change to payment. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.12.6
Low Income Duct Sealing All Low Income PTCS and Prescriptive Duct Sealing measure savings will change. Manufactured Homes Duct Sealing will increase to $500. See the October 2016 Measure Changes available in the Document Library for details.	These measures were updated by the RTF as a result of the SEEM calibration and the 7th Plan UES Update.	Change	10.12.6
Low Income Duct Sealing The payment for Low Income PTCS and Prescriptive Duct Sealing measure cost is capped at $500/unit.	The Change Notice for this cap was inadvertently left out of a previous Implementation Manual.	Change	10.12.6
Utility Distribution Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data.	Change	11
Multi-Sector			
All RTF approved UES measures have been updated. Site and Busbar savings are now unique to each load shape, therefore savings per measure may increase or decrease as a result of these updates.	The RTF has updated all UES measures to incorporate the updated 7th Plan Cost Effectiveness Methodology and the updated ProCost modeling tool. Capacity benefits were added as well as new load shape data.	Change	12
Commercial Clothes Washers – Multi-family The savings will change.	This change is due to an RTF action.	Change: Savings up or down	12.3.8

Implementation Manual Revision Timeline

MILESTONE	OCTOBER 2016 DUE DATE [1]
Publish notice of changes to existing measures and list of new measures.	April 1, 2016
Publish draft IM for internal and external review.	May 15, 2016
All internal and external feedback due	June 5, 2016
Publish Implementation Manual	August 15, 2016
Implementation Manual Effective	October 1, 2016

[1] This column will be updated 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.

Definitions

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
ANSI	American National Standards Institute administers, coordinates, and promotes the United States public sectors' cooperative efforts to develop a consensus of standards and conformity assessment systems. ANSI accreditation signifies the procedures used by the standards body in connection with the development of American National Standards meet the Institute's essential requirements for openness, balance, consensus and due process.
Available Implementation Budget	The balance of a customer's budget that is available at a given point in time. It is equal to the Initial Implementation Budget plus any Rollover Amount plus any Implementation Budget Transfers minus any approved invoice payment amounts to date.
B/C	Total resource cost benefit/cost ratio
Basis for Energy Savings	Detail of inputs, interactive effects and analysis to describe how the energy efficiency savings is estimated for UES measures currently active in the BPA Measure List. (Note: Measures in the BPA Measure List may not yet reflect updated savings and assumptions from the RTF due to our notice requirements.
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
BPA Qualified	A non-RTF approved measure that BPA is collecting data and performing analysis on, with the eventual goal of securing RTF approval.
BTU	Unit of energy equal to about 1055 joules; the amount of energy needed to cool or heat one pound of water by one degree Fahrenheit
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
Commercial Building Stock Assessment (CBSA)	CBSA is a comprehensive assessment of energy efficiency that provides critical information about energy use in the Northwest's commercial buildings. The CBSA database includes more than 250 variables for each site including building type and functional use, building size, detailed information about building envelope, fenestration, lighting and HVAC equipment.

DEFINITIONS	
Conditioned space (residential)	Any residential building cavity or space that is directly heated and/or cooled by an HVAC system 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)
CZ	Cooling Zone
Deemed Measure	This definition has been changed and the new terminology is Unit Energy Savings (UES). Please see the definition below.
DHP	Ductless Heat Pump
EASA	Electrical Apparatus Service Association, Inc. is an international trade organization of more than 1,900 electromechanical sales and service firms in 62 countries. Through its many engineering and educational programs, EASA provides members with a measure of keeping up to date materials, equipment, and state-of-the-art technology.
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
EPM	Energy Program Manager, a component of the Energy Smart Industrial Program; it can be an end user employee or contractor who manages energy efficiency custom projects at the industrial facility.
ESI	Energy Smart Industrial, BPA's regional industrial program. Customers enroll by formal request to their COTR via email.
ESIP	Energy Smart Industrial Partner, a technical expert assigned to participating customers that is the single point-of-contact for coordinating ESI components and resources to meet their goals and needs. They also assist with the development and implementation of industrial projects.
Evaluation	Evaluation involves real time and/or retrospective assessments of the performance and implementation of a program or measure.

DEFINITIONS	
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
HDD	Heating degree days, a measurement designed to reflect the demand for energy needed to prevent agricultural livestock watering tanks and fountains from freezing. It is derived from measurements of outside air temperature.
hp	Horse power, a unit of measurement of power, 1 hp = 746 watts of electrical power.
HP	Heat pump
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 payment)
kW	Kilowatt – one thousand watts (units of electric power)
kWh	Kilowatt-hour – one thousand watts of electric power supplied to or taken from an electric circuit over the period of one hour
Large Project Program	The money reserved for certain BPA-approved custom projects with payment 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	Low income household eligibility is defined in the Federal Weatherization Assistance Program as 200% of the poverty income levels. Approved statewide definitions substitute for federally established low income levels, if provided.
M&V	Measurement and verification, a term given to the process for quantifying savings delivered by an energy conservation measure (ECM) to demonstrate how much energy use was avoided and it enables it to be isolated and fairly evaluated.
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

DEFINITIONS	
Manufactured Home	A dwelling that is transportable in one or more sections, built on a permanent chassis, with or without a permanent foundation, with wheels removed when set up on site (not including travel trailers or park models) (Homes manufactured after 1983 must be constructed to the U.S. Department of Housing and Urban Development code.)
Market Transformation	BPA collaborates with the Northwest Energy Efficiency Alliance for the achievement of market transformation, which entails working in a market (e.g., upstream with manufacturers instead of directly with end-users) to improve products and behaviors.
Measure	Materials, equipment or activities that achieve energy efficiency. A term used broadly in this document to mean one or more changes in system configuration, equipment specifications or operating practices that reduce electric power consumption as a result of increases in the efficiency of energy use, production, or distribution. "Measure" covers all savings types, i.e., Unit Energy Savings, Calculators, or Custom projects.
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 payment is established by the energy savings achieved.)
Modular Home	Sectional, factory-built dwelling in the single-family home category designed to be transported to the building site, affixed to a permanent foundation, with no chassis
Momentum Savings	Cost-effective energy savings resulting from energy efficiency measures, which are above the Council baseline and not included in program savings.
MT&R	Monitoring, targeting & reporting, a technique (based on statistical process control) to monitor and control a system. For the purpose of the Energy Smart Industrial Program, "system" may be a whole facility or a sub-system within an industrial facility.
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
NWPCC	Northwest Power and Conservation Council, a non-profit entity authorized through the Northwest Power Act to develop and maintain a regional power plan and fish and wildlife program to balance the Northwest's environmental and energy needs. They develop a 20-year regional Power Plan that has been revised five (5) times. BPA adjusts its energy savings targets based on the current Power Plan.
Oversight	A contract management activity, designed to assure the government that it is getting what it pays for with some level of certainty
Payment	A term representing monetary incentive levels for the installation of energy efficiency measures

DEFINITIONS	
Performance Payment	Application of funds to cover internal customer administrative costs incurred in support of energy savings activities described in this Manual. All performance payments are intended to help cover the customer expenses associated with achieving conservation savings, e.g., paying for conservation staff, printing marketing/education materials, end-user rebates, performing audits, assessing conservation potential, etc.
Primary Residential Heating System	A heating system that serves 50% or more of the conditioned living area of a residence
Programmatic Savings	Energy savings paid for and directly attributed to BPA, utility and NEEA program.
PTCS®	Performance Tested Comfort Systems (certification for duct sealing and heat pump commissioning)
PTS	Performance Tracking System, an online tracking of real-time energy use (kW) to document the baseline and post tune-up energy use for ESI Program's Strategic Energy Management projects It is also used to track any number of key variables in order to develop a meaningful, normalized energy use profile.
Qualified Product List	A list of products (i.e., equipment, appliances) that meet a specification for qualification.
Rate Period	Period of time during which a specific set of rates established by BPA pursuant to a rate process is in effect (currently two-year periods)
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.)
Residential Building Stock Assessment (RBSA)	A comprehensive survey of more than 1,850 sites across the Northwest, including more than 1,400 single-family homes. The RBSA was designed to develop a characterization of the residential sector that takes into account the diverse climates, building practices, and fuel choices across the region.
Residential Energy Services Network of Certified raters (RESNET)	Residential Energy Services Network of Certified raters using the Home Energy Rating System (HERS) Index. The HERS index score can be used to measure the energy efficiency performance of Residential Single Family New Construction. It is one of the means of certifying if a Single Family home meets the Northwest ENERGY STAR Homes standards.
Retail Program delivery mechanisms	Residential Retail delivery mechanisms/program models include downstream (incentives are delivered directly to the end user, usually through a rebate); midstream (program activity/incentives are go through the retailer); upstream (program activity goes through the manufacturer)
Retail Sales Allocation Tool (RSAT)	A tool for use in Residential Retail midstream/upstream programs where site information (i.e. home address) is not available. This tool provides evaluated, research-based percentage allocations for all NW utilities (public and investor-owned) for a select list of energy efficiency products in an easy-to-use Excel-based tool. This tool is used by the Simple Steps, Smart Savings program and is available from your EER.
Rollover Amount	An amount equal to the Available Implementation Budget at the end of a Rate Period,but not to exceed five percent of a Customer's Initial Implementation Budget in the immediately preceding Rate Period.
Simplified Energy Enthalpy Model (SEEM)	A tool used by the RTF to model residential building energy use.
SEM	Strategic Energy Management, as defined by CEE's Minimum SEM Elements: a holistic approach to managing energy use in order to continuously improve energy performance, by achieving persistent energy and cost savings over the long term.
Single-family	Fewer than five dwelling units within the same structure (including duplexes, tri-plexes, accessory dwelling units and modular homes). Townhouse homes that share walls but do not vertically overlap may be considered single family regardless of the number of units connected side-by-side.

DEFINITIONS	
Site energy savings	The ascribed, deemed, calculated, estimated, evaluated or verified conservation in first year 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
Total Resource Cost (TRC)	Perspective of cost-effectiveness testing that includes all cost and benefits of a measure, regardless of who pays for or receives them. BPA uses the definition of the TRC test consistent with the Council.
Townhouses	Townhouse homes that share walls but do not vertically overlap (side by side and not stacked vertically) may be considered Single Family.
TSP	Technical Service Provider. Consultants that perform technical services required to advance custom projects. Their expertise may include: efficiency firms (whose core business relates to supporting DSM), design/build firms (provides design/build engineering services in addition to DSM support), or vendor firms.
Unassigned Account	The repository for unallocated funds and returned Energy Efficiency Incentive funds.
Unit of Energy Savings (UES)	Measures for which savings are estimated on a per-unit basis (e.g., savings per light bulb) for a typical baseline case to efficient case scenario. UES measures have relatively small variation in savings that can be reliably forecasted (Formerly Deemed Measure).
Unique (site) ID	It is an end user's unique identifier that may include address, a field location, meter number, GPS coordinates, or legal property description, etc.
Unconditioned space (residential)	Any residential building cavity or space that is intentionally vented to the outside or is not heated and/or cooled by an HVAC system.
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 (VSHP)	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, a type of adjustable speed drive used in electromechanical drive systems to control AC motor speed and torque by varying the motor input frequency and voltage.
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
Zonal electric heating system	Non-ducted electric heating systems utilizing thermostats to control individual heating units or groups of heaters (e.g., "zones"), including radiant ceiling cable, fan-forced electric resistance (wall, toe-kick, ceiling, and exhaust fan combinations), electric baseboard, and electric boiler/hot water (e.g., "hydronic") radiant systems

Section 1: Introduction

Bonneville Power Administration (BPA) pursues energy efficiency as a resource per the 1980 Pacific Northwest Electric Power Planning and Conservation Act and consistent with the Northwest Power and Conservation Council's regional power plan.

The Energy Conservation Agreement (ECA) is the contractual mechanism for BPA to meet its statutory obligations. The ECA, the Energy Efficiency Implementation Manual (Manual) and BPA's energy efficiency reporting system provide the implementation requirements for measures reported to BPA.

The Implementation Manual rests on the framework specified in the Long-Term Regional Dialogue Final Policy[1] and the BPA Energy Efficiency Post-2011 Implementation Program. For additional guidance on Post-2011, see the BPA Web site.

1.1 OVERVIEW

Based on BPA's Regional Dialogue policy, BPA commits to achieving the share of the Council's Power Plan regional energy efficiency target that represents the load of BPA's public power customers. BPA reports savings to its target from three major categories: programmatic, momentum and market transformation. The Manual covers only programmatic savings that are reportable to BPA's targets.

Prior to inclusion in this Manual, BPA conducts planning efforts to ensure funds expended on the offerings and programs are prudent and are expected to meet stated objectives and outcomes. Programmatic offerings are considered reportable when they are reliable, cost-effective and meet eligibility and documentation requirements. Reportable measures are eligible for the BPA payments outlined in this document.

1.2 RELIABILITY

BPA has a responsibility to ensure reliability of its energy savings achievements. The Power Act specifically calls on BPA to pursue cost-effective energy efficiency that is "reliable and available at the time it is needed."[2] For EE, ensuring reliability is not a single action at a single point in time. Instead it is an ongoing process that includes planning, and implementing and using evaluation and oversight results to make improvements.

Reliability at the time of reporting to BPA varies by savings type: UES, custom projects and calculators. Custom projects require site-specific Measurement and Verification (M&V) to support reliable estimates of savings. BPA M&V Protocols[3] direct M&V activities and are the reference documents for reliable M&V. For UES measures and Savings Calculators, measure specification and savings estimates must be RTF approved or BPA Qualified.

The RTF reviews and approves costs, savings, lifetime and specifications for measures, based on the reliability standards in the RTF Guidelines. BPA reviews RTF-approved measures and makes decisions on whether to adopt

[1] "Bonneville Power Administration Long-Term Regional Dialogue Final Policy," http://www.bpa.gov/power/PL/RegionalDialogue/07-19-07_RD_Policy.pdf, p. 30-31.
[2] Power Act language summarized at: http://www.nwcouncil.org/reports/poweract/3_definitions.
[3] Protocols include: Protocol Selection Guide; Reference Guides for sampling, regression and glossary; Protocols on metering, indexing, engineering calculations with verification, energy modeling, and existing building commissioning.

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 project process.

Section 5 contains information on the custom program processes.

Sections 6 through 12 contain information about specific sectors (Agricultural, Commercial, Federal, Industrial, Residential, Utility Distribution, and Multi-Sector).

1.1 Overview 1
1.2 Reliability 1
1.3 Cost Effectiveness 2
1.4 Payment 2
1.5 Policy for Measure Changes/ Additions 3
1.6 Official Interpretations 3

Supporting Content

Regional Dialog Policy

BPA Energy Efficiency Post-2011 Implementation Program

NW Council Website

the measures into offerings. The primary and preferred path for BPA's measure and savings calculator development and maintenance is through RTF approval because the RTF has a well-developed public review process, uniform standards of quality and documentation and staff to conduct the ongoing review and updating of UES measures.

To provide BPA and customers with additional UES measure flexibility, BPA may conduct internal approval of costs, savings, lifetime and specifications; this is known as "BPA-Qualified". It may only be used for structural purposes (e.g., adjust specifications or granularity for a gap in offerings) or research purposes (e.g., gain experience with new technology or improve savings estimates). BPA-Qualified measures are noted in the title of the measure. Documentation requirements may be higher for BPA Qualified measures to support research efforts.

To assure portfolio-level reliability, impact evaluation is also required. Impact evaluations follow the RTF Guidelines and are conducted on all savings types.

1.3 COST EFFECTIVENESS

BPA has a responsibility to ensure the cost-effectiveness of its energy savings achievements, per the Northwest Power Act[4].

BPA maintains a cost-effective energy efficiency portfolio with an aggregate TRC benefit-to-cost ratio greater than or equal to one (TRC > 1.0). To maintain a cost-effective portfolio, BPA maintains TRC > 1.0 in each of the major savings types: UES, custom and calculators. BPA does not require that every measure or project is cost-effective; instead it uses a combination of cost-effectiveness thresholds and measure bundling to ensure cost-effectiveness while providing flexibility.

1.4 PAYMENT

When BPA determines the appropriateness of payments, it assesses cost characteristics relative to established metrics as well as considers other influences.

Cost metrics reviewed for payment development are: incremental cost, first-year cost and levelized cost of the measure. First, payments are measured as a percent of incremental cost and capped based on savings type policies (e.g., custom projects capped at 70% of incremental cost). Next, BPA reviews the first-year cost[5] with the aim of keeping each offering at or below the sector average cost goals. Finally, BPA compares the levelized cost of the payment against the Power Plan's avoided costs to ensure that BPA's payment does not exceed the resource value of the savings.

Other factors considered include: Programmatic considerations, Market maturity or conditions, Payment influence and free ridership, TRC cost-effectiveness and regional benefits.

[4]Power Act language summarized at: http://www.nwcouncil.org/reports/poweract/3_definitions.
[5]First-year cost is calculated as the ratio of the payment and first year savings.

1.5 POLICY FOR MEASURE CHANGES/ ADDITIONS

BPA reserves the right to make changes to policies, procedures, measure eligibility, specifications and requirements.

Effective October 1, 2015, the Change Notice Policy will be changed to reflect the "Revised Energy Efficiency Post-2011 Implementation Program."

BPA will publish the IM annually beginning October 1, 2015. Changes that require notice will be announced the previous April in a separate changes document. BPA's new change notice policy will be as follows:

CHANGES TAKING EFFECT IN OCTOBER IM WITH NOTICE IN APRIL CHANGES DOCUMENT	CHANGES TAKING EFFECT IN OCTOBER IM AND APRIL CHANGES DOCUMENT WITHOUT NOTICE
Savings change up or down	New measure
Payment amount change, up or down	Optional calculators
Adding or substituting a requirement	Removal of a requirement
Expiration of a measure	

Note that changes are different from corrections. Corrections are introduced to fix ambiguous or incorrect language or to align conflicting terms between BPA's rules (e.g., Implementation Manual, standards of conduct, spreadsheets, calculators, outside specifications and the BPA Energy Efficiency reporting system). Corrections may be implemented at any time in order to provide immediate clarification and alignment to customers and BPA.

1.6 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 Technical Representative (COTR)). 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.

Supporting Content

Revised Energy Efficiency Post-2011 Implementation Program

Section 2: Funding

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2.1.1 Bilateral Funding 4
2.1.2 Rules for Pooling Organization 6
2.1.3 Performance Payments 7 !
2.2 Funding Sources and Savings Allocation 8

2.1 BPA FUNDING

Pursuant to section 3(a) of the Energy Conservation Agreement (ECA), BPA Energy Efficiency will pay customers for the costs of energy savings from in-region projects.[6]

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[7] 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 Program). Pursuant to Section 4(c) of the ECA, BPA shall not pay amounts in excess of the implementation budget in Exhibit A.

The following section discusses (1) Energy Efficiency Incentive (EEI) allocation, (2) Inter-Rate Period Budget Flexibility (3) EEI redistribution, (4) EEI Budget Reduction (5) EEI increase from the Unassigned Account and (6) the Large Project Program.

1. EEI Allocation

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 Acknowledgment 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. Inter-Rate Period Budget Flexibility

Beginning October 1, 2015, customers will have the ability to move up to five percent of their start of rate period EEI budget to the subsequent

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

[7]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 payment or staff time spent administering the agreement).

Supporting Content

Bilateral Transfer Request and Attestation Form

! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

rate period. This means customers will be able to move up to five percent of their start of FY 2014-2015 rate period EEI budget to the FY 2016-2017 rate period, consistent with the following:

No more than five percent of a customer's start of rate period EEI budget may be rolled over to the following rate period. The amount of funds remaining at the end of a given rate period, not to exceed the five percent customer cap, will be automatically added to the customer's EEI budget for the following rate period. There is no requirement that roll over funding be tied to specific projects or programs and there is no requirement of customer notification to BPA, i.e., the roll over is automatic up to the five percent cap.

3. ECA Implementation Budget Budget Redistribution (Bilateral Transfers and Pooling Organizations)

Customers may redistribute EEI funds among each other by forming a pooling organization or by sending a completed Bilateral Transfer Request and Attestation Form (available in the Document Library) to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955). Approved bilateral transfers will result in ECA implementation budget revisions.

4. ECA Implementation Budget Reduction

Customers may reduce their implementation budget at anytime by submitting a request through 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.

5. 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 (3) Or at BPA's discretion as funding becomes available 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).

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 Program 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.

6. Large Project Program (LPP)

Customers may receive a supplemental Large Project Program (LPP) budget to support qualifying custom projects. Up to $10 million will be made available each rate period for commercial and industrial energy savings projects. To request LPP funding, customers may submit the Option 1 Custom Project Calculator (available in the Document Library) to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) for review. LPP requests may be made at any time during the project lifecycle, prior to submission of a completion report to BPA. BPA will review and approve LPP requests on a first-come, first-serve basis based on the date the

request is received. The portion of a project funded by the LPP does not qualify for performance payments.

In order to qualify for funding, the LPP request must indicate:

1) The rate period in which the LPP allocation will be disbursed to the consumer (by estimating the project completion date)

2) The project milestones with a proposed schedule of completion

If BPA determines that the LPP request complies with the LPP and Custom Project requirements, BPA will allocate LPP funding equal to the projected payment. However, the actual payment is based on savings achieved as documented in the custom project completion report. BPA's payment for savings through the LPP may be combined with other sources of customer funds.

If a project is not completed within the projected rate period stipulated in the LPP request, the funding allocation will expire, and the customer must reapply for LPP funding by resubmitting the Option 1 Custom Project Calculator to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) for review. The request must include the revised projected completion date and payment amount.

Once BPA approves the LPP request and allocates the funds, the terms and conditions of the agreement will be detailed in Exhibit D of the customer's Regional Dialogue power sales contract. The LPP agreement will establish the Large Project Targeted Adjustment Charge (LPTAC). The LPTAC will be based on the cost BPA incurs to borrow money to pay for the project. The LPTAC would apply long enough to recover the amortized amount of the LPP borrowing (currently 12 years), but the customer could choose an expedited payment schedule.

NOTE: 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.

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	DEFINITIONS	PAYMENT RATE $/KWH
Small	The customer's forecast net requirement is less than 10 aMW.	$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.[9]	$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. If the customer does not wish to claim performance payment on invoices, they must submit the Performance Payment Form (available in the Interim Solution 2.0 Files). (Note, however, that the process for requesting payment for EnergySmart Grocer (ESG) savings is different; to request a performance payment on ESG savings, customers must e-mail their Energy Efficiency Representative and request a report of eligible savings and the ESG Performance Payment Form.)

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.[10]

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.[11]

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).

[8]BPA will notify customers of their rate-period classification in the EEI allocation letter.
[9]BPA reserves the right to request additional documentation (e.g., an annual report) to verify a customer's load.
[10]The implementation budget does not include Large Project Program Funds.
[11]This restriction reduces the risk that BPA will overpay because performance payments are paid on a $/kWh basis, independent of payment amount (i.e., a customer could max out its performance payment, receiving little payment and then transfer its remaining implementation budget to another customer that similarly maxes out the performance payment).

Supporting Content

Interim Solution 2.1 Files

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 payment in the form of EEI funding; ECA funded activities that are accepted by BPA
Large Project Program Budget	LPF	BPA payment in the form of EEI funding; ECA Large Project Program 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[12]	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 payment requested by the customer.

BPA PAYMENT AMOUNT REQUIRED	AVAILABLE APPLICATIONS	SAVINGS ALLOCATED TO EEI	SAVINGS ALLOCATED TO CUSTOMER
All	All	100%	0%
None	All	0%	100%
Partial	Custom Projects	See Tables Below	See Tables Below
Partial BPA Payment Requests - Savings Allocation			
EEI	Amount of BPA Payment Requested* / Amount Paid to the End User** x Total Reported Savings		
Customer	(Amount Paid to the End User**) - (Amount of BPA Payment Requested*) / Amount Paid to the End User** x Total Reported Savings		

*Use the amount paid to the end user if less than the amount of BPA payment requested.

**This amount may not exceed the total available BPS payment.

[12] 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

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3.1 DOCUMENTATION REQUIREMENTS

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

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 documentation that Manual requirements have been met.

3.2 REPORTING REQUIREMENTS

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.

Until BPA Energy Efficiency procures a long-term reporting system, customers must use Interim Solution 2.0 (IS2.0) (available through BPA Customer Portal) to report energy efficiency achievements to BPA (with and without requests for payment). Customers may report energy savings, at any time, as long as the completion dates are in the current or previous rate period.

The following describes the reporting steps. All referenced documents are available in the Document Library or the Interim Solution 2.0 Files.

1. Gather invoice package documents which may include, but are not limited to, the following:
    - UES Measure Upload Template (Note that customers may report measures labeled "any" and/or "all" at any time. Customers may report these measures alone or in conjunction with other, more detailed measures from the same measure Technology/Activity/Practice)
    - 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 completed project)
        - Option 2 Custom Project Calculator (available for

Supporting Content

BPA Customer Portal

Interim Solution 2.0 Files

Required Documents

UES Measure Upload Template

Performance Payment Form

Progress Payment Request Form

Option 1 Custom Project Calculator

RTF-approved Small Compressed Air Calculator

Track and Tune Calculator v6.0

High PEM Version 6.1 Calculator

Energy Management Calculators

Non-Residential Lighting Calculator

Custom Project Calculator Version 2.1

File Naming Tool

Summarizer

bulk reporting of multiple projects can be found as an Additional Document in the Energy Efficiency section of the BPA Customer Portal for eligible Option 2 customers.)

- RTF-approved Small Compressed Air Calculator
- Energy Management Calculators (Energy Project Manager, Track and Tune and High Performance Energy Management)
- Lighting Calculators
- Custom Program Calculators

2. Use the File Naming 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 total invoice package payment 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 determine the acceptability for payment for measures reported.

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) conduct impact and process 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 payments to achieve compliance.

2. Impact and Process 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 with input from the customers on the evaluation plan.

b. BPA may also 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 payment.

3.4 THIRD-PARTY OPERATED PROGRAM REQUIREMENTS

It is unlikely, but possible that unforeseeable contract circumstances may result in the termination or change of third-party operated programs, without prior notice. If BPA is forced to change a third-party operated program, BPA will strive to minimize disruptions to delivery of program services through an alternate third-party provider or with BPA's own staff resources. BPA will give customers as much notice as possible of such terminations or changes or of potential terminations or changes and will work with customers to wrap-up and/or transition any work in progress.

The following programs are operated by third-parties: Air Northwest, EnergySmart Grocer, Energy Smart Industrial, Northwest Trade Ally Network, Technical Service Providers, Simple Steps, Smart Savings Retail Promotion and the Green Motors Rewind Initiative.

3.5 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.[13]

3.6 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.

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

Section 4: Custom Projects

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4.1 CUSTOM PROJECTS PAYMENT RATE

Effective April 1, 2015, customers must use Custom Project Calculator Version 2.0 or later for new custom projects. BPA will no longer accept Custom Project Calculator Version 1 unless it is for a completion report on a project started prior to April 1, 2015.

The total available BPA payment for a custom project is equal to the lesser of (1) the BPA payment rate ($/kWh) or (2) the project cost cap.

The applicable BPA payment rate ($/kWh) is the rate in place at the time of project start date. BPA payment rate is calculated according to the table below:

PROJECT TYPE	MEASURES LIFE (YEARS)	SECTOR	PAYMENT RATE ($/KWH)
ESG	1	Commercial	$0.025
	2-3	Commercial	$0.05
	4+	Commercial	$0.17
Non-Residential Lighting	All	Agricultural Commercial Industrial	$0.18
Retrofit Construction (excluding ESG and Non-Residential Lighting)	1	All	$0.025
	2-3	All	$0.05
	4-19	Agricultural Industrial Utility Distribution	$0.25
		Commercial Residential	$0.20
	20+	All	$0.35
New Construction and Major Renovation (excluding ESG and Non-Residential Lighting)	1	All	$0.025
	2-3	All	$0.05
	4-19	Agricultural Commercial Industrial	$0.27
		Industrial Utility Distribution	$0.25
	20+	Agricultural Commercial Industrial Residential	$0.35
		Utility Distribution	$0.25
New Construction	45+	Residential	$0.45

! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

Project cost cap: Payment for all sectors is capped at 70% of the incremental project cost. If incremental cost data is not available for commercial new construction projects, incremental cost may be calculated as 2.86% of the whole building.

Customers may request less than the available BPA payment. This option applies to all projects, regardless of the approval date. To make this request, the customer must enter the percentage or dollar amount of available payment requested in the Custom Project Calculator.

Customers must pass through the entire BPA payment received to their end users if such payment is for a progress payment or funded by the large project program.

Customers seeking partial self-funded credit on a project must (a) request a payment lower than the available BPA payment, (b) pay a portion of the available BPA payment with utility funds (self-funding), (c) enter the actual end-user payment amount in the custom project calculator and (d) retain proof of actual end-user payment to substantiate the self-funding portion.

4.2 CUSTOM PROJECTS SPECIAL FUNDING

All utilities are eligible to request special funding (progress payments and Large Project Program Funds)[14]

4.2.1 Progress Payments

Customers requesting progress payments must use the Option 1 Custom Project Process and Calculator (available in the Document Library) to request approval. 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 measurable 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.
5. For projects seeking use of progress payments the custom project proposal and completion report must be approved prior to submission of the completion report into the BPA reporting system. There is no required minimum time between the date of BPA's acceptance of a custom project proposal and the date of completion report submission.

[14]Option 2 customers may request progress payments or Large Project Program Funds for a project only if they use the Option 1 custom project process to secure BPA's approval.

Supporting Content

Document Library

4.2.2 Large Project Program Funds

The customer must follow the process in section 2.1.1.6 and request Large Project Program Funds using the Option 1 Custom Project Calculator proposal.

4.3 CUSTOM PROJECTS OVERVIEW

4.3.1 Custom Projects Process Option Overview and Enrollment

There are two paths available for custom projects: Option 1 and Option 2.

Customers, by default, are enrolled in Option 1, but may elect Option 2 by using the COTR Request and Acknowledgment Procedure at the start of each rate period, and must submit/renew their application no later than September 1 preceding the new rate period.

A request to follow the Option 2 path must include the customer's proposed custom project delivery approach (including, but not limited to, documentation of rules, processes, and staffing capability) to meet the custom project requirements. The request must also provide any internal M&V protocols used for custom projects for BPA review. BPA may request additional information before notifying the customer of its approval/non-approval of Option 2 status. Option 2 customers may switch to Option 1 through the COTR Request and Acknowledgment Procedure (1) for any reason at the start of a new rate period[15] or (2) if customer circumstances change, making Option 2 unworkable.

- Option 1: BPA manages the project performance and cost-effectiveness of the bundle of energy savings from Option 1 custom projects. Option 1 customers may request technical support from BPA or BPA program implementers (i.e. Energy Smart Industrial or ESG) to develop projects and complete M&V regardless of the size of the project or the requirement for review and comment.
- Option 2: Customers manage the project performance and cost effectiveness of the bundle of energy savings from their custom projects. The customer conducts all aspects of M&V and custom project quality control (e.g., project proposal and project completion documentation review) internally. Technical assistance is available in relation to Manual clarifications and consultations regarding M&V methods and protocols as they apply to a single project or the customer's portfolio of projects; project implementation assistance is not available unless provided by third-party implementation contractors as part of a program (e.g., PECI through ESG, Cascade Energy through Energy Smart Industrial or the Northwest Trade Ally Network). Option 2 customers that request special BPA funding such as progress payments or Large Project Program or those performing Emerging Field Test Demonstration Projects must follow the Option 1 custom project process.

4.3.2 Custom Projects General Requirements

1. 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.
2. Custom projects are limited to one sector each.

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

Required Documents

Option 1 Custom Project Calculator

COTR Request and Acknowledgment Procedure

3. UES measures and calculated projects may be included in custom projects, on their own or in a project with other measures/projects, but must either (1) be included in the custom project M&V and not use the UES/calculated savings value or (2) be reported separately through the UES/calculated path and the savings must not be included in the custom project savings.
4. Option 1 Custom Projects must meet the following B/C ratio requirements:
   a. If the project savings are 200,000 kWh or less, no cost effectiveness screen is applied.
   b. If the project savings are over 200,000 kWh and the project has a BPA-approved proposal, the proposal must demonstrate that the project has a B/C ratio ≥ 0.5 based on proposed costs and savings. No additional screen will be applied at the completion report.
   c. If the project savings are over 200,000 kWh and the project does not have a BPA-approved proposal, the completion report must demonstrate that the project has a B/C ratio ≥ 0.5.
5. Option 2 custom projects must have a minimum B/C ratio of 1.0 at the invoice level, based on verified costs and savings, when invoiced.
6. The BPA M&V Protocol Selection Guide (available in the Document Library) for custom projects must be used to select an appropriate M&V plan and documented in file. The implemented plan will be either (i) Engineering Calculations with a Verification Plan or (ii) a Comprehensive M&V Plan.
   a. Engineering Calculations with a Verification Plan
      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 Guide, Engineering Calculations with a Verification Plan may be used for projects with an expected annual energy 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.

4.4 OPTION 1 CUSTOM PROJECTS

4.4.1 Custom Project Proposal

Option 1 custom project proposals (a component of the Option 1 Custom Project Calculator) are not required unless the customer is applying for Large Project Program Funds or Progress Payments or is performing an Emerging Technology Demonstration Field Test Project.

Customers may, but are not required to, submit proposals to manage (1) energy savings risks (i.e., if BPA approves the M&V plan at the proposal stage and the M&V is carried out as stated in the plan, then BPA will accept the savings.) and (2) cost-effectiveness risks (i.e., customers can secure assurance of project eligibility based on proposed values (rather than the completion report values)). The customer may submit the Option 1 Custom Project Calculator and other supporting materials to BPA by emailing it to eedocs@bpa.gov or faxing to 1-866-535-7955 with the following tabs completed: “Project Information”, “Proposal” and “Measure Input” (all fields labeled “required for proposals”).

When a proposal is approved, BPA will notify the customer and e-mail the

approved Option 1 Custom Project Calculator to the customer with the BPA-Assigned Project ID. This file must be saved and used by the customer for submittal of the completion report.

4.4.2 Custom Project Completion Report

Option 1 customers must submit a completion to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) in BPA's Option 1 Custom Project Calculator with "Project Information", "Measure Input" and "Completion Report" completed and provide supporting documentation for all custom projects.

When a completion report is approved, BPA shall notify the customer and email the approved Option 1 Custom Project Calculator to the customer. The customer must submit the BPA-approved calculator in the BPA Energy Efficiency Reporting System when requesting payment or reporting self-funding.

Note that Option 1 customers electing to submit non-reportable projects must do so using the Option 2 Custom Project Calculator.

4.4.3 BPA Review

Within 10 business days of receiving an Option 1 custom project proposal or completion report, BPA will review the proposal or completion report and either (1) accept the submittal, return the submittal for modification and resubmittal or (2) reject the submittal. BPA determination of acceptability of a completion report is based on the following criteria:

- Whether the Option 1 Custom Project Calculator and supporting documentation contain all required information
- Whether the project meets all requirements
- Whether verified energy savings are reliable (i.e., M&V was implemented per the approved M&V plan or M&V was appropriate for the project and consistent with BPA M&V Protocols)

For Option 1 projects without BPA-approved proposals and insufficient M&V, BPA will work with customers to adjust completion report savings, where appropriate and feasible. If it is not possible to make appropriate adjustments, the project will be rejected and is ineligible for reporting to BPA.

4.5 OPTION 2 CUSTOM PROJECTS

For Option 2 projects, BPA does not require or review proposals. Option 2 customers may apply for special BPA funding such as Progress Payments or Large Project Program Funds using the custom project proposal process for Option 1 custom projects, and if approved for such, the projects are Option 1 projects and must meet all requirements of Option 1 custom projects.

For all Option 2 projects, the customer must review and approve the completion report prior to customer submission of savings into the BPA reporting system. The completion report itself does not need to be submitted to BPA but must be retained in the customer file for oversight/evaluation. The completion report should also contain any information on additional quality control conducted on the project. To receive payment for a custom project, the customer must submit the Option 2 Custom Project Calculator through the BPA Energy Efficiency reporting system.

BPA may reject Option 2 projects that do not (1) have a completion report that contains all required information and demonstrates that project is consistent with the custom project requirements and (2) have verified

Supporting Content

BPA M&V Prorotcol Selection Guide and Example M&V Plan

BPA Engineering Calculations with Verification Protocol

RTF Standard Saving Estimation Protocols

Required Documents

Option 1 Customer Project Calculator

energy savings that are reliable (i.e., M&V was implemented per the approved M&V plan or M&V was appropriate for the project and consistent with BPA M&V Protocols).

4.6 CUSTOM PROJECTS DOCUMENTATION REQUIREMENTS

DOCUMENTATION DESCRIPTION	RETENTION/SUBMITTAL LOCATIONS		
	BPA ENERGY EFFICIENCY REPORTING SYSTEM	EEDOCS@BPA.GOV OR FAX 1-866-535-7955	CUSTOMER FILE
Option 1 Custom Projects			
Option 1 Custom Project Calculator (Send to BPA for completion report review with all supporting documentation, including associated lighting calculator being used for estimates if applicable. Submit to BPA Energy Efficiency reporting system after approval of project completion report, when requesting BPA payment or reporting self-funding.)	X	X	X
End-user payment documentation (e.g. canceled check), if progress payments, large project fund or if partial self-funding credit is requested.			X
Option 2 Custom Projects			
Option 2 Custom Project Calculator	X		X
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
Project documentation including, at a minimum: basic project information, baseline conditions, efficient measure conditions, description of M&V procedures used for the project (e.g., protocol used for estimating savings, calculations used, metering equipment, sampling) and deviations from planned M&V, M&V report and/or detailed savings model, name of M&V protocol used, verified savings and documentation showing how the projected non-energy benefits and operations and maintenance costs were calculated (if applicable), verified costs, including invoices, and delivery inspection report/date.			X
End-user payment documentation (e.g. canceled check) if progress payments, large project fund or if partial self-funding credit is requested.			X

Section 5: Custom Programs

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Custom programs are a combination of similar projects, measures and/or end-users that have the same M&V or evaluation plan across the entire program. The scope of a custom program is multiple installations that may include one or more measures, or sectors[16] and may occur at one or more end-user sites.

5.1 CUSTOM PROGRAMS PAYMENT RATE

The total available BPA payment for an Evaluated Custom Program or project within a M&V Custom Program is equal to the lesser of (1) the BPA payment rate ($/kWh) or (2) the project cost cap.

The applicable BPA payment rate ($/kWh) is the rate in place at the time of Evaluated Custom Program approval or project start date for a project within a M&V Custom Program. BPA payment rate is calculated according to the table below:

PROGRAM MEASURE TYPE	MEASURE LIFE (YEARS)	SECTOR	PAYMENT RATE ($/KWH)
Non-Residential Lighting	All	Agricultural Commercial Industrial	$0.18
Retrofit Construction (excluding Non-Residential Lighting)	1	All	$0.025
	2-3	All	$0.05
	4-19	Agricultural Industrial Utility Distribution	$0.25
		Commercial Residential	$0.20
	20+	All	$0.35
New Construction and Major Renovation (excluding Non-Residential Lighting)	1	All	$0.025
	2-3	All	$0.05
	4-19	Agricultural Residential Commercial	$0.27
		Industrial Utility Distribution	$0.25
	20+	Agricultural Commercial Industrial Residential	$0.35
		Utility Distribution	$0.25
New Construction	45+	Residential	$0.45

[16]Savings must be reported separately for each sector.

Payment for all sectors is capped at 70% of the incremental cost. Eligible costs include measure costs (incremental measure costs, operations and maintenance costs) and program costs (implementation, evaluation and M&V).

Customers may request less than the available BPA payment.

Customers seeking partial self-funded credit on an evaluated program or project within an M&V Custom Program must (a) request a payment lower than the available BPA payment, (b) pay a portion of the available BPA payment with utility funds (self-funding), (c) enter the actual program expenses (implementation, incentives and evaluation) in the custom program calculator and (d) retain proof of actual program expenses (payment to end-user and program costs) to substantiate the self-funding portion.

5.2 CUSTOM PROGRAMS REQUIREMENTS

Both Option 1 and Option 2 customers are eligible for custom programs, and both must meet the same requirements and follow the same process with BPA. Option 2 customers must use the custom program path when the BPA M&V protocols are insufficient to provide direction, including use of an impact evaluation to estimate savings or where the M&V protocols do not cover a specific measure/application/method.

Custom Programs must do the following:

1. Not result in fuel switching
2. Contain only measures with a savings life of one year or more

UES measures and calculated projects may be included in custom programs, on their own or in a program with other measures/projects, but must either (1) be included in the custom program M&V or evaluation and not use the UES/calculated savings value or (2) be reported through the UES/calculated path and netted out from the custom program savings. There are two types of custom programs:

1. M&V Custom Program: Savings are estimated for individual sites based on M&V methodologies. M&V methods are based on the BPA M&V Protocol Selection Guide or RTF Standard Savings Estimation Protocols.

   M&V Custom Programs must be TRC cost-effective (TRC>1.0) at a calculator level.

2. Evaluated Custom Program: Savings estimation follows an impact evaluation plan, which may include a census or sample of the participants. Evaluation methods are known and tested for the specific measure/application. Evaluations must be, at a minimum, consistent with RTF Guidelines Section 5 (Impact Evaluation).

   Evaluated Custom Programs must be cost-effective at the program level (impact evaluation level) with TRC of 1.0 or greater based on verified costs and savings at the time of completion report and invoicing.

Supporting Content

M&V Protocol and Selection Guide

RTF Standard Savings Estimation Protocols

5.3 CUSTOM PROGRAMS APPROVAL AND MODIFICATION PROCESS

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

Custom Program proposals must, at a minimum, contain[17] the following information:

1. Basic program information, including:
   a. Program name
   b. Contact information: customer name, proposer contact information
   c. Program summary, existing system and proposed system descriptions
2. Documentation of baseline conditions
3. A site-specific M&V plan or impact evaluation plan
4. Proposed measure costs and savings
5. Proposed program costs
6. Estimated project-level cost effectiveness
7. For M&V Custom Program, completion report submission requirements (e.g., approved reports prior to submission for all projects, some projects, or no projects).

The customer's request for approval must be sent to BPA (e-mail eedocs@bpa.gov or fax 1-866-535-7955) by submitting a Custom Program Calculator (available in the Document Library).

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.

Evaluation requirements differ for Evaluated and M&V Custom Programs, *but each evaluation plan must be customer funded unless otherwise directed by BPA*.

BPA may ask the customer clarifying questions during the approval process. Within 10 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.

[17]Additional optional fields are included in the Custom Program Calculator.

Supporting Content

Custom Project Calculator

Custom Program Calculator

5.4 CUSTOM PROGRAMS DOCUMENTATION AND REPORTING REQUIREMENTS

DOCUMENTATION DESCRIPTION	RETENTION/SUBMITTAL LOCATIONS		
	BPA ENERGY EFFICIENCY REPORTING SYSTEM	EEDOCS@BPA.GOV OR FAX 1-866-535-7955	CUSTOMER FILE
Custom Program Calculator	X	X	X
Evaluation Plan		X	X
Evaluation Report for completed evaluated program		X	X
End-user payment documentation (e.g. canceled check), if pass-through is required or for all projects requesting less than the total available BPA payment			X
Completion reports for M&V Custom Program projects, as defined in the proposal		X	X
For M&V Custom Programs, documentation of basic project information, baseline conditions, efficient measure conditions, description of M&V procedures used for the project (e.g., protocol used for estimating savings, calculations used, metering equipment, sampling) and deviations from planned M&V, detailed savings model including calculations and raw data if applicable, verified savings			X

Savings may be reported from projects that were completed prior to proposal approval, as long as those savings meet the savings estimation and reporting requirements.

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

1. M&V Custom Program

   The customer must conduct M&V in accordance with its approved M&V plan and must document the type and quantity of measures installed.

   Completed projects may be submitted for payment 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 payment, consistent with the start date of each individual project.

   BPA will define M&V Custom Program completion report requirements at the proposal stage. Prior to customer submission in the BPA reporting system, BPA must approve the completion report to ensure alignment with the requirements given at proposal.

2. Evaluated Custom Program

   Prior to reporting in the BPA reporting system, the customer must submit a completed Custom Program Calculator and an evaluation report consistent with the previously approved evaluation plan.

   Payment is based on evaluated savings per the evaluation report.

   Upon conclusion of the program and approval of the final Custom Program Calculator and evaluation report, the COTR will direct the customer how to report the program savings to BPA.

Section 6: Agricultural Sector

Please check the changes and corrections summary to see if revisions were made to any of the measures in this sector.

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 livestock, 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).

6.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Freeze Resistant Stock Water Tanks/ Fountains	$140.00-$225.00/tank or fountain
Irrigation-Related Measures	
Irrigation System Upgrades	$0.75-$175.00
Scientific Irrigation Scheduling	$5.20/acre
Irrigation Pump Testing and System Analysis	$50.00-$300.00/test or analysis
Variable Frequency Drives in Agricultural Turbine Pump Applications	$60.00/hp
Transformer De-energization	$0.025/kWh of busbar savings
New Agricultural Construction	See the custom projects payment table.
Other Agricultural Measures	See the custom projects payment table.
Multi-Sector Opportunities	
Green Motors Rewind Initiative	$2.00/hp
Non-Residential Lighting Program	See the lighting calculators.
Engine Block Heaters	$200.00-$1,500.00/unit
Limited Availability Emerging Technology Demonstration Field Test Projects	See the custom projects payment table.
Variable Frequency Drives in Small Compressed Air System	See the custom projects payment table.

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6.7 Other Agricultural Measures 30
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New Sections Coming In October:
6.3.4 Low Energy Precision Agriculture (LEPA)
6.3.5 Low Elevation Sprinkler Application (LESA)

Supporting Content

Document Library

Interim Solutions 2.1 Files

Scientific Irrigation Scheduling M&V Calculator

Irrigation Pump Testing and System Analysis BPA Screening Tool

BPA Qualified and Provisional UES Input Sheet

Variable Frequency Drives in Agricultural Turbine Pump Applications - VFD Calculator

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

! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

6.2 FREEZE RESISTANT STOCK WATER TANKS/ FOUNTAINS

Basis for Energy Savings

The baseline for freeze resistant tanks/fountains that replace a tank heated with an electrically resistive element is called the Electrically Heated Tank Consumption estimate. The efficient case is zero electric heating. Savings are calculated by taking the difference between the baseline and efficient case. The annual consumption from a submersible electric resistant tank heater is estimated by using monitored results from site metering studies. Baseline consumption is adjusted from the metering period to the full heating season using heating degree days (HDD) as a scaling factor. Savings are computed for each of the primary heating zones by using the weighted average number of HDD of each heating zone.

More information can be found on the Regional Technical Forum (RTF) website: http://rtf.nwcouncil.org/measures/Default.asp

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 have the following qualifications:

1. New (i.e., not home- or kit- made)
2. Enclosed, fully foam or dead air space insulated with the opening completely sealed in impact-resistance polyurethane
3. Possess elliptical or flap closures that tip easily so animals can drink without resistance
4. Sized in accordance with manufacturer's specifications for the type and number of animals for which it will be used
5. Water supply is hard-piped underground and stubbed up into the insulated portion of the fountain
6. Contain no electric heat
7. Possess a minimum five-year manufacturer defect warranty

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 (e.g. field location, farm name, meter number, GPS coordinates or legal property description).	X		X
Proof of manufacturer defect warranty of at least five (5) years.			X
Equipment/contractor invoice is to include: manufacturer, model number, type or size of equipment or product installed/used, quantity, order/purchase date, and cost.			X

Payment

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

6.3 IRRIGATION-RELATED MEASURES

6.3.1 Irrigation System Upgrades

Basis for Energy Savings

The base case is an inefficient, pressurized irrigation system with potential for improvements in application efficiency. The efficient case improves the application efficiency and the energy savings is based on a weighted average of the RTF-approved energy savings for each measure. The RTF-approved energy savings was based on regional location (irrigation system run-time and water pumping lift are the primary drivers) identified improvements in overall application efficiency and leak reduction. BPA decided to simplify each UES offering.

More information can be found on the Regional Technical Forum (RTF) website: http://rtf.nwcouncil.org/measures/Default.asp

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 UES Measure List (available in the Interim Solution 2.0 Files. Brass impact sprinklers shall be rebuilt by an established repair shop and shall meet or exceed manufacturers' 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 (e.g. field location, meter number, GPS coordinates, farm name, or legal property description).	X		X
Equipment/contractor invoice is to include: manufacturer, model number, type or size of equipment or product installed/used and quantity, the order/purchase date and cost.			X

Payment

SPRINKLER EQUIPMENT	PAYMENT
Replace worn nozzle with new flow controlling type nozzle for impact sprinklers	$4.00/nozzle[i]
Replace leaking impact sprinkler with rebuilt or new impact sprinkler	$3.75/sprinkler[i]

SPRINKLER EQUIPMENT	PAYMENT
New nozzle for impact sprinkler replacing existing worn nozzle of same flow rate or less	$1.50/nozzle[i]
New nozzle for center pivot and lateral moves	$1.00/nozzle
New rotating type sprinklers that replace impact sprinklers	$4.00/sprinkler[i]
Replace leaking pipe section and riser cap gaskets for wheel or hand lines or portable main line gasket with new gasket	$2.75/gasket
New low-pressure regulators	$5.00/regulator[i]
New rotating type sprinklers that replace low-pressure	$4.00/sprinkler[i]
New multiple configuration nozzles for low-pressure pivot[ii] sprinklers	$3.00/sprinkler[i]
New multi-trajectory sprays that replace impact sprinklers	$4.00/sprinkler[i]
New multi-trajectory sprays that replace low-pressure sprinklers	$1.00/sprinkler[i]
Replace leaking drain gaskets with new gaskets on wheel-lines, hand lines or pivots[ii]	$1.00/drain
New hubs for wheel-lines	$14.50/hub
New goose-neck elbow for new drop tubes (to convert existing sprinkler equipment mounted on top of the pivot[ii] to low-pressure sprinkler package)	$1.65/goose-neck
New drop tube for low-pressure pivot[ii] sprinklers (minimum three feet length)	$3.00/drop tube
Replace leaking center pivot base boot gasket with new gasket	$175.00/pivot
Pipe repair of leaking hand lines, wheel-lines and portable mainline	$10.00/pipe section
Rebuild or replace leaking or malfunctioning leveler with new or rebuilt wheel-line leveler	$0.75/leveler

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

[ii] Lateral moves are also included

6.3.2 Scientific Irrigation Scheduling

Basis for Energy Savings

The base case used to calculate for this measure uses typical irrigation practices to determine when and how much to irrigate. Such practices include looking at soil moisture using the "shovel method" and the "feel method" or no method at all. The efficient case assists irrigators to know exactly when and how much to irrigate crops through a system that monitors weather and soil moisture data. In addition to reducing energy costs for pumping water, Scientific Irrigation Scheduling (SIS) conserves water and reduces fertilizer use and runoff. Previous BPA-sponsored studies have shown water savings of 10%, which is used for the energy savings of this measure.

BPA is conducting an SIS Market Research Plan to better understand the standard practices in the market and benefits of SIS. The results are expected in the winter of 2016/17. These results may change the basis of energy savings for this measure.

More information on typical irrigation practices can be found on Washington State University's website: http://irrigation.wsu.edu

More information for the SIS measure can be found on the Regional Technical Forum (RTF) website: http://rtf.nwcouncil.org/subcommittees/SIS/

Requirements and Specifications

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, 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 Scientific Irrigation Scheduling M&V Calculator (available 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 (e.g., field location, meter number, GPS coordinates, farm name, or legal property description)	X		X
Electronic or hard copies of the Contractor SIS Report which includes: number of treated acres, performance period, and copies of weekly hydro application data, e.g., water applied, evapo-transpiration needs, and soil moisture tables.		X	X
Completed Scientific Irrigation Scheduling M&V Calculator and data on measure costs, crop type, acreage and energy savings		X	X

Payment

BPA shall pay customers $5.20 per acre per year.

6.3.3 IRRIGATION PUMP TESTING AND SYSTEM ANALYSIS (BPA QUALIFIED)

Basis for Energy Savings

This BPA Qualified measure is intended to help the irrigator determine irrigation system health and identify potential energy efficiency improvements. Ideally, the pump test will be performed on systems that are inefficient as determined by the Irrigation Pump Testing and System Analysis BPA Screening Tool (available in the Document Library). The results of the pump test could be used in developing the Custom Project proposal. There is no energy savings associated with this reimbursement.

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[18] must be performed by an individual possessing pump testing knowledge and experience.[19]
- Customers and qualified vendors must use the Irrigation Pump Testing and System Analysis BPA Screening Tool (available 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.
  - Irrigation Pump Test and System Analysis[20]: 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 address (e.g., field location, pump number, GPS coordinates, farm name, or legal property description)	X		X
Electronic or hard copies of the completed Irrigation Pump Testing and System Analysis BPA Screening Tool, irrigation pump test, and recommendation report.			X
Complete the "Agricultural Irrigation Pump Testing and System Analysis" tab in the BPA Qualified and Provisionally Deemed Input Sheet (available in the "other documents" section of the Document Library)		X	X

Payment

TEST TYPE	PAYMENT
Simple System Evaluation	$50.00
Simple System Irrigation Pump Test (e.g. open discharge)	$100.00

[18]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.
[19]Pump tests performed by BPA engineers do not qualify for payment.
[20]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.

TEST TYPE	PAYMENT
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

6.4 VARIABLE FREQUENCY DRIVES IN AGRICULTURAL TURBINE PUMP APPLICATIONS (BPA QUALIFIED)

Basis for Energy Savings

The base case for this measure is a turbine-style pump that is used for irrigation purposes that operates at a fixed speed but has a variation of flow or head requirements. The efficient case for this measure would have a variable frequency drive to better match pump performance to system requirements.

BPA is collecting data on these retrofits to help support the RTF analysis of this measure.

Requirements and Specifications

This measure applies to pumping operations that deliver, distribute or transport irrigation water with qualifying VFDs from 20 to 500 hp. 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). BPA recommends that all new VFD installations meet the IEEE 519 standard. This measure provides an annual energy savings of 20% of the average of the previous three operating years' annual energy usage of the pump.

Customers must use the Variable Frequency Drives in Agricultural Turbine Pump Applications - VFD Calculator to estimate savings (available in the Document Library). BPA no longer collects information for this measure from the BPA Qualified and Provisionally UES Input Sheet.

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 (e.g., field location, meter number, GPS coordinates, farm name or legal property description)	X		X
Equipment/contractor invoice is to include: manufacturer, model number, type or size of equipment or product installed/used, quantity, order/purchase date and cost.			X
Complete the Agricultural Turbine Pump Applications VFD Calculator (available in the Document Library) regardless of completion date.		X	X

Payment

BPA shall pay $60.00 per installed hp.

6.5 TRANSFORMER DE-ENERGIZATION

Basis for Energy Savings

The base case for this measure assumes that irrigation loads are seasonal and the utility transformers serving the pump station are left energized all year. These energized transformers consume energy even when not serving any irrigation load. The efficient case is to de-energize the transformers during the non-irrigation season.

More information can be found on the Regional Technical Forum (RTF) website: http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Transformer De-energization (TRX-DX) is disconnecting a transformer and downstream loads from the utility power supply 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 must be submitted as an UES measure and have a one-year measure life.

Documentation Requirements

DOCUMENTATION DESCRIPTION	RETENTION/SUBMITTAL LOCATIONS		
	BPA ENERGY EFFICIENCY REPORTING SYSTEM	EEDOCS@BPA.GOV OR FAX 1-866-535-7955	CUSTOMER FILE
Complete the Transformer De-energization Worksheet (available in the Document Library)		X	X

Payment

BPA will pay $0.025 kWh of busbar savings.

6.6 NEW AGRICULTURAL CONSTRUCTION

Basis for Energy Savings

The base case and efficient case are determined through the custom project process.

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

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

6.7 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

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

Supporting Content

Option 1 Custom Project Calculator

6.8 MULTI-SECTOR OPPORTUNITIES

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

- Processes
- Measures and Initiatives

1. Green Motors Rewind Initiative
2. Non-Residential Lighting Program
3. Generator Block Heaters
4. Vehicle Block Heater Controls
5. Limited Availability Emerging Technology Field Test Projects
6. Variable Frequency Drives in Small Compressed Air Systems
7. ENERGY STAR Commercial Clothes Washers - Multifamily Common Areas
8. Multifamily, Multi-Sector Measures

Section 7: Commercial Sector

Please check the changes and corrections summary to see if revisions were made to any of the measures in this sector.

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.

7.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Commercial Custom Projects – Existing Buildings	See the custom projects payment table.
Commercial Lighting	See Multi-Sector chapter (except for LED Traffic Signals).
LED Traffic Signals	$25.00-$30.00/traffic signal
Commercial HVAC	
Unitary Air Conditioning	$45.00-$1,500.00/AC
Advanced Rooftop Unit Control Retrofit	$150.00-$225.00/ton
Ductless Heat Pumps in Commercial Buildings	$250.00/ton
Heat Pump Equipment Conversion and Upgrade in Commercial Buildings	$100.00-$250.00/ton
Web-Enabled Programmable Thermostats	$150.00-$800.00/thermostat
Commercial Shell Measures	
Retrofit Windows for Commercial Buildings	$3.00-$6.00/square foot
Commercial Insulation	$0.25-$1.85/square foot
Electric Water Heating	
Electric Storage	$25.00 / electric storage heater unit
Heat Pump Water Heating	$300.00-$500.00/Heat Pump Water Heater
Commercial Refrigeration	
BPA ESG Program**	See the CLEAResult ESG Program rebate worksheet.

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

** The ESG program sunsets March 31, 2016. In place of ESG, the UES refrigeration measures can be used, per the commercial refrigeration section of the IM).

7.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Anti-Sweat Heater (ASH) Control	$40.00/lin. ft. of case controlled
Compressor Head Cooling Fans	$62/motor
Door Gasket Replacement for Walk-in and Reach-in Coolers and Freezers	$25-$65/door
Floating Head Pressure Control on Single Compressor Systems	$60-$100/compressor nameplate horsepower
LED Case Lighting – Reach-in Refrigerated Display Cases	$10-$25/lin. ft. of LED
LED Motion Sensors for Reach-in Refrigerated Display Cases	$2/lin. ft. of LED controlled
LED Case Lighting – Open Refrigerated Display Cases and De-Lamping	$5-$34/lin. ft. of lamp
Strip Curtains for Walk-in Coolers and Freezers	$9/square foot of doorway
Walk-in or Display Case Evaporator Fan Motors-ECM	$55-$140/ECM motor
Walk-in Evaporator ECM Fan Speed Control	$35/motor controlled
Commercial Kitchen and Food Service Equipment	
Demand Controlled Kitchen Ventilation	$200.00-$400.00/Horsepower
Electric Commercial Steamers	$50.00-$200.00/steamer
Hot Food Holding Cabinets	$75.00-$200.00/cabinet
Electric Combination Ovens	$500.00/oven
Electric Convection Ovens	$300.00/oven
Commercial Electric Fryers	$300.00/installation
Pre-rinse Spray Wash Valves	$100.00/installation
Additional UES Offerings	
Networked Computer Power Management	$10.00/workstation
ENERGY STAR Commercial Clothes Washers - Laundromats	$25.00-$125.00/washer
Smart Power Strips – Load Sensing	$15.00/strip
Commercial Showerheads	$8.00-$11.00/showerhead

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! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

7.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Commercial New Construction	
New Construction/Major Renovation	See the custom projects payment table.
Multi-Sector Measures	
Electric Storage Water Heaters	$25.00/Electric Storage Water Heater
Green Motors Rewind Initiative	$2.00/Horsepower
Non-Residential Lighting Program	See the lighting calculator.
Engine Block Heaters	$200.00-$1,500.00/Engine Block Heater
Limited Availability Emerging Technology Demonstration Field Test Projects	See the custom projects payment table.
Variable Frequency Drives in Small Compressed Air System	See the custom projects payment table.
Commercial Clothes Washers – Multifamily Common Areas	$25.00-$100.00/Clothes Washer
Multifamily, Multi-Sector Measures	See the measure specific section.

7.2 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.

Documentation Requirements

See the custom projects documentation requirements.

Payment

See the custom projects payment 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).

7.3 COMMERCIAL LIGHTING

Refer to the Non-Residential Lighting Program in the Multi-Sector Section for details on the lighting program.

Supporting Content

Non-Residential Lighting Calculator Version 3.3

7.3.1 LED Traffic Signals

Notice to Expire Measure

BPA will retire this measure on September 30, 2016. LED traffic signals will still be eligible for reporting through the non-residential lighting program as non-standard measures.

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

Payment

TRAFFIC SIGNAL TYPE	PAYMENT
12-inch Left Turn Bay; 12-inch Thru Lane; Don't Walk	$30.00
8-inch Left Turn Bay; 8-inch Thru Lane	$25.00

7.4 COMMERCIAL HVAC

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

Supporting Content

CEE

AHRI web sites

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

Required Documents

Unitary Air Conditioning Business Owner Information Form

Requirements and Specifications

Unitary air conditioning equipment refers to air-cooled, packaged, air conditioning equipment for both new construction and retrofits in commercial buildings. This equipment can be used in conjunction with gas or electric heating systems. Heat pumps are excluded.

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

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Unitary AC (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

Payments by unit size and CEE Tier (efficiency level) are detailed in the table below. Though payments are the same across all cooling zones, each has a different reference number.

UNIT SIZE RANGE		CEE TIER	PAYMENT ($/UNIT)
BTU/H	TONS		
<65,000	<5.4	Tier 1	$10.00
		Tier 2	$15.00
≥65,000 and <135,000	≥ 5.4 and < 11.3	Tier 1	$15.00
		Tier 2	$25.00
≥135,000 and <240,000	≥11.3 and < 20.0	Tier 1	$15.00
		Tier 2	$25.00
≥240,000 and <760,000;	≥ 20 and < 63.3	Tier 1	$15.00
		Tier 2	$30.00
≥760,000	>63.3	Tier 1	$20.00
		Tier 2	$25.00

7.4.2 Advanced Rooftop Unit Control (ARC) Retrofit (BPA Qualified)

Basis for Energy Savings

The base case used to calculate energy savings for ARC Retrofits consist of single-zone, constant air volume, packaged, HVAC rooftop units (RTUs), ranging in size between 5 and 20 tons, with an operational economizer and serving a commercial building.

The following two efficient cases were used to calculate energy savings for ARC Retrofits:

Type 1) Full ARC Retrofit with supply-fan control, and enhanced economizer control, and

Type 2) ARC -Lite Retrofit with supply-fan control only.

Research found that energy savings result primarily from supply-fan control and secondly from enhanced economizer control. Most of the ARC Retrofit electrical savings result from strategies that lower supply-fan speeds during heating, ventilating and air conditioning modes. These supply-fan savings were found to be mostly dependent on hours of occupancy, and less dependent on heating system type, building type or heating zone.

More detailed information is available on the RTF's Commercial Rooftop Unit webpage: http://rtf.nwcouncil.org/measures/Default.asp.

BPA will accept all ARC and ARC-Lite products that are on the BPA ARC Qualified Products List.

ARC products on the BPA approved list meet the following requirements:

- Supply-fan control with either variable speed, multi-speed or cycling that meets ventilation and space conditioning needs, and digital, integrated economizer control.

ARC-Lite products on the BPA approved list meet the following requirement:

- Supply-fan control with either variable speed, multi-speed or cycling that meets ventilation and space conditioning needs.

If a product meets these requirements but is not on the ARC Qualified Products List, please use the COTR Request and Acknowledgment Procedure for approval to use the product.

Requirements and Specifications

Qualifying ARC Retrofit applications must meet the following requirements:

The existing RTU must have the following qualities:

- Greater than five tons of cooling capacity,
- Unitary equipment (no split-systems),
- Constant speed supply fan (no variable speed fans)
- An operational economizer, and
- Continuous operation during occupied hours.

The Type 1) Full ARC Retrofit must have the following qualities:

- Either supply-fan variable speed, multi-speed or cycling that meets ventilation and space conditioning needs.
- Digital, integrated economizer control.

Required Documents

Advanced Rooftop Unit Control Retrofit Information Form

The Type 2) Lite ARC Retrofit must provide:

- Either supply-fan variable speed, multi-speed or cycling that meets ventilation and space conditioning needs.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Advanced Rooftop Unit Control (ARC) Retrofit or ARC-Lite Retrofit (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

ARC RETROFIT TYPE	OCCUPIED HOURS PER YEAR	PAYMENT PER TON
Type 1 (Full)	2,000 – 4,000	$150.00
Type 1 (Full)	4,001 – 8,760	$225.00
Type 2 (Lite)	2,000 – 4,000	$100.00
Type 2 (Lite)	4,001 – 8,760	$150.00

7.4.3 Ductless Heat Pumps in Commercial Buildings (BPA Qualified)

Basis for Energy Savings

The following two base case HVAC system energy savings were used to calculate Ductless Heat Pump (DHP) energy savings in Commercial buildings: 70% energy savings for electric forced air with A/C, and 30% energy savings for electric resistance heat without cooling.

CBSA data was used to weight the average savings for the following elements: (1) building envelope, (2) occupancy schedule, (3) number of stories, (4) base case pre-existing HVAC system, and, (5) climate zone. The efficient case used to calculate energy savings installs a fully ductless, inverter driven DHP with a variable-speed indoor fan.

Required Documents

Ductless Heat Pump Business Owner Information Form

Requirements and Specifications

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

- The building conditioned by the DHP has the following characteristics:
  - Less than 20,000 square feet of conditioned floor area
  - A construction date before 2009
  - The area conditioned by the DHP must be heated by either zonal or forced air electric resistance 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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Ductless Heat Pumps (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

Payment is $250.00 per ton of installed outdoor unit heating capacity for each DHP as shown in the following table:

OUTDOOR UNIT HEATING CAPACITY		PAYMENT PER DHP
BTU/H	TONS	
12,000	1	$250
18,000	1.5	$375
24,000	2	$500
30,000	2.5	$625
36,000	3	$750
42,000	3.5	$875
48,000	4	$1,000
54,000	4.5	$1,125
60,000	5	$1,250

If the installed unit tonnage is in between the options in the table the user should round to the nearest available option.

7.4.4 Heat Pumps Commercial Buildings (BPA Qualified)

Basis for Energy Savings

The following two heat pump cases were used to calculate energy savings: Type 1) Heat Pump Equipment Conversion, and, Type 2) Heat Pump Equipment Upgrade.

The Type 1 efficient case replaces an existing electric heating system with a heat pump (e.g., replacing an electric furnace with a heat pump), while the Type 2 efficient case replaces an existing heat pump with a more efficient heat pump (e.g., replacing a code minimum heat pump with a CEE Tier 2 heat pump).

Requirements and Specifications

The installed equipment must be an air to air heat pump system that meets CEE Tier 1 minimum efficiency level. The building in which the equipment is installed must have the following characteristics:

- An existing building (not new construction).
- 50,000 square feet or less conditioned building area.
- Consume less than 600,000 kWh annually.
- The building must be electrically heated.

For buildings with multiple heat pumps, enter the sum of heat pump tonnage into one commercial heat pump tool. Multiple buildings cannot be entered into a single commercial heat pump tool.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Commercial Heat Pump Tool available in the IM Document Library, showing the measure requirements have been met.		X	X

Payment

MEASURE CATEGORY	PAYMENT ($/TON)
Type 1: Resistance Heating to Tier 1 Premium Efficiency Heat Pump or better.	$250.00
Type 2: Heat Pump to Tier 1 Premium Efficiency Heat Pump or better.	$100.00

7.4.5 Web-Enabled Programmable Thermostats (BPA Qualified)

Basis for Energy Savings

The following two base cases were used to calculate energy savings for Web-Enabled Programmable Thermostats (WEPT): Type 1) thermostats that are not programmable, and, Type 2) programmable-thermostats that are not

Supporting Content

CEE Tier 1

Required Documents

Web-enabled Programmable Thermostat Information Form

web-enabled.

The efficient case used to calculate savings is for thermostats that are web-enabled and programmable. This makes the thermostat capable of controlling the HVAC supply-fan to meet the mechanical building code required minimum ventilation level during occupied periods, while also being able to save energy during unoccupied periods. Energy savings result from the ability to program operating schedules, temperature set-points, and supply-fan operation during unoccupied periods including evenings, holidays and breaks. Because savings are mostly during unoccupied periods, they are indirectly correlated with the number of occupied hours. Electrical savings were found to be more dependent on heating system type, and less dependent on building type and heating zone.

Requirements and Specifications

Depending on the commercial-building base case, two incentives are available: Type 1) replacing thermostats that are not programmable, and, Type 2) replacing programmable-thermostats that are not web-enabled. Hotel rooms are not eligible for this incentive.

BPA will accept all WEPT products that are on the BPA WEPT Qualified Products List. WEPT products on the BPA approved list meet the following requirements:

- Limited duration occupied-period override.
- Multiple set-back schedules with energy-saving temperature set-points during unoccupied periods including evenings, holidays and breaks.
- The supply fan is scheduled to operate continuously during occupied periods, and to operate in "auto" mode during unoccupied periods.
- Remote, web-based monitoring and programming.
- Battery and memory back-up to retain settings during power or internet losses.

If a product meets these requirements but is not on the WEPT Qualified Products List, please use the COTR Request and Acknowledgment Procedure for approval to use the product.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for WEPT (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

WEPT INSTALLATION TYPE	HEATING TYPE	OCCUPIED HOURS PER YEAR	PAYMENT
Type 1: Replacing a thermostat that is not programmable	Electric	2,000-4,000	$800.00
Type 1: Replacing a thermostat that is not programmable	Non-Electric	2,000-4,000	$700.00
Type 1: Replacing a thermostat that is not programmable	Electric	4,001-8,760	$600.00
Type 1: Replacing a thermostat that is not programmable	Non-Electric	4,001-8,760	$500.00
Type 2: Replacing a programmable thermostat that is not web-enabled	Any	Any	$150.00

7.5 COMMERCIAL SHELL MEASURES

7.5.1 Commercial Insulation

Basis for Energy Savings

The base case used to calculate energy efficiency savings for commercial insulation is based on pre-condition wall, roof, and attic levels with R-0 insulation values. The efficient case used to calculate savings is based on wall, roof, and attic insulation value ranges which are shown in the payment table below. Energy savings are also dependent on the building type, heating zone and heating system types.

More detailed information on K-8 schools measure description is available on the RTF's UES web page. http://rtf.nwcouncil.org/measures/measure.asp?id=211

Energy savings are also dependent on the building type, heating zone and heating system types.

Requirements and Specifications

Commercial Insulation measures must meet the following requirements:

1. Building is electrically heated.

2. Existing insulation value must be R-0.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Insulation (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

(per square foot of insulation)

BPAQ COMMERCIAL INSULATION MEASURES: ALL COMMERCIAL (INCLUDING K-8 SCHOOLS)			
	HZ1	HZ2	HZ3
Attic/Roof Insulation			
R-0 to R-19	$0.40	$0.60	$0.65
R-0 to R-49	$0.60	$0.70	$0.80
Wall Insulation			
R-0 to R-11	$0.25	$0.35	$0.40
R-0 to R-19	$0.40	$0.60	$0.65
RTF UES APPROVED COMMERCIAL INSULATION MEASURES: K-8 SCHOOLS ONLY			
	HZ1	HZ2	HZ3
Attic Insulation			
R-0 to R-30	$0.50	$0.60	$0.65
Roof Insulation			
R-0 to R-30	$0.70	$0.80	$0.90
R-0 to R25 + R11	$1.20	$1.60	$1.85
Wall Insulation			
R-0 to R-9.5	$0.25	$0.35	$0.40

Additional Information

The two payment tables above are a result of the fact that energy savings associated with K-8 schools are RTF approved while the remaining building types (including K-8) are BPA Qualified. For K-8 schools, the BPAQ measures provide additional options which are not available in the RTF K-8 schools only table. The BPAQ measures do not make a distinction between attic or roof insulation while the RTF measure series does.

*Attic insulation is defined by insulation which is installed in the attic crawl space, typically on a horizontal surface.

**Roof insulation is defined by insulation which is installed in direct contact with the building's roof, typically a flat or slightly pitched surface.

***For metal roof scenarios where the insulation is broken into two components: 1) uncompressed insulation that rests between the metal purlins (R-0 to R-25) and 2) compressed insulation that is draped over the lower uncompressed insulation and metal purlins (+R11).

7.5.2 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.

Required Documents

Commercial Window Retrofit Project Information Form

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Window Retrofits (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

HEATING ZONE	PAYMENT/SQUARE FOOT OF WINDOW REPLACED
1	$3.00
2	$6.00
3	$6.00

7.6 ELECTRIC WATER HEATERS

Basis for Energy Savings

The efficient case used to calculate energy efficiency savings for commercial electric storage water heaters is an estimate of "current practice", which is defined as the average of all units within the AHRI database that meet the minimum federal standard. The efficient case used to calculate energy efficiency savings is based on a minimum hourly heat loss reduction of 20BTU/hr less than the current practice base case. More detailed information on measure description is available on the RTF's UES web page. http://rtf.nwcouncil.org/measures/Default.asp

More detailed information on AHRI database is available at the following: https://www.ahridirectory.org/ahridirectory/pages/home.aspx

Requirements and Specifications

BPA will accept all products that are on the BPA Commercial Electric Water Heaters Qualified Products List, located in the document library.

Products on the BPA Commercial Electric Water Heater Qualified Products List meet the following requirements:

COMMERCIAL WATER TANK SIZE BY GALLON	EFFICIENT CASE MAXIMUM HEAT LOSS [BTU/HR]
25 – 34.99	157
35 – 44.99	185
45 – 54.99	201
55 – 74.99	238
75 – 99.99	249
100 – 120	287

If a product meets these requirements but is not on the Commercial Electric Water Heater Qualified Products List, please use the COTR Request and Acknowledgment Procedure for approval to use the product.

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		X
Invoice showing, new equipment name and model number, installed cost, and order/purchase date.			X

Payment

BPA will pay $25.00 / unit.

7.7 HEAT PUMP WATER HEATER (BPA QUALIFIED)

Supporting Content

NEEA Northern Climate HPWH Qualified Products List

Heat Pump Water Heater Form

Requirements and Specifications

Qualifying applications for Heat Pump Water Heaters include those installed in commercial areas that are listed on NEEA's HPWH qualified products list as meeting Tier 1 requirements of the Northern Climate Specification. At this time, Tier 2 Heat Pump Water Heaters are not included as a Commercial measure. Any products which meet Tier 2 or greater are eligible for the Tier 1 incentive. If a customer believes a product should be on the list, and is not, it should use the COTR Request and Acknowledgment Procedure to request approval to use the product.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Heat Pump Water Heaters (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

HPWH TANK SIZE	PAYMENT
50-75 gallons	$300.00
Greater than 75 gallons	$500.00

7.8 COMMERCIAL REFRIGERATION

7.8.1 BPA EnergySmart Grocer (ESG) Program

Program Sunset

The ESG Program, implemented by CLEAResult, will sunset on March 31, 2016. The program will enter a six month wind-down period beginning October 1, 2015 to close out projects in the pipeline that have achieved the "bid accepted" stage by October 31, 2015. Customers have until the October 31, 2015 deadline to sign up for the six month close-out period and commit funding to the ESG program.

During the six month close-out period, CLEAResult will complete all tasks related to the installation of energy efficiency measures in commercial refrigeration equipped facilities (see EnergySmart). CLEAResult will continue to process and deliver rebate checks to end users, perform post-installation checks as required, manage required back-up documentation and report installations to BPA.

With the sun setting on the EnergySmart Grocer Program, UES commercial refrigeration measures have been completely migrated to the Implementation Manual for use by customers.

Requirements and Specifications

Participating customers must (1) sign a participation agreement with CLEAResult and (2) deliver a completed ESG Program Sign-up Form (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 and program scope. Changes to participation may be made by submitting a revised ESG Program Sign-up Form to BPA.

By selecting one or more scope add-ons, the customer may work with CLEAResult to implement custom projects in the selected areas. Custom projects completed under the ESG Program must follow the Option 1 requirements in the custom projects chapter, and CLEAResult will act on behalf of the customer in approving, reviewing and submitting custom project documentation to BPA.

If customers decrease their funding amount or withdraw from a program component, they must notify CLEAResult at least 60 days in advance to verify that in-process projects have secured rebates. Customers may be able to decrease their funding amount or withdraw from a program component with less advance warning with CLEAResult's consent.

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

Within the final quarter of the close-out period, customers may still submit ESG Sign-up Forms to BPA to increase or decrease funds up to the deadline referenced below.

March 1, 2016 is the deadline for submitting final budget changes for ESG program close-out.

Documentation Requirements

Self-funding customers must retain proof of payment for rebates on their behalf to end users in their service territory.

Supporting Content

Energy Smart

ESG Program Sign-up Form 2014-2015

ESG Program FY2016 Close-out Form

UES Measure List

Payment

Payment rates for measures are available in CLEAResult's ESG Program rebate worksheet. Payment for custom projects follows the custom projects payment table.

Customers using BPA funds are eligible for a performance payment. To request a performance payment on ESG program, customers must e-mail their Energy Efficiency Representative requesting a report of eligible ESG savings and the ESG Performance Payment Form.

7.8.2 LED Case Lighting - Reach-in Refrigerated Display Cases

Notice to Expire Measure

BPA plans to retire this measure on September 30, 2016. LED case lighting for reach-in refrigerated display cases will be available for reporting and incentives through the non-residential lighting program.

Requirements and Specifications

LED case lighting for reach-in refrigerated display cases applies to all building types with retail food sales. This UES refrigeration measure is available for use outside of the ESG program and outside the BPA Lighting Calculator.

The rebate will be calculated based on the total number of feet of LEDs installed and cannot exceed the total number of feet of fluorescent lamps replaced.

This measure applies to replacement fixtures, modification of existing fixtures and new case fixtures that meet the following requirements:

- Replacement fixtures must replace existing reach-in refrigerated display case T12 or T8 fluorescent fixtures with an LED fixture.
- Existing fixtures can only be modified to install permanent LED fixtures. Drop in replacement LED lamps must use the manufacturer recommended ballast type. Fluorescent magnetic ballasts cannot be used to power the LED.
- New case LED fixtures must be installed in a new reach-in refrigerated display case.

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting model number and rated power consumption.			X

Payment

MEASURE CATEGORY	SPECIFICATION	PAYMENT (PER/ LIN. FT. OF LED)
LED - T12 replaced	LED power between 4.0 and 7.5 watts per linear foot	$20.00
LED - T12 replaced	LED power less than 4.0 watts per linear foot	$25.00
LED - T8 replaced	LED power between 4.0 and 7.5 watts per linear foot	$10.00
LED - T8 replaced	LED power less than 4.0 watts per linear foot	$20.00
LED – New Case	LED power between 4.0 and 7.5 watts per linear foot	$10.00
LED – New Case	LED power less than 4.0 watts per linear foot	$10.00

7.8.3 LED Motion Sensors for Reach-in Refrigerated Display Cases

Notice to Expire Measure

BPA plans to retire this measure on September 30, 2016. LED motion sensors for reach-in refrigerated display cases will be available for reporting and incentives through the non-residential lighting program.

Requirements and Specifications

Motion sensors are used to control permanently installed LED case lighting. This measure for motion sensors is restricted to reach-in refrigerated display cases. This UES refrigeration measure is available for use outside of the ESG program and outside of the BPA Lighting Calculator.

- Existing conditions requirements: No motion sensor installed in a refrigerated display case with LED case lighting.
- Efficient case requirement: The motion sensor must activate a lighting control system that reduces lighting load to 20% or less of full load when unoccupied. Load reduction ability must be indicated on the system specification sheets or confirmed by the manufacturer. The load reduction programming must be indicated on manufacturer/installers invoicing. Existing timers must continue to be used after installation of a motion sensor.

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name and model number.			X

Payment

MEASURE CATEGORY	SPECIFICATION	PAYMENT (PER/LIN. FT. OF LED CONTROLLED)
Motion Sensors	LED power between 4.0 and 7.5 watts per linear foot	$2.00
Motion Sensors	LED power less than 4.0 watts per linear foot	$2.00

7.8.4 LED Case Lighting – Open Refrigerated Display Cases

Notice to Expire Measure

BPA plans to retire this measure on September 30, 2016. LED case lighting for open refrigerated display cases will be available for reporting and incentives through the non-residential lighting program.

Requirements and Specifications

LED case lighting for open refrigerated display cases applies to all building types with retail food sales. This UES refrigeration measure is available for use outside of the ESG program and outside the BPA Lighting Calculator.

The rebate will be calculated based on the total number of feet of installed LEDs. In replacement scenarios, the LED total length cannot exceed the total length of fluorescent lamps that are replaced.

This measure applies to new and existing fixtures. Existing fixtures need to meet the following requirements:

- Replacement fixtures in existing vertical or semi-vertical open refrigerated cases must replace T12 or T8 fluorescent fixtures with an LED fixture.
- All replacement LEDs must be rated for 50,000 hours.
- Existing fixtures can only be modified for the purpose of permanently installing LED fixtures. Drop-in replacement LED lamps must use the manufacturer recommended ballast type. Fluorescent magnetic ballasts cannot be used to power the LED.

New LED fixtures in vertical or semi-vertical open refrigerated cases must be installed in a new, open refrigerated display case.

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name, model number and rated power consumption.			X

Payment

MEASURE CATEGORY	SPECIFICATION	PAYMENT (PER/LIN. FT. OF LAMP)
Retrofits of double lamps are eligible for the following rebates:		
Double fluorescent lamps retrofit to a single high power LED (note: RTF savings already incorporate a de-lamp here).	T-12 to LED – High Power Retrofit (LED power between 4.5 and 8.5 watts per linear foot)	$34.00
	T-8 to LED – High Power Retrofit (LED power between 4.5 and 8.5 watts per linear foot)	$22.00
Double fluorescent lamps retrofit to two low power LEDs	T-12 to 2 x LED – Low Power Retrofit (LED power less than 4.5 watts per linear foot)	$18.00
	T-8 to 2 x LED – Low Power Retrofit (LED power less than 4.5 watts per linear foot)	$12.00
Double fluorescent lamps retrofit to a single low power LED and a single de-lamp	T-12 to LED – Low Power Retrofit (LED power less than 4.5 watts per linear foot)	$18.00
	A single de-lamp T- 12	$ 5.00
Double fluorescent lamps retrofit to a single low power LED and a single de-lamp	T-8 to LED – Low Power Retrofit (LED power less than 4.5 watts per linear foot)	$12.00
	A single de-lamp T-8	$ 5.00
Retrofits of single lamps are eligible for the following rebates:		
Single fluorescent lamps retrofit to a single low power LED	T-12 to LED – Low Power Retrofit (LED power less than 4.5 watts per linear foot)	$18.00
	T-8 to LED – Low Power Retrofit (LED power less than 4.5 watts per linear foot)	$12.00

MEASURE CATEGORY	SPECIFICATION	PAYMENT (PER/ LIN. FT. OF LAMP)
Single fluorescent lamps retrofit to a single de-lamp	De-lamp T-12	$5.00
	De-lamp T-8	$5.00
New open cases are eligible for the following rebates:		
LED – New Open Case	High Power LED - LED power between 4.5 and 8.5 watts per linear foot	$11.50
LED – New Open Case	Low Power LED - LED power less than 4.5 watts per linear foot	$5.00

7.8.5 Anti-Sweat Heater (ASH) Controls

Requirements and Specifications

Anti-sweat heater (ASH) controls reduce the energy consumption of anti-sweat heaters on reach-in doors. To meet the requirements, the end user must install a device that reduces the energy consumption of anti-sweat heaters of reach-in doors. This measure applies to cooler and freezer reach-in glass door cases in any commercial building and is available for use outside of the ESG program.

To verify the requirements, the amps/ft. of the case can be found on the amp tag on the inside of the door frame. If there is no amp tag for the case, please call BPA Engineering staff to help qualify your equipment.

- Pre-retrofit requirements:
  - Cooler Case: A present, uncontrolled ASH that uses greater than 0.20 amps/ft. of case (door rail, glass and/or frame heating element combined).
  - Freezer Case: A present, uncontrolled ASH that uses greater than 0.39 amps/ft. of case (door rail, glass and/or frame heating element combined).
- Post-retrofit requirements:
  - Cooler Case: An installed controller with settings that reduce the ASH run- time by at least 50%. Includes any heating element in door rail, glass and/or frame.
  - Freezer Case: An installed controller that reduces the ASH run-time by at least 50%. Includes any heating element in door rail, glass and/or frame.

Restrictions: This measure only applies to technologies that reduce energy consumption of anti-sweat heaters based on sensing humidity. It does not apply to doors equipped with low/no anti-sweat 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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name and model number.			X

Payment

MEASURE	PAYMENT (PER LIN. FT. OF CASE)
Anti-Sweat Heater (ASH) Controls – Freezer	$40.00
Anti-Sweat Heater (ASH) Controls – Cooler	$40.00

7.8.6 Floating Head Pressure Control on Single Compressor Systems

Requirements and Specifications

To meet the requirements of this measure, an existing single compressor system from a fixed control must be converted to a floating control. This measure is for the installation of condensing and remote condensing refrigeration systems in building types with retail food sales, excluding restaurants. This UES refrigeration measure is available for use outside of the ESG program.

- Pre-retrofit requirements:
  - A fixed pressure head control valve
  - An expansion valve
  - A compressor motor nameplate that indicates motor is 1 HP or more
  - A single compressor that serves a suction group
  - The condenser intake air must be from outside ambient air
- Post-retrofit requirements:
  - Must replace any nonadjustable flood-back control valve with adjustable flood-back control to saturated pressure equivalent of 70° F or less. Alternatively, a fan control safety switch can be used to maintain adequate head pressure.
  - Pressure setting must be verified against a calibrated pressure gauge or transducer.
  - To prevent evaporator from starving, at low condensing pressures, one of the following must be implemented (if the existing expansion

valve is a balanced port or electronic expansion valve, this requirement does not apply):

- Replace each expansion valve with balanced-port valve or electronic expansion valve (EEV) sized to meet the load requirement at 70º F condensing temperature.
- Install a device to supplement refrigerant feed to each evaporator attached to the condenser.

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name, model number and rated power consumption.			X

Payment

MEASURE CATEGORY	PAYMENT (PER COMPRESSOR NAMEPLATE HORSEPOWER)
Cooler – Condensing unit	$100.00
Freezer – Condensing unit	$100.00
Cooler – Remote Condenser	$60.00
Freezer – Remote Condenser	$60.00

7.8.7 Compressor Head Cooling Fan - Shaded Pole to Electronically Commutated Motor (ECM)

Requirements and Specifications

An electronically commutated motor (ECM) is a fractional horsepower direct current (DC) motor often used in commercial refrigeration applications such as display cases, walk-in coolers/freezers, refrigerated vending machines, and bottle coolers. This measure is for the replacement of existing shaded pole, compressor head-cooling fan motors with electronically commutated motors (ECMs). This measure only applies to low temperature reciprocating compressor systems that are an integral part of a refrigeration system with a remote air cooled or evaporative condenser.

This UES refrigeration measure is available for use outside of the ESG program.

Pre-retrofit requirements: A shaded pole motor with an air cooled or evaporative condenser requiring 35-55 Watts.

Post-retrofit requirements: An ECM motor that requires 20 Watts 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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name, model number and rated power consumption.			X

Payment

BPA shall pay $62.00 per motor.

7.8.8 Walk-in or Display Case Evaporator Fan Motor – Shaded Pole to Electronically Commutated Motor (ECM)

Requirements and Specifications

This measure is for existing shaded pole evaporator fan motors in refrigerated reach-in display cases, walk-in coolers, and walk-in freezers that are replaced by electronically commutated motors or ECMs. Though this measure does not apply to motors with fans less than 10″ in diameter on walk-in coolers and freezers, there is no restriction for the fan size on refrigerated display cases. This UES refrigeration measure is available for use outside of the ESG program.

Pre-retrofit requirements: Shaded pole motors in refrigerated display cases, walk-in coolers and freezers.

Post-retrofit requirements: Refrigeration system shaded pole evaporator fan motors that are replaced with electronically commutated motors (ECM).

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name, model number and rated power consumption.			X

Payment

APPLICATION	PAYMENT (PER ECM MOTOR)
Display Case: Shaded Pole to ECM	$55.00
Walk-in Cooler or Freezer, ECM Motor Rating <= 23 W; Shaded pole to ECM	$140.00
Walk-in Cooler or Freezer, ECM Motor Rating > 23 W: Shaded pole to ECM	$140.00

7.8.9 Walk-in Evaporator ECM Fan Speed Control – Constant to Variable

Requirements and Specifications

This UES measure is for the installation of controls that reduce energy consumption of evaporator fan motors in walk-in coolers and freezers. The control reduces fan speed when there is no refrigerant being delivered to the evaporator. This UES refrigeration measure is available for use outside of the ESG program.

- Pre-retrofit requirements:
  - Electronically Commutated Motor (ECM)
  - Evaporator fan motor size (nameplate rated output power) > 23 Watts
  - Evaporator fan full speed runtime: full speed 24hrs/day except if off for defrost periods
  - Evaporator fan full speed: 1,550 RPM

- Post-retrofit requirements:
  - Electronically Commutated Motor (ECM)
  - Evaporator fan full speed runtime: full speed only during call for cooling (compressor on or liquid-line solenoid open)
  - Evaporator fan full speed: 1,550 RPM
  - Evaporator fan low speed: 500-600RPM
    - Alternative to low speed: On/Off Cycling. During periods when there is no refrigerant being delivered to the evaporator, eligible controllers may cycle the fans off only if they turn the fans on periodically during that time to circulate air in the walk-in (not more than 1 minute every 8 minutes or 13% of time).
  - On walk-in refrigeration circuits served by multiplex systems, liquid-line solenoid is required for adequate control; multiplex systems without liquid-line solenoid on the walk-in circuit are not eligible at this time.

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name and model number.			X

Payment

MEASURE CATEGORY	SPECIFICATION	PAYMENT
Coolers	1 motor per controller	$35.00
	2 or more motors per controller	$35.00
Freezers	1 or 2 motors per controller	$35.00
	3 or more motors per controller	$35.00

7.8.10 Door Gasket Replacement for Walk-in and Reach-in Coolers and Freezers

Requirements and Specifications

This measure is for the replacement of door gaskets in walk-in and reach-in coolers and freezers in retail food sales businesses. This measure applies to main insulated solid door(s) of walk-in coolers or freezers that open to ambient temperatures. This also applies to the replacement of gaskets in standard size reach-in glass or solid door(s) of freezer or cooler display cases. This UES refrigeration measure is available for use outside of the ESG program.

- Pre-retrofit requirements: A worn or damaged gasket and/or door sweep with degradation sufficient to create an air gap or leak that is equal to or greater than 6 inches in length.
- Post-retrofit requirements: Replacement gasket and/or door sweep must meet the manufacturer's specifications regarding dimensions, materials, attachment method, style, compression, and magnetism.
- Under-counter half-coolers, freezers, or beverage merchandisers do not qualify for rebates.

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name and model number.			X

Payment

APPLICATION	PAYMENT (PER ECM MOTOR)
Door Gaskets - Walk-In Cooler	$25.00
Door Gaskets - Walk-In Freezer	$65.00
Door Gaskets - Reach-In Cooler	$25.00
Door Gaskets - Reach-In Freezer	$40.00

7.8.11 Strip Curtains for Walk-in Coolers and Freezers

Requirements and Specifications

Strip curtains and plastic doors on walk-ins keep cool air from escaping, and warm air from entering the unit. This measure is for the installation of new strip curtains or plastic swinging doors on qualifying walk-in cooler and freezer doorways. Eligible applications include grocery walk-in freezers and coolers; convenience store walk-in freezers, and restaurant walk-in freezers where there are no existing curtains or plastic doors. This UES refrigeration measure is available for use outside of the ESG program.

Pre-retrofit requirements: No strip curtains installed inside of a walk-in.

Post-retrofit requirements: Strip curtains or swinging doors ≥0.06 inches thick. Low temperature strip curtains or doors must be used on low temperature applications.

The following applications will not apply:

- Walk-in freezers located inside of walk-in coolers,
- Walk-in coolers in restaurants, drug or convenience stores,
- Replacement of existing strip curtains, or
- Application of strip curtains on display cases

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		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
Product Specification Sheet (also referred to as cut-sheet) documenting product name and model number.			X

Payment

MEASURE	PAYMENT (PER SQUARE FOOT OF DOORWAY)
Strip Curtains	$9.00

7.9 COMMERCIAL KITCHEN AND FOOD SERVICE EQUIPMENT

BPA pays for a suite of high-efficiency commercial kitchen and food service electric equipment, including steamers, hot food holding cabinets, combination ovens, convection ovens, fryers and pre-rinse spray wash valves. All equipment must be new.

7.9.1 Demand Controlled Kitchen Ventilation (BPA Qualified)

Requirements and Specifications

Demand Controlled Kitchen Ventilation (DCKV) reduces fan speed during times of low activity or demand. Qualifying applications include new and modified existing exhaust hoods and the associated make-up air units installed in commercial zones that meet the following requirements:

- Installed in zones that contain a kitchen
- Control the primary ventilation and make-up air units in the zone
- Utilize one or more control sensors to modify the fan speeds

Required Documents

Demand Controlled Kitchen Ventilation Form

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Window Retrofits (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

DCKV	DCKV CONTROL SENSORS	PAYMENT/ HORSEPOWER OF FAN
New or Retrofit	One	$200.00
New or Retrofit	Multiple	$400.00

7.9.2 Electric Commercial Steam Cookers

Requirements and Specifications

Measures must meet ENERGY STAR v2.0 requirements.

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.)			X

Payment

SIZE	PAYMENT
3 pan, 4 pan, 5 pan, or 6 pan	$50.00
10 pan	$200.00

7.9.3 Hot Food Holding Cabinets

Requirements and Specifications

Measures must meet ENERGY STAR v1.2 requirements.

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.)			X

Payment

SIZE	PAYMENT
Half	$75.00
Full	$200.00

7.9.4 Electric Combination Ovens

Requirements and Specifications

Measures must meet ENERGY STAR v2.0 requirements, and oven capacity must be between 6 and 20 pans.

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.)			X

Payment

BPA shall pay $500.00 per oven. Note that there are two measures for Combination Ovens: one for 6–15 pan ovens and one for 16-20 pan ovens.

7.9.5 Electric Convection Ovens

Requirements and Specifications

Measures must meet ENERGY STAR v2.0 requirements.

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.)			X

Payment

BPA shall pay $300.00 per oven.

7.9.6 Commercial Electric Fryers (BPA Qualified)

Requirements and Specifications

Measures must meet ENERGY STAR v2.0 requirements and be new.

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.)			X

Payment

BPA shall pay $300.00 per fryer.

7.9.7 Pre-rinse Spray Wash Valves

Requirements and Specifications

The measure must be installed in a dishwashing facility and covers valves up to one gallon per minute. The existing spray valve must be regularly

used every day of business. The spray valve must use hot water heated with an electric water heater. The measure requires direct installation (per the Measure Distribution Processes section in the Multi-Sector chapter) of a new nozzle.

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 of the IM.			X

Payment

BPA shall pay $100.00 per spray valve.

7.10 ADDITIONAL UES OFFERINGS

BPA pays customers for computer power management solutions and certain efficient commercial appliances and is developing additional UES measures.

7.10.1 Networked Computer Power Management

Basis for Savings

The base case used to calculate energy savings for Networked Computer Power management software are computer work stations that remain on even when not in use. Network administrators have resisted computer power management, because they need computers to be on for automatic software updates and backups. The efficient case installs Networked Computer Power management software, which offers a variety of features to remotely and automatically turn off computer work stations when not in use, while also allowing network administrators to remotely turn on work stations for updates and backups.

Requirements and Specifications

Networked Computer Power Management software is eligible for both desktop and laptop workstations in commercial spaces and must be capable of 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. Cause a workstation's power-energy saving mode to be remotely enabled or disabled for central distribution of software updates (e.g., wake on LAN capability);
3. Monitor disk and central processing unit activity to determine whether a workstation is idle; and
4. Apply specific power management policies to network groups.
5. 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

Payment

BPA shall pay $10.00 per workstation (i.e., CPU and all connected computer monitors).

7.10.2 ENERGY STAR Commercial Clothes Washers - Laundromats

Requirements and Specifications

The clothes washer must be ENERGY STAR and installed in a laundromat.

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.)			X

Payment

MEASURE NAME	PAYMENT
Clothes Washers ENERGY STAR Electric Water Heater/Electric Dryer Laundromat	$125.00
Clothes Washers ENERGY STAR Electric Water Heater/Gas Dryer Laundromat	$100.00
Clothes Washers ENERGY STAR Gas Water Heater/Electric Dryer Laundromat	$75.00
Clothes Washers ENERGY STAR Gas Water Heater/Gas Dryer Laundromat	$25.00

7.10.3 Smart Power Strips - Load Sensing

Basis for Savings

The base case used to calculate energy savings for Smart Power Strips are plug-loads that remain on even when not in use. For example, peripheral plug-loads, such as printers, copiers, task lights and phone battery chargers, are regularly left on, and draw power even when not in use. The efficient case installs Smart Power Strips, which automatically turn off power to peripheral plug loads, as well as a variety of other features. Energy savings assume Smart Power Strips are used in accordance with the manufacturer's instructions.

Requirements and Specifications

Smart Power Strips must be distributed via Direct Install or By Request per the Measure Distribution Processes section in the Multi-Sector chapter and must be installed in a commercial office setting and automatically switch off power to peripheral plug loads, while preventing false switching through the use of resistor-capacitor circuit filters or equivalent

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
See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements			X

Payment

BPA shall pay $15.00 per Smart Power Strip.

7.10.4 Commercial Showerheads

Requirements and Specifications

The showerhead must have a rated flow rate at 2.0 gallons (or fewer) per minute 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 or By Request 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
See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements.			X

Payment

MEASURE NAME	PAYMENT
Showerheads, 1.5-2.0 Gallons Per Minute, Mail by Request	$8.00
Showerheads, 1.5-2.0 Gallons Per Minute, Direct Install	$11.00

7.11 COMMERCIAL NEW CONSTRUCTION

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

7.11.1 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 or Major Renovation	> 200,000 kWh/yr	International Performance Measurement and Verification Protocol Option D: Calibrated Model Simulation
	< 200,000 kWh/yr	BPA Protocols: • Energy Modeling • End Use Metering • Energy Use Indexing (EUI) • Energy Calculations with Verification (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

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

7.12 MULTI-SECTOR OPPORTUNITIES

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

- Processes
- Measures and Initiatives

1. Green Motors Rewind Initiative
2. Non-Residential Lighting Program
3. Generator Block Heaters
4. Vehicle Block Heater Controls
5. Limited Availability Emerging Technology Field Test Projects
6. Variable Frequency Drives in Small Compressed Air Systems
7. ENERGY STAR Commercial Clothes Washers - Multifamily Common Areas
8. Multifamily, Multi-Sector Measures

Section 8: 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 section under which they are offered. Customers must report new projects under "federal," and customers, rather than BPA, must provide incentive payments to end users.

Section 9: Industrial Sector

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Please check the changes and corrections summary to see if revisions were made to any of the measures in this sector.

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.

9.1 PAYMENT SUMMARY*

PROGRAM COMPONENT OR MEASURE	PAYMENT
Custom Projects	See the custom projects payment table.
Energy Management	
Energy Project Manager	See the payment section of this offering.
Strategic Energy Management Projects	See the payment section of this offering.
Limited Availability Small Industrial High Performance Energy Management	See the payment section of this offering.
Trade Ally Delivered Small Industrial Measures	See the custom projects payment table.
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	
Green Motors Rewind Initiative	$2.00/hp
Non-Residential Lighting Program	See the lighting calculators.
Engine Block Heaters	$200.00-$1,500.00/unit
Limited Availability Emerging Technology Demonstration Field Test Projects	See the custom projects payment table.
Variable Frequency Drives in Small Compressed Air System	See the custom projects payment table.

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

! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

9.2 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.

9.3 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 (ESIP) and offered the following program components:

- Industrial Custom Projects
- Energy Management: Energy Project Managers; Strategic Energy Management; and Limited Availability Small Industrial Strategic Energy Management
- Trade Ally Delivered Small Industrial Measures
- Northwest Trade Ally Network (Non-Residential Lighting Program)
- 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 acknowledgment to the customer documenting the decisions made during the meeting.

ESI Partner (ESIP): An ESIP (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 ESIP engagement, but, generally, the ESIP 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: 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.

Supporting Content

Non-Residential Lighting Program

COTR Request & Acknowledgment Procedure

CUSTOM PROJECT PROCESS STEP	RESPONSIBLE PARTY	
	OPTION 1	OPTION 2
Develop M&V Plan.	ESIP, TSP or Customer	ESIP, TSP or Customer
Prepare Option 1 custom project proposal documents (optional).	ESIP or Customer	n/a
Submit Option 1 custom project proposal documents (optional).	Customer	n/a
Review Option 1 custom project proposal documents, if submitted.	BPA ESI Engineer, ESI program partner Quality Control Engineer and COTR	n/a
Provide technical advice to customer.	ESIP	ESIP
Develop custom project results data.	ESIP, TSP or Customer	ESIP, TSP or Customer
Prepare custom project completion documentation.	ESIP or Customer	ESIP 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

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

9.3.1 Strategic Energy Management (Optional Energy Management Feature)

Strategic Energy Management (SEM) is a component composed of (1) the Energy Project Manager, (2) SEM Projects (formerly known as Track and Tune Projects and High Performance Energy Management), and (3) Limited Availability Small Industrial Strategic Energy Management (formerly Small Industrial High Performance Energy Management).

Required documents to be submitted by customer to BPA in support of ESI Energy Management projects must be sent in an e-mail (secure link from the online ESI Secure File Share) to eedocs@bpa.gov or fax 1-866-535-7955.

Required Documents

EPM Calculator

ESI Secure File Share

9.3.1.1 Energy Project Manager

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 SEM projects and UES lighting at the end users' facilities. A customer may request EPM co-fund approval by contacting BPA (e-mail eedocs@bpa.gov or 1-866-535-7955). The customer must send an email (a secure link from the ESI Secure File Share to eedocs@bpa.gov with the 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 to BPA by email eedocs@bpa.gov the executed EPM agreement, (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., SEM and UES lighting). 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 by e-mail eedocs@bpa.gov the EPM Comprehensive Plan (available in the Document Library) to the customer and BPA. 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[21]), if known.[22]

    iv. Itemized summary of planned electrical energy efficiency

[21]EPM training costs must be pre-approved by BPA 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 BPA. BPA will not pay customers for EPM time in a custom or SEM project if it was included in the EPM Comprehensive Plan.

[22]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 BPA acceptance of the final project. Customers may include a performance incentive as a portion of the EPM's salary.

projects (including participation in SEM) 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 SEM.[23]

The EPM must submit either a secure link from ESI Secure File Share or Status Reports to the customer and BPA (e-mail eedocs@bpa.gov) 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 SEM 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 payment calculations.

Upon completion of the EPM Agreement, the customer may elect to extend the agreement for an additional 12-18 months by sending an e-mail request to BPA (eedocs@bpa.gov) including either a secure link from ESI Secure File Share or the subsequent executed EPM 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 ensuing contract period including creating a new EPM Comprehensive Plan.

A customer may send a request to BPA (e-mail eedocs@bpa.gov) for consideration of BPA directly contracting with its end users to provide EPM funding. The request must include the following:

a. 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

b. End-user information (name, address and contact information)

c. 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; $250,000.00; or an amount specified in the EPM agreement.

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 payment 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 paid the end user, the remaining budget will be returned to the customer's ECA implementation budget.

[23] SEM project first year savings and subsequent years' incremental savings may be applied toward the EPM savings goal.

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 (available in the Document Library)	X		X

Payment

To receive payment, 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 payment 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]Payment No. 1 is issued in the first year of an EPM engagement to address initial recruiting and placement costs. In subsequent years of the engagement, the payment schedule begins with Payment No. 2. 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, (c) $250,000.00 or (d) an amount specified within the EPM agreement

9.3.1.2 SEM Projects (Optional Energy Management Feature) Requirements

Requirements

SEM Projects are optional energy management components of the ESI program. SEM is designed to acquire energy savings by improving facilities' energy intensity through custom projects and operations and maintenance improvement. Annual performance incentives are available from BPA for verified savings from the annual Completion Report.

Option 1 and Option 2 customers must follow the M&V requirements

Required Documents

ESI MT&R Reference Guide

SI HPEM Calculator

addressed in the ESI MT&R Reference Guide (available in the Document Library). The tables below describe the requirements for (1) enrollment and staffing, (2) performance period, (3) component implementation, and (4) savings reports.

Enrollment and End-User Staffing

To enroll in the SEM components, a customer must meet these enrollment requirements and ensure end-user staffing requirements have also been met, as outlined below.

ACTIVITY	REQUIREMENT
Enroll	Send an e-mail request to BPA (eedocs@bpa.gov)
End-User Appoint Energy Champion	The Energy Champion is a key contact person for the energy management continuous improvement process and implements energy efficiency measures.
End-User Appoint Executive Sponsor	The Executive Sponsor is the management level supporter of the energy management system.
End-User Engagement	**Attend Energy Management Training** Classroom and onsite training develops the end user's energy management system. End-users must present their energy efficiency implementation. Training sessions are confidential. Two employees must attend monthly training sessions during the performance period. The length and frequency of the training sessions will vary based on the type of engagement (e.g., formerly HPEM, T&T, ROC and SI HPEM). Or **Implement Action Items** Tune-up site or sub-system through no-cost or low-cost operations and maintenance (O&M) action items.

Performance Period

SEM projects are enrolled in two-year performance periods. The customer may enroll end-users in consecutive performance periods.

	MEASURE LIFE BY YEAR	
	YEAR 1	YEAR 2
Strategic Energy Management	1 year	1 year

Customers will be credited with 100% of the verified energy savings for each reporting year (i.e., Year 1 of the SEM engagement and again for Year 2).

Component Implementation

SEM generates energy savings through project implementation.

ACTIVITY	SEM REQUIREMENTS
Performance Tracking System (PTS)	Follow requirements in the Performance Tracking System (PTS) requirements table.
Energy Management System	Assess current energy management practices (e.g., does end-user track, manage or reduce energy usage?). Establish an energy management policy with goals and an energy team to implement energy efficiency measures.
Implement Energy Efficiency Measures	Use continuous improvement practices (led by the energy team) to identify potential energy efficiency measures, implement energy efficiency measures, and evaluate the energy efficiency measures.

Optional – Performance Tracking System

	PERFORMANCE TRACKING SYSTEM (PTS) – T&T ONLY
Description	The PTS is metering hardware and/or electric energy data collection software that 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.
Requirements	1. Collect key process energy performance indicators sufficient to predict energy consumption. 2. Provide data frequently enough to measure changes in energy performance.
PTS Design Approval	Prior to installing the PTS, BPA may approve the PTS to ensure that collected baseline data will sufficiently model baseline energy consumption. BPA approval is optional.
Verification	Prior to beginning tune-up activities, BPA will verify the PTS and collected baseline data sufficiently models baseline energy consumption.

Optional - Tune-Up

	TUNE-UP (OPTIONAL)
Scoping	Energy Champion, with Track and Tune (T&T) Provider (BPA provided, in-house expert, ESIP) must perform scoping study that results in Tune-Up Scoping and Monitoring Plan. The tune-up scoping and monitoring plan includes: 1.An estimate of savings potential 2.Recommendations for energy savings tracking 3.Determination of baseline electrical energy consumption 4.Proposal for follow-up technical services to tune-up the system 5.A secure link from ESI Secure File Share or the Scoping Study to eedocs@bpa.gov
Tune-Up	1. Facilitate a tune-up with the T&T Provider (BPA provided, in-house expert, ESIP, or contracted provider), which generates an Action Plan Report. 2. Action items are low-cost energy savings activities identified and recommended in the T&T Action Plan Report that in aggregate produce cost-effective energy savings. The end user does not have to implement every implementable action item. 3. The Action Plan Report includes: • A summary of the activities and results of the tune-up • A plan to implement specific energy efficiency project action items • A secure link from ESI Secure File Share or the Action Plan Report prepared by T&T Provider to eedocs@bpa.gov.

	TUNE-UP (OPTIONAL)
Action Item Implementation	Upon Action Item completion, the participating end user begins the action item verification period. After the action item verification period, the customer submits either a secure link from ESI Secure File Share or the T&T Completion Report to eedocs@bpa.gov.

Savings Reports

	REQUIREMENT
M&V Protocol	Both Option 1 and Option 2 customers must calculate verified energy savings following the M&V prescribed in the ESI MT&R Reference Guide (available in the Document Library).
	SEM energy savings may not include energy savings from other ESI program components BPA programs (e.g., custom projects or deemed projects).
Performance Period	The SEM performance period starts 1. No earlier than the BPA kick-off workshop, 2. No later than either (a) the first full monthly billing cycle following the kick-off workshop, or (b) when the end user begins action item implementation.
Annual Completion Reports	Customers are required to send either a secure link from ESI Secure File Share or the Annual Completion Report to eedocs@bpa.gov documenting energy usage and unit production over the previous year. Annual Completion Report documents: • Energy usage and unit production over the previous year. • Energy efficiency measures implemented • SEM action items implemented • Optional: SEM implementation costs (invoices).

Documentation Requirements

DOCUMENTATION DESCRIPTION	DUE DATE	RETENTION/SUBMITTAL LOCATIONS		
		BPA ENERGY EFFICIENCY REPORTING SYSTEM	EEDOCS@ BPA.GOV	CUSTOMER FILE
Signed Customer/ End-user Agreement (secure link or file)	Prior to requesting first payment		X	X
PTS design proposal (secure link or file)	Completion of T&T Scoping		X	
PTS installation invoice, design proposal and verification report (secure link or file)	Prior to requesting PTS payment		X	X
Annual Completion Report (secure link)	Prior to annual payments		X	X
SEM Calculator (secure link or file)	Prior to annual payments	X		X
PTS Maintenance Invoice (secure link or file)	Prior to annual payments		X	X

Payment

The customer may invoice BPA when the end user reaches the milestones in the chart below. Use the SEM Calculator (available in the Document Library) to calculate the payment amount.

MILESTONE	PAYMENT
FOR ANY PAYMENT, THE CUSTOMER MAY SET A LOWER THAN ALLOWABLE CAP (I.E., SELECT A PAYMENT SMALLER THAN THE CALCULATED PAYMENT).	
End user purchases and installs PTS	> 4 Million kWh System Baseline Lesser of the following: • Documented PTS costs • $0.0025 per kWh of estimated annual energy consumption • $50,000.00 =< 4 Million kWh System Baseline Lesser of the following: • Documented PTS costs • $10,000.00
BPA Approves Annual Completion Report	Lesser of the following: • Supporting Invoices provided o $0.075 per kWh of verified annual busbar-adjusted energy savings o 70% of documented action item costs • No Invoice o $0.025 per kWh of verified annual busbar-adjusted energy savings
BPA Approves PTS maintenance payment	Lesser of the following: • Documented PTS costs • $10,000.00

9.3.1.3 Limited Availability Small Industrial Strategic Energy Management (Optional Energy Management Pilot Feature)

Basis for Energy Savings

Small Industrial Strategic Energy Management (SI SEM) is limited availability offer designed to help small industrial sites generate electrical energy savings through (a) operations and maintenance (O&M) improvements and, (b) energy behavior-based changes, and (c) identification and implementation of custom projects. SI SEM energy savings are calculated by site-specific energy models.

BPA may offer a limited availability SI SEM that is designed to help small industrial sites generate electrical energy savings through (a) operations and maintenance (O&M) improvements, (b) behavior-based changes, and (c) identification and implementation of custom projects.

Requirements and Specifications

When offer is active, customers may nominate industrial end users with an annual, connected electric energy load between 1,000,000 kWh and 2.0 aMW by submitting a SI SEM Utility Questionnaire (available in the Document Library) to the ESI program. From the qualifying nominations, the ESI program will work with customers to plan and conduct initial site visits prior to making the final selection of the 10 participants. Final SI SEM participant selection is at BPA's discretion and will be based on:

1. Order nominated (first come, first served)

Required Documents

ESI MT&R Reference Guide

SEM Utility Questionnaire

M&V Engineering Calculations with Verification Protocol for Custom Projects

SI HPEM Calculator

2. End user electric energy load (i.e., seeks a full range of eligible participants)
3. Geographic dispersion (i.e., seeks participants throughout BPA's service territory)
4. End user's readiness for energy management (e.g., stable process, available staff time, and continuous improvement programs)
5. Availability of data needed to model end user's energy consumption

If selected by BPA, a customer may enroll in the offering by sending a request to BPA (e-mail eedocs@bpa.gov or 1-866-535-7955) for enrollment. The customer must sign an SI SEM agreement with the end user and report savings to BPA. The customer will send to BPA (a link from the secure, online ESI SharePoint site by e-mail to eedocs@bpa.gov;) the executed agreement and must demonstrate that the end user will meet the following requirements:

1. The end user must assign a staff member as Energy Champion, the point of contact for SI SEM training. The assigned staff member is expected to complete assigned online SI SEM training and attend at least one year of quarterly BPA SI SEM training webinars.
2. Concurrent with SI SEM training, and over the course of the SI SEM 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:
   a. Establish energy management goals
   b. Implement energy efficiency activities and projects
   c. M&V

Option 1 and Option 2 customers must follow the SI SEM requirements and report savings using one of the SI SEM M&V Plans described below.

1. Top Down M&V Plan (two-year measure life): This M&V plan establishes and maintains an energy use data tracking system with an established baseline, energy use and energy savings and must follow the M&V requirements addressed in the ESI MT&R Reference Guide (available in the Document Library).
2. Bottom Up M&V Plan (one-year measure life): This M&V plan tracks and reviews indicators of improvement made to reduce energy usage. It applies short-term measurements of key performance indicators to calculate energy savings of discrete O&M improvement measures by using the BPA M&V Engineering Calculations with Verification Protocol (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
Executed SI SEM agreement between customer and end user (secure link or file)		X	X
SI SEM Completion Report (secure link or file)		X	X
SI SEM Calculator (available in the Document Library)	X		X

Payment

To receive payment, the customer must invoice BPA upon the end user reaching the milestones in the chart below. Use the SI SEM Calculator (available in the Document Library) to calculate the Year 1 payment amount.

FUNDING PERIOD	M&V PLAN	FUNDING AMOUNT	MILESTONE
Year 1	Top Down M&V Plan	Not to exceed $0.025 per kWh of BPA verified MT&R energy savings for previous year*	End user completes SI SEM training, implements a continuous improvement process program for energy management and BPA receives and approves annual SI SEM Completion Report.
	Bottom Up M&V Plan	Not to exceed $0.025 per kWh of BPA verified energy savings for previous year*	End user completes SI SEM training, implements a continuous improvement process program for energy management and BPA receives and approves annual SI SEM Completion Report.
Year 2	Top Down M&V Plan	Not to exceed $1,000*	BPA approves customer submission of end-user model data (production and consumption)
	Bottom Up M&V Plan	n/a	n/a

*Customers may choose a funding amount up to the amounts listed.

9.3.2 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 ESIP is closely involved with Small Industrial Measures.

Documentation Requirements

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

9.3.3 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.

Required Documents

EPM Calculator

ESI Secure File Share

ESI MT&R Reference Guide

HPEM Calculator

T&T Calculator

Payment

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

9.3.4 Variable Frequency Drives (VFD) for Fans in Spud and Onion Storage Facilities

Basis for Energy Savings

The base case used to calculate this measure is a fixed speed fan that is used to blow air at 100% airflow, all year round. The efficient case would have a variable speed drive to better match the airflow necessary for winter season performance.

Requirements and Specifications

Ventilation fan VFD installations in spud and onion storage facilities have a UES of 1,193 kWh per hp. BPA recommends that all new VFD installations meet the IEEE 519 standard.

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 (e.g., field location, meter number, GPS coordinates, farm name, or legal property description)	X		X
Equipment/contractor invoice is to include: manufacturer, model number, type or size of equipment or product installed/used, quantity, order/purchase date, and cost.			X

Payment

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

9.4 MULTI-SECTOR OPPORTUNITIES

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

- Processes
- Measures and Initiatives

1. Green Motors Rewind Initiative
2. Non-Residential Lighting Program
3. Generator Block Heaters
4. Vehicle Block Heater Controls
5. Limited Availability Emerging Technology Field Test Projects
6. Variable Frequency Drives in Small Compressed Air Systems
7. ENERGY STAR Commercial Clothes Washers - Multifamily Common Areas
8. Multifamily, Multi-Sector Measures

Section 10: Residential Sector

Please check the changes and corrections summary to see if revisions were made to any of the measures in this sector.

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 four stories or more above ground and all common areas within multifamily housing are considered commercial.)

**Installations of High Intensity Discharge lighting in residential settings must be reported as commercial sector. See the Non-Residential Lighting Program.*

10.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Lighting	
ENERGY STAR CFLs	$0.75-$5.50/CFL
ENERGY STAR CFL Fixtures	$10.00/fixture
ENERGY STAR Linear Fixtures	$5.00-$15.00
LED Bulbs	$4.00-$6.00/LED
LED Fixtures	$ 5.00-15.00/fixture
Showerheads, *Simple Steps*, and Advanced Power Strips	
Showerheads	$12.00-$20.00/unit
BPA *Simple Steps*, *Smart Savings* Retail Promotion	See the payment section of this measure.
Advanced Power Strips	$40.00-$60.00/unit
Appliances (New)	
ENERGY STAR Refrigerators	$5.00-$30.00/refrigerator
ENERGY STAR Freezers	$15.00/freezer
ENERGY STAR Clothes Washers	$20.00-$60.00/washer
ENERGY STAR Clothes Dryers	$25.00/washer
Refrigeration	
Refrigerator and Freezer Decommissioning	$80.00/unit
Electric Water Heating	
Heat Pump Water Heaters	$300.00-$500.00/water heater

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! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

10.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Pipe Insulation	$5.00-$25.00/unit
HVAC Measures	
Ductless Heat Pumps	$800.00-$1,200.00/unit
Ducted Systems	See the payment section of this measure.
Electronic Thermostats	
Line Voltage Electronic Thermostats	$115.00-$160.00/home
New Construction	
New ENERGY STAR Manufactured Homes	$850.00-$1,450.00/home
New HIGH PERFORMANCE Manufactured Homes	$4,500.00/home
New ENERGY STAR/Built Green Single-family Homes	See the payment section of this measure.
Montana House (v 2.0)	See the payment section of this measure.
New Multifamily Construction	$200.00-$500.00/unit
Weatherization (Standard Income)	
Insulation	See the UES Measure List in the Document Library.
Prime Window and Patio Door Replacement	$2.00-$8.00/square foot
Insulated Exterior Doors	$40.00/door
Whole House Air Sealing and Testing	See the UES Measure List in the Document Library.
Weatherization (Low-Income)	
Low-income Weatherization, Ductless Heat Pumps and Duct Sealing	See the payment section of this measure.
Custom Projects	
Residential Custom Projects	See the custom projects payment table.
Multi-Sector Measures	
Multifamily, Multi-Sector Measures	See the measure specific section.

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

10.2 LIGHTING

10.2.1 ENERGY STAR CFLs and Fixtures

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for the current BPA Residential CFL measures is an estimate of the current state of residential lighting using a) the RBSA (which identifies the socket saturation of efficient lighting by both low use locations and moderate/high use locations) or b) through actual observance (Direct Install only). The base case for CFLs factors in current socket saturation and EISA compliance and uses a weighted average of incandescent and halogen lamps, except in the case of Direct Install.

Savings estimates also include deductions for the storage factor, HVAC interactions and assumptions on Hours of Use. The storage factor attempts to predict if any bulbs went into storage rather than into an available socket (i.e. Direct Install has no storage factor, Retail has a low storage factor, By Request or mailed Non-request have the highest storage factors). HVAC interaction accounts for the increased heating load requirement from more efficient bulbs that produce less heat. Hours of Use are estimates taken from a California study conducted by KEMA.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

These measures are available for all types of residential buildings (single-family, manufactured and multifamily).

Compact Fluorescent Lamps (CFLs) and fixtures must be more than 5 watts, ENERGY STAR qualified; installed in a residential building 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).

General purpose and specialty CFLs are both eligible. Specialty CFLs are defined as the following screw-base bulbs: decorative and minibase; three-way; reflector; and outdoor CFLs. *Note: T-2s, A-lamps and dimmable CFLs are general purpose, not specialty.*

Linear fluorescent fixtures must be Energy Star Qualified High Performance T8 with a minimum ballast efficacy factor as shown in the table below. Qualified fixtures may be found on the Linear Fluorescent Fixture Qualified Products List in the Document Library.

NUMBER OF LAMPS	MINIMUM BALLAST EFFICACY FACTOR (BEF)
1	3.52
2	1.76
3	1.16
4	0.88

Customers may distribute CFLs and fixtures via: Retail; By Request; Mailed Non-Request (bulbs only, limited to four CFLs per household per fiscal year); or Direct Install per the Measure Distribution Processes section in

Supporting Content

RTF Unit Energy Savings (UES) Measures

Measure Distribution Processes

Required Documents

Linear Fluorescent Fixture Qualified Products List

Lighting Design Lab (LDL) Qualified LED Lamp List

the Multi-Sector chapter. CFLs distributed via Direct Install must replace incandescent or halogen bulbs. Direct Install measures are also categorized by the RTF using the Regional Building Stock Assessment (RBSA) as Exterior, Moderate/High-use interior or Low-use interior.

RBSA ROOMTYPE	RTF CATEGORY
Exterior	Exterior
Bedroom	Moderate and High-use Interior
Dining Room	Moderate and High-use Interior
Family Room	Moderate and High-use Interior
Garage	Moderate and High-use Interior
Kitchen	Moderate and High-use Interior
Laundry Room	Moderate and High-use Interior
Living Room	Moderate and High-use Interior
Master Bedroom	Moderate and High-use Interior
Bathroom	Low-use Interior
Closet	Low-use Interior
Hall	Low-use Interior
Office	Low-use Interior
Other	Low-use Interior

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.)			X
See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements.			X

Payment

TYPE	RETAIL	BY REQUEST	MAILED NON-REQUEST	DIRECT INSTALL
General Purpose CFLs (includes dimmables & globes)	$0.75	$2.50	$2.50	$4.00
Specialty CFLs: (Decorative and minibase; reflector & outdoor, and three-way CFLs)	$2.25	$4.00	$4.00	$5.50
ENERGY STAR CFL Fixture	$10.00	$10.00	n/a	$10.00
ENERGY STAR Linear fluorescent fixture 1 lamp	$5.00	n/a	n/a	n/a
ENERGY STAR Linear fluorescent fixture 2 lamp	$7.00	n/a	n/a	n/a
ENERGY STAR Linear fluorescent fixture 3 lamp	$10.00	n/a	n/a	n/a
ENERGY STAR Linear fluorescent fixture 4 lamp	$15.00	n/a	n/a	n/a

Additional Information

Measures that can be distributed "By Request" may be distributed at events such as trade shows, annual meetings, or community events after asking attendees a question such as "would you like to try an efficient CFL or LED?" By Request may also be used to supplement Direct Install if there are fixtures that an installer is unable to retrofit with an efficient bulb (i.e. antique lamp, etc.).

The New Linear fluorescent fixture measures are currently available only for "Retail". Other delivery mechanisms are expected to be developed by the RTF in the next update to residential lighting measures.

10.2.2 ENERGY STAR Solid-State Lighting/Light Emitting Diodes Bulbs and Fixtures

Supporting Content

Measure Distribution Processes

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for the current BPA Residential LED bulb measures is an estimate of the current state of residential lighting using a) the RBSA (which identifies the socket saturation of efficient lighting by both low use locations and moderate/high use locations) or b) through actual observance (Direct Install only). The base case for LEDs factors in current socket saturation and EISA compliance and uses a weighted average of incandescent, halogen and CFL bulbs, except in the case of Direct Install.

Savings estimates also include deductions for the storage factor, HVAC interactions and assumptions on Hours of Use. The storage factor attempts to predict if any bulbs went into storage rather than into an available socket (i.e. Direct Install has no storage factor, Retail has a low storage factor, By Request or mailed Non-request have the highest storage factors). HVAC interaction accounts for the increased heating load requirement from more

efficient bulbs that produce less heat. Hours of Use are estimates taken from a California study conducted by KEMA.

LED Fixture measures are currently BPA qualified measures (to be reviewed by the RTF later in 2015). These fixture measures use a weighted average of the LED bulb lumen bins to create saving estimates until more sales data is available to improve the weighting on these averages. The Hours of Use for LED fixtures employs estimates from the 2011 RBSA metering sample.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

These measures are available for all types of residential buildings (single-family, manufactured and multifamily).

Solid state lighting, also known as light emitting diodes (LED) bulbs, must be ENERGY STAR qualified or listed on the Lighting Design Lab (LDL) Qualified LED Lamp List as integral omnidirectional, directional or decorative, with corresponding measures on the UES Measure List in the Document Library.

LED bulbs may be distributed via: Retail; By Request; Mailed Non-Request (bulbs only, limited to four LEDs per household per fiscal year) or Direct Install per the Measure Distribution Processes section in the Multi-Sector chapter. LED fixtures[24] may be distributed via Retail only.

Direct Install measures are also categorized by the RTF using the Regional Building Stock Assessment (RBSA) as Exterior, Moderate/High-use interior or Low-use interior.

LED Fixtures must be ENERGY STAR qualified or listed on the Lighting Design Lab (LDL) Qualified LED Lamp List, with corresponding measures on the UES Measure List in the Document Library.

RBSA ROOM TYPE	RTF CATEGORY
Exterior	Exterior
Bedroom	Moderate and High-use Interior
Dining Room	Moderate and High-use Interior
Family Room	Moderate and High-use Interior
Garage	Moderate and High-use Interior
Kitchen	Moderate and High-use Interior
Laundry Room	Moderate and High-use Interior
Living Room	Moderate and High-use Interior
Master Bedroom	Moderate and High-use Interior
Bathroom	Low-use Interior
Closet	Low-use Interior
Hall	Low-use Interior

[24]LED fixtures via other delivery mechanisms are pending development and review by the RTF.

RBSA ROOM TYPE	RTF CATEGORY
Office	Low-use Interior
Other	Low-use Interior

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/Lighting Design Lab 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.)			X
See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements.			X

Payment

TYPE	RETAIL	BY REQUEST	MAILED NON-REQUEST	DIRECT INSTALL
LED Decorative and Minibase*	$4.00	$4.00	$4.00	$6.00
LED General purpose and dimmable, Globe, Three-way (Omnidirectional)*	$4.00	$4.00	$4.00	$6.00
LED Reflectors and Outdoor (Directional, includes R, PAR, BR, MR)*	$4.00	$4.00	$4.00	$6.00
LED Downlight (Retrofit Kit) Kit Fixture	$10.00	n/a	n/a	n/a
LED Decorative Ceiling Flush Mount Fixture	$10.00	n/a	n/a	n/a
LED Track Light Fixture	$5.00	n/a	n/a	n/a
LED Linear Shop Light Fixture	$5.00	n/a	n/a	n/a
LED Linear Flush Mount Fixture	$5.00	n/a	n/a	n/a
LED Exterior Porch Light Fixture	$10.00	n/a	n/a	n/a
LED Exterior Security Fixture	$15.00	n/a	n/a	n/a

* Savings is determined by LED bulb type and lumen categories. See the UES Measure List in the Document Library for details.

Additional Information

Measures that can be distributed "By Request" may be distributed at events such as trade shows, annual meetings, or community events after asking attendees a question such as "would you like to try an efficient LED?" By Request may also be used to supplement Direct Install if there are fixtures that an installer is unable to retrofit with an efficient bulbs (i.e. antique lamp, etc.).

The new LED fixture measures are currently available only for "Retail". Other delivery mechanisms are expected to be developed by the RTF in the next update to residential lighting measures.

10.3 SHOWERHEADS

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for the current BPA Residential showerhead measures is the current federal standard showerhead with a flow rate of 2.5 gpm. Savings from the efficient replacement are based on the nominal flow rates of 2.0, 1.75 and 1.5 gpm showerheads for all types of residences. Savings inputs also include an average for number of persons per residence type, number of showers per day,

Direct Install measures may gain higher savings by identifying the water heater fuel type. For Retail measures, shower type and water heater fuel type are restricted to 'Any' to collapse shower location and water heater fuel type.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

These measures are available for all types of residential buildings (single-family, manufactured and multifamily).

Showerheads must have a gallon per minute (GPM) flow rate of 2.0 or less and may be distributed via Retail, By Request, or Direct Install per the Measure Distribution Processes section in the Multi-Sector chapter.

- Customers claiming the measures for showerheads By Request or Direct Install must document a request by the end user and water heater fuel type.
- Direct Install showerheads are only eligible in homes with electric water heat.
- All showerhead measures are limited to two showerheads per residence.

Supporting Content

Measure Distribution Processes

Measure Distribution Multi-Sector

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 (By Request or Direct Install showerheads)			X
See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements.			X

Payment

MEASURE	RETAIL	BY REQUEST	DIRECT INSTALL
All Showerhead measures	$12.00	$12.00	$20.00

Additional Information

Measures that can be distributed "By Request" may be distributed at events such as trade shows, annual meetings, or community events after asking attendees a question such as "would you like to try an efficient showerhead?" By Request may also be used to supplement Direct Install when an installer is unable to install the showerhead due to tricky plumbing or accessibility constraints.

10.4 BPA SIMPLE STEPS, SMART SAVINGS RETAIL PROMOTION

Basis for Energy Savings

The basis for savings for measures promoted in the *Simple Steps, Smart Savings* promotion is found in each of the measure sections for the corresponding measures.

Requirements and Specifications

The BPA *Simple Steps, Smart Savings* Retail Promotion, is implemented by a third party Simple Steps contractor (the Contractor). Current contact information may be found on the Residential Lighting Web site. The Contractor currently provides regional coordination of the delivery of retail CFLs, LEDs, lighting fixtures, showerheads, appliances and advanced power strips measures and offers bulk purchase, direct mail and Direct Install delivery options.

New retail appliance measures for refrigerators, freezers, clothes washers and electric dryers are now available for use through the Simple Steps Retail promotion. The Retail Sales Allocation Tool is used for allocation of savings to customers.

Supporting Content

Simple Steps, Smart Savings ECA Implementation Budget Release Form

Residential Lighting Web site

COTR Request & Acknowledgment Procedure

Participating customers receive credit for savings achieved in their service territory. Customers may participate by either signing a contract directly with the Contractor 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 the Simple Steps Contractor	• Customers must sign a Promotion Services Agreement with the Contractor and pay the Contractor directly for qualified sales under that agreement. • Interested customers must contact the Contractor, contact information available on the Residential Lighting Website. 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-maileedocs@bpa.gov or fax1-866-535-7955 (1) a completed *Simple Steps, Smart Savings* ECA Implementation Budget Release Form (available in the Document Library) and (2) a sales projection provided by the Contractor. • Customers must commit to a funding period of a minimum of six months, or be approved for participation by the Contractor. The funding period may not exceed the rate period. • BPA will reduce the customer's ECA implementation budget by the allocated amount in the budget release form and will pay the Contractor for program incentives using these funds. • BPA will track savings, and the Contractor will send the customer monthly savings reports. • If actual sales are below the sales projection at the mid-point of the customer's selected funding period, BPA, the Contractor 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 allocated funds have not been spent at the conclusion of the rate period, they will be returned to the customer's 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. • If the Contractor fails to deliver according to its projection, the customer may terminate participation with 30 days notice to BPA using the COTR Request and Acknowledgment Procedure.

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 Simple Steps contractor and copy of invoice for sales in service territory (self-funded customers, only).			X

Payment

Customers are paid according to the established payment levels for ENERGY STAR CFLs, CFL fixtures, LED bulbs, LED fixtures, showerheads and advanced power strips. Retail appliances are paid according to the chart below.

SIMPLE STEPS RETAIL APPLIANCE MEASURES	RETAIL
Any ENERGY STAR Refrigerator (7.75 cubic feet or larger)	$10.00
Refrigerator - CEE Tier 1 (7.75 cubic feet or larger)	$5.00
Refrigerator – CEE Tier 2 (7.75 cubic feet or larger)	$10.00
Refrigerator – CEE Tier 3 (7.75 cubic feet or larger)	$30.00
Any ENERGY STAR Freezer (7.75 cubic feet or larger)	$15.00
Any Front Load ENERGY STAR Clothes Washer Any water heater	$20.00
Any Top Load ENERGY STAR Clothes Washer (IMEF 2.38+) Any water heater	$20.00
Clothes Washer - CEE Tier 1 Any water heater	$20.00
Clothes Washer - CEE Tier 2 Any water heater	$30.00
Clothes Washer - CEE Tier 3 Any water heater	$40.00
Any ENERGY STAR Electric Clothes Dryer Vented/Ventless	$25.00

Additional information

The Simple Steps program results in energy efficiency savings that are distributed among the utility participants using the Retail Sales Allocation Tool (RSAT). Additionally, because the program model requires a commitment to all qualified sales of efficient products in active stores (including those that would be attributed to non-participating utilities) the program also acquires savings from these unclaimed sales. These non-participating/unclaimed sales are then divided among Simple Steps participating utilities at the end of each fiscal year proportionally to their share of Simple Steps kWh and associated cash investment for that fiscal year, (similarly to how NEEA distributes savings to their funders).

To limit volatility in non-participating utility savings while preserving the flexibility of participating in Simple Steps, the retroactive purchase of non-participating/unclaimed sales by a new program participant will be limited to the current quarter within which the customer joins. For more information on joining the program, contact your EER.

10.5 ADVANCED POWER STRIPS

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for the current BPA Residential Advanced Power Strip measures is the estimated annual electric usage of home entertainment centers and their peripheral AV devices, based on three detailed field trials conducted in South Africa, Australia and the U.S. The Australian savings (largest trial) were adjusted to account for demographics and future electronic trends. Efficient case savings includes the reduction of loads from Master/peripheral load sensing strips and Infrared Sensing (IR) strips capable

Supporting Content

Advanced Power Strip Qualified Products List

COTR Request & Acknowledgment Procedure

Measure Distribution Multi-Sector

Required Documents

APS End User Survey

of shutting off power to controlled devices when not in use. Other inputs include the prevalence of different peripherals (DVD, VCR, video games, stereo, speakers, etc.) and each peripherals hours of use.

These measures are currently deemed as Planning measures by the RTF Guidelines, requiring the completion of a Research Plan to provide more data on the inputs.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

This measure is available for all types of residential buildings (single-family, manufactured and multifamily).

The Residential Advanced Power Strip measure is an infrared remote sensing strip that reduces power consumption of home entertainment centers by shutting off power to the main device (television) and controlled peripherals when no infrared remote signal is detected for a predetermined period of time. This measure must be used on home entertainment centers only (TV with any combination of peripherals).

Qualified products are on the Advanced Power Strip Qualified Products List and may be distributed via Retail, By Request, or Direct Install. (If a customer believes a product should be on the list, and is not, it should use the COTR Request and Acknowledgment Procedure to request approval to use the product.)

A qualified Advanced Power Strip must meet the following qualifications:

- Infrared remote sensing
- Consume less than 1W of energy
- One-year warranty and any length warranty for connected devices
- Surge protection to 740 joules
- UL1449 listed
- Rated for 15 amps
- Resettable circuit breaker
- Customers shall deliver a short Advanced Power Strip survey (By Request or Direct Install only) to gather data on this measure to help move it to a proven UES measure. Customers shall deliver the survey or an online hyperlink to the online version of the survey within 30 days of distributing an Advanced Power Strip. A Word version of the APS End User Survey is available in the Document Library and is also available as an APS End User Survey Monkey tool. Contact your EER for more information.

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 for additional requirements.			
Completed end-user surveys received for APS delivered via By Request or Direct Install. This survey is available in the Document Library and is also available as an APS End User Survey Monkey tool.		X	

Payment

MEASURE	RETAIL	BY REQUEST	DIRECT INSTALL
Advanced Power Strip	$40.00	$40.00	$60.00

Additional information

Measures that can be distributed "By Request" may be distributed at events such as trade shows, annual meetings, or community events after asking attendees a question such as "would you like to try an advanced power strip on your home entertainment center?" By Request may also be used to supplement Direct Install when an installer is unable to install the APS due to complicated AV set-ups or accessibility constraints.

10.6 APPLIANCES (NEW)

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for new appliance measures is the average annual energy consumption of appliances meeting the Federal Standard. If a standard has been updated recently, BPA examines the potential prevalence of equipment not meeting the standard remaining in the marketplace. Energy savings is calculated as the difference between the annual energy consumption of the baseline case and the energy efficient case.

Clothes Washers have additional characteristics for saving based on the associated water heater fuel type (for their use of heated water) and dryer fuel type (for the electric savings on drying time). Note: a slight deduction of dryer savings for the very small percentage of more efficient electric dryers was included in the last update to the clothes washer measure.

Clothes Dryers (new) have additional characteristics for the efficient case, depending on the efficiency level of the new equipment from electric resistance to a heat pump dryer and whether the dryer is vented or ventless. The savings for dryers are discounted by the portion of savings assigned to clothes washers.

Supporting Content

Measure Distribution Processes

RTF Unit Energy Savings (UES) Measures

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

These measures are available for all types of residential buildings (single-family, manufactured and multifamily).

- Refrigerators must be ENERGY STAR qualified and 7.75 cubic feet or larger.
- Freezers must be ENERGY STAR qualified and 7.75 cubic feet or larger.
- Clothes Washers must be ENERGY STAR qualified and Top Loaders must have a minimum IMEF of 2.38.
- Clothes Dryers must be electric and ENERGY STAR qualified.

New Retail delivered appliance measures for refrigerators, freezers and clothes washers and dryers have been added as retail measures available to the Simple Steps Retail promotion. The Retail Sales Allocation Tool is used for allocation of these retail savings to customers. See the Simple Steps section for details. See the Measure Distribution Processes section in the Multi-Sector chapter for additional requirements.

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.)			X
Documentation of water heater fuel and clothes dryer fuel (applies to clothes washers only, and when claiming measures with fuel-specific savings) Customers who are able to document the absence of natural gas within their service territory (through a statement or map provided by the public utilities commission or equivalent regulatory body) may claim Clothes Washer electric domestic hot water heater/electric dryer without the verification of water heater or dryer fuel type.			X

Payment

The payment differs for each type of appliance, listed below

APPLIANCE	PAYMENT
Any ENERGY STAR Refrigerator (7.75 cubic feet or larger)	$10.00
Refrigerator – CEE Tier 1 (7.75 cubic feet or larger)	$5.00
Refrigerator – CEE Tier 2 (7.75 cubic feet or larger)	$10.00
Refrigerator – CEE Tier 3 (7.75 cubic feet or larger)	$30.00
Freezers 7.75 cubic feet or greater (7.75 cubic feet or larger)	$15.00
Any Front Load ENERGY STAR Clothes Washer (electric water heater)	$30.00
Any Top Load ENERGY STAR Clothes Washer IMEF 2.38+ (electric water heater)	$30.00
Any Front Load ENERGY STAR Clothes Washer (gas/any water heater)	$20.00
Any Top Load ENERGY STAR Clothes Washer IMEF 2.38+ (gas/any water heater)	$20.00
Clothes Washer – CEE Tier 1 (electric water heater)	$30.00
Clothes Washer - CEE Tier 1 (any water heater)	$20.00
Clothes Washer – CEE Tier 2 (electric water heater)	$50.00
Clothes Washer - CEE Tier 2 (any water heater)	$30.00
Clothes Washer – CEE Tier 3 (electric water heater)	$60.00
Clothes Washer - CEE Tier 3 (any water heater)	$40.00
Any ENERGY STAR Electric Clothes Dryer Vented/Ventless	$25.00

Additional Information

As ENERGY STAR specifications change, BPA will continue to accept pre-existing models that were ENERGY STAR qualified at the time they were manufactured. A copy of the product information insert or packaging that includes the ENERGY STAR logo and the Model number can be used to document qualification.

Current and archived ENERGY STAR qualified appliance lists may be found on the BPA Residential Appliance webpage.

The Any appliance measures assume a weighted average of reported measures. Utilities who report appliances to the tiered measures should not also use the Any measures on the same invoice submitted to BPA. Utilities may switch to the Any measures if reporting to the tier- specific measures delivers little benefit.

10.7 REFRIGERATOR AND FREEZER DECOMMISSIONING

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for Refrigerator and Freezer Decommissioning is an average pre-condition of the pre-existing unit, based on vintage data collected by JACO. The efficient case is a combination of market averages of new units and RBSA data documenting vintages of used units used for replacement. Energy savings for Refrigerator and Freezer Decommissioning is the delta between the pre-existing unit that was recycled and a weighted average of the replacement appliance (new, used, or none).

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

These measures are available for all types of residential buildings (single-family, manufactured and multifamily).

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

Payment

BPA shall pay $80.00 per unit.

10.8 ELECTRIC WATER HEATING

Notice to Expire Measure

Effective October 1, 2015 Residential Electric Storage Water Heater measures have expired.

BPA will pay customers for heat pump water heaters and pipe insulation.

10.8.1 Heat Pump Water Heater (Provisionally Deemed)

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for new Heat Pump Water Heater (HPWH) is the average annual energy consumption of electric water heaters meeting the Federal Standard. If a standard has been updated recently, BPA examines the potential prevalence of equipment not meeting the standard remaining in the marketplace.

Required Documents

HPWH Qualified Products List

Heat Pump Water Heater Form

Support Documents

Installation training

COTR Request & Acknowledgment Procedure

Energy savings is calculated as the difference between the annual energy consumption of the base case and the energy efficient case, the HPWH. Additional factors include draw profiles (water consumption) and interaction with the home HVAC system.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Important Notice: Effective April 1, 2015, BPA will no longer provide payment for AirGenerate and Electrolux Heat Pump Water Heaters. These products have been removed from the HPWH Qualified Product list due to ongoing equipment issues.

These measures are available for new and existing single-family homes and manufactured homes. Savings for multifamily homes has yet to be demonstrated. In existing homes, the HPWH must replace an electric storage water heater.

HPWHs must be (1) listed on BPA's HPWH Qualified Products List and (2) installed, according to manufacturer's specifications. The installer must have received installation training from the manufacturer of the installed HPWH equipment, if available. (If a customer believes a product should be on the list, and is not, it should use the COTR Request and Acknowledgment Procedure to request approval to use the product.)

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		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
Heat Pump Water Heater Form (available in the Document Library)			X

Payment

TIER, TANK SIZE	PAYMENT
Tier 1, 50-75 gallons	$300.00
Tier 1, greater than 75 gallons	$500.00
Tier 2, 50 gallons or greater	$500.00

Additional Information

The RTF recently reviewed savings assumptions associated with ducting HPWH's. There was no savings benefit from ducting Tier 2 HPWH. Because there was no demonstrated savings benefit from ducting, the requirement has been removed. Please refer to manufacturer's installation instructions for guidance on location and recommendations for ducting.

10.8.2 Pipe Insulation (BPA Qualified)

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for Pipe Insulation are both uninsulated hot and cold water pipes connected to an electric water heater. Energy savings is calculated on the reduction of standby losses in the pipes, reducing warm-up times from "cold starts", a reduction in tank thermostat set-point and savings from wastewater treatment resulting from reducing the amount of water wasted from cold starts. Energy savings is provided for two measures, insulating the first 6 feet of both hot and cold water pipes and another for insulating all accessible water pipes.

BPA documentation requirements for this BPA Qualified measure consider these factors.

Requirements and Specifications

This measure is available for all types of residential buildings (single-family, manufactured and multifamily) with an electric water heater. Customers may claim only one measure per project.

Both Short and Whole House insulation measures must meet the following requirements:

- Hot and cold pipes must be insulated with a minimum of R-3 closed cell foam insulation for at least the first three feet past the water heater and if accessible, up to six feet adjacent to the water heater
- Insulation material, any jackets or facing and adhesive (if used) must have a flame spread/smoke density rating in accordance with ASTM E-84
- Pipe insulation must not cover pressure relief values, any handles, safety drain valves or any other safety control device
- All pipe elbows and joints must be mitered to ensure coverage to the same thickness as straight runs
- Pipe insulation must be secured with twine, corrosion resistant wire, or plastic compression ties every 12 inches and within 3 inches of the ends.

For the Whole House insulation measure, insulation must be installed on all accessible hot water pipes. If hot water pipes (trunk and branch lines) are already covered with floor or attic insulation, the project is not eligible.

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, address, and water heater fuel type			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

Payment

APPLICATION	PAYMENT
Short (3-6 foot minimum, hot and cold water pipes)	$5.00
Whole House (trunk lines and all exposed hot water pipe)	$25.00

10.9 HEATING, VENTILATION, AIR CONDITIONING (HVAC)

10.9.1 Ductless Heat Pumps

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for Ductless Heat Pumps (DHP) are Single Family and Manufactured homes with electrical zonal or electric forced air furnace HVAC. The calculation of energy efficiency savings for DHPs utilized multiple runs of the SEEM simulation engine calibrated with results from a study of the performance of DHPs in actual homes, in combination with Prototype House Weightings, to generate heating energy use for baseline and efficient cases for each Heating System Type and Heating Zone within the analysis.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Measures include DHP for homes with zonal electric heat or electric forced air furnace as their primary system. These measures are available for existing single family and manufactured homes. Qualifying applications include the following:

- Single-family residences with zonal electric heat, including hydronic systems
- Single-family residences with electric forced air furnaces, with or without air conditioning
- Manufactured homes with zonal electric heat
- Manufactured homes with electric forced air furnaces, with or without air conditioning

- Ductless heat pumps must be a split system heat pump employing inverter-driven outdoor compressor, with inverter-driven or variable-speed indoor blowers, rated with a minimum of 9.0 HSPF (for single head systems) and 8.0 HSPF (for multi-head systems) and listed on BPA's DHP Qualified Product List. (If a customer believes a product should be on the list, and is not, it should use the COTR Request and Acknowledgment Procedure to request approval to use the product.)
- Ductless heat pumps must be installed, according to manufacturers' specifications and the Best Practices for Installing Ductless Heat Pumps Guide, by a HVAC company who attended a Northwest Ductless Orientation.
- Ducted indoor DHP units do not qualify for payment.

Required Documents

DHP Qualified Product List

Ductless Heat Pump Installation Form

Support Documents

Best Practices for Installing Ductless Heat Pumps

RTF Unit Energy Savings (UES) Measures

COTR Request & Acknowledgment Procedure

- Homes with electric forced air furnaces are eligible for PTCS or Prescriptive Duct Sealing.
- Homes where plug-in electric heaters are the primary heating system in the home qualify for DHP payment. The customer should determine if a weather-related heating signature exists that demonstrates electric resistance heating use.

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		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 Installation Form (or other form(s) that contain the same information) (available in the Document Library)			X

Payment

BUILDING TYPE	EXISTING HEATING SYSTEM TYPE	PAYMENT
Single-family Homes	Zonal electric heat	$800.00
	Electric forced air furnace	$1,200.00
Manufactured Homes	Zonal electric heat	$800.00
	Electric forced air furnace	$1,200.00

10.9.2 HVAC - Ducted Systems

This section covers the following:

- Air Source Heat Pumps & Variable Speed Heat Pumps
- Ground Source Heat Pumps
- Duct Sealing

10.9.2.1 Air Source Heat Pumps and Variable Speed Heat Pumps

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for Air Source Heat Pumps and Variable Speed Heat Pump Upgrades are the heat pumps determined by RTF data to be current practice (8.5 HSPF and 14.0 SEER). The base case (pre-existing state) for Air Source Heat Pump and Variable Speed Heat Pump Conversions are an electric forced air furnace (with or without central air conditioning). The base case (pre-existing state) for Air Source Heat Pump and Variable Speed Heat Pump Upgrades includes non-electric heating savings represented as a cost savings.

Energy savings are calculated using multiple runs of the calibrated SEEM simulation engine in combination with the Prototype House Weightings

Required Documents

PTCS Program Requirements

PTCS Online Registry

Air Source Heat Pump Installation Form

PTCS Heat Pump and Central Air Conditioner Sizing Calculator

Support Documents

Document Library

RTF Unit Energy Savings (UES) Measures

Residential HVAC Website

Air Source Heat Pump Specification

to generate heating energy use for baseline and efficient cases for each Heating System Type and Heating Zone within the analysis, for the efficient case of 9.0 HSPF/14.0 SEER. Savings for the efficient case includes a PTCS installation with commissioning, controls, and sizing.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Measures include PTCS Heat Pump Upgrades; PTCS Heat Pump Conversions; and PTCS Commissioning, Controls and Sizing.

These measures are available for new construction single family, existing construction single family, or existing manufactured homes.

- Air-Source Heat Pump and Variable Speed Heat Pump Upgrades include replacing an existing heat pump, adding a heat pump to a non-electric heating system (i.e., gas/oil/propane/wood), replacing the heat pump portion of a ground source heat pump system, or upgrading from zonal to air-source heat pump.
    - New Heat Pumps (Upgrades or Conversions) must be rated as having a minimum of 9.0 HSPF and 14 SEER and equipment must be AHRI tested and certified. Manufacturer claims of "equivalent to AHRI certified equipment" will not be accepted.
- Air-Source Heat Pump and Variable Speed Heat Pump Conversions must convert an electric forced air furnace to a high efficiency heat pump. When a home is hydronically heated, an electric resistance water heater is considered equivalent to an electric furnace.
    - New Heat Pumps (Upgrades or Conversions) must be rated as having a minimum of 9.0 HSPF and 14 SEER and equipment must be AHRI tested and certified. Manufacturer claims of "equivalent to AHRI certified equipment" will not be accepted.
- Commissioning, Controls and Sizing may be applied to any new heat pump that meets the federal minimum standards. This measure can not be claimed in combination with any other heat pump measure.
- PTCS work must be performed by a technician certified in PTCS, or an approved alternative (listed in the PTCS Program Requirements) and the technician must be PTCS certified in the online site registry.
- Air Source and Variable Speed Heat Pumps must be installed according to the PTCS Air Source Heat Pump Installation Specification dated June 11, 2013 available in the Document Library.
- All eligible installations must be entered in the online site registry.

PTCS forms and specifications are available in the Document Library and on the BPA Residential HVAC webpage.

Homes with heated floor area greater than 4,500 square feet or with two separate duct systems may claim up to two heat pump measures when two qualifying heat pumps are installed provided all other program requirements are met.

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	X		X
PTCS site registry measure ID	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 form(s) for the claimed measure have been accepted in the PTCS site registry of certified systems		X	

Heat Pump forms / certificates (available in the Document Library)
• PTCS Air Source Heat Pump Form (handwritten form completed by the technician);
• AHRI Certificate; and
• Technician documentation used to determine size of heat pump per PTCS specifications, by submitting either:
  • Both "heating load/heat loss calculations", and a "balance point worksheet," or
  • "PTCS Heat Pump and Central Air Conditioner Sizing Calculator"
			X

Payment

MEASURE CATEGORY	PAYMENT
Heat Pump Upgrade to Air-Source or Variable Speed Heat Pump	$500.00
Conversion from Electric Forced-Air Furnace to Air-Source or Variable Speed Heat Pump	$1,400.00
Commissioning, Controls and Sizing	$300.00

Additional Information

PTCS Air Source and Variable Speed Heat Pumps are subject to Quality Assurance oversight by a BPA-approved Quality Assurance Inspector. The PTCS Air Source and Variable Speed Heat Pump specifications require the PTCS technician to provide (and utilities to keep on file) the Technician's documentation of sizing calculations (e.g., Both the "Heating Load/Heat Loss calculations", and "Balance Point Worksheet," or "PTCS Heat Pump and Central Air Conditioner Sizing Calculator"). Installations lacking this information will fail to pass their Quality Assurance inspection.

10.9.2.2 Ground Source Heat Pumps

Basis for Energy Savings

The base case (pre-existing state) used to calculate energy efficiency savings for Ground Source Heat Pump Upgrades are the heat pumps determined by RTF data to be current practice (8.5 HSPF and 14.0 SEER). The base cases (pre-existing state) for Ground Source Heat Pump Conversions are an electric forced air furnace (with or without central air conditioning).

Energy savings is calculated using multiple runs of the calibrated SEEM simulation engine in combination with the Prototype House Weightings to generate heating energy use for baseline and efficient cases for each Heating System Type and Heating Zone within the analysis, for the efficient case of an ENERGY STAR Ground Source Heat Pump. Additional savings is added in the case of a DeSuperheater. Savings for the efficient case includes a PTCS and IGSHPA installation with commissioning, controls, and sizing.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Measures include PTCS Ground Source Heat Pump Upgrades or Conversions with or without a Desuperheater.

These measures are available for new construction single-family and existing single-family in Heating Zones 2 and 3 only.

For new construction homes, the baseline is considered to be an electric forced air furnace.

- For existing homes, only ground source heat pumps replacing an electric forced air furnace, an electric boiler used for hydronic heating, or an air source heat pump qualify.
- Projects which only replace the heat pump portion of an existing ground source heat pump system should be claimed using the Air-Source Heat Pump Upgrade measure (see Air Source Heat Pump Section).
- All system components must be newly installed. The replacement of an existing ground source heat pump unit or the thermal exchange loop does not qualify.
- Ground source 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 and one of the two Ground Source Heat Pump Specifications listed below. All specifications are available in the Document Library and on the BPA Residential HVAC webpage:
    - Closed Loop Ground Source Heat Pumps must be installed according to the "Ground Source Heat Pump System Installation Standards" dated October 4, 2011.
    - Open Loop Ground Source Heat Pumps must be installed according to the "PTCS Ground Water Source Open Loop Heat Pump Installation Specification" dated April 1, 2015.

Required Documents

PTCS Air Source or Ground Source Heat Pump Form

PTCS Commissioned Ground-Water Source Heat Pump Form

Heat Pump Water Heater Form

PTCS Heat Pump and Central Air Conditioner Sizing Calculator

Supporting Content

PTCS Online Registry

RTF Unit Energy Savings (UES) Measures

Residential HVAC Webpage

US DOE Appliance & Equipment Standards

Open and Closed Loop Ground Source Heat Pump Specifications

- Work must be performed by a technician or technicians certified in PTCS (or an approved alternative found in the PTCS Program Requirements) and IGSHPA. (Multiple technicians may be employed to meet these certification requirements, but must have been present during the installation to qualify.
- Only one ground source heat pump per home qualifies for BPA payment. Ground source heat pumps may be connected to hydronic heating systems in residential end-use applications if all PTCS and IGSHPA specifications are met.
- All eligible installations must be entered in the online site registry.

Ground Source Heat Pump forms and specifications are available in the Document Library and on the BPA Residential HVAC webpage.

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	X		X
PTCS site registry measure ID	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 form(s) for the claimed measure have been accepted in the PTCS site registry of certified systems		X	

Heat Pump forms / certificates (available in the Document Library)
• PTCS Ground Source Heat Pump Form (handwritten form completed by the technician);
• AHRI Certificate; and
• Technician documentation used to determine size of heat pump per PTCS specifications, by submitting either:
  • Both the "Heating Load/Heat Loss calculations", and "Balance Point Worksheet," or
  • "PTCS Heat Pump and Central Air Conditioner Sizing Calculator"
			X

Payment

MEASURE CATEGORY	PAYMENT
Ground Source Heat Pump Upgrade or Conversion without DeSuperheater	$3,000.00
Ground Source Heat Pump Upgrade or Conversion with DeSuperheater	$3,500.00

Additional Information

PTCS Ground Source Heat Pumps are subject to Quality Assurance oversight by a BPA-approved Quality Assurance Inspector.

The PTCS Ground Source Heat Pump specifications require the PTCS technician to provide (and utilities to keep on file) the Technician's documentation of sizing calculations (e.g., Both the "Heating Load/Heat Loss calculations", and "Balance Point Worksheet," or "PTCS Heat Pump and Central Air Conditioner Sizing Calculator"). Installations lacking this information will fail to pass their Quality Assurance inspection.

10.9.2.3 Duct Sealing – PTCS or Prescriptive

Basis for Energy Savings

Multiple runs of the calibrated SEEM simulation engine are used in combination with the Prototype House Weightings to generate heating energy use for baseline and efficient cases for each Heating System Type and Heating Zone within the analysis for both PTCS and Prescriptive Duct Sealing measures. Primary Parameters are the key SEEM inputs and factor in differences in average duct leakage to the exterior of the home with variations for basement, crawlspace and/or slab homes as provided by the RBSA.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Measures include PTCS Duct Sealing and Prescriptive Duct Sealing.

- PTCS Duct Sealing measures are available for existing single family homes or existing manufactured homes with ducts that are connected to electric heat.
    - PTCS work must be performed by a technician certified in PTCS, or an approved alternative (listed in the PTCS Program Requirements) and the technician must be PTCS certified in the online site registry.
    - PTCS Duct Sealing measures must be sealed according to the "PTCS Duct Sealing Specification" dated April 1, 2015 available in the Document Library
- Prescriptive Duct Sealing measures are available for existing single family homes or existing manufactured homes with ducts that are connected to electric heat.
    - Prescriptive work must be performed by a technician certified in Prescriptive Duct Sealing, (listed in the Prescriptive Duct Sealing Program Requirements) and the technician must be certified as Prescriptive in the online site registry.
    - Prescriptive Duct Sealing measures must be installed according to the "Prescriptive Duct Sealing Specification" dated April 1, 2015 available in the Document Library
    - All eligible installations must be entered in the online site registry.

PTCS and Prescriptive forms and specifications are available in the Document Library and on the BPA Residential HVAC webpage

Homes with two independent, electrically-heated duct systems may claim up to two duct sealing measures provided all other program requirements are met.

Required Documents

PTCS Duct Sealing Form

Heat Pump Sizing Calculator

Supporting Content

PTCS Online Registry

RTF Unit Energy Savings (UES) Measures

US DOE Appliance & Equipment Standards

PTCS Duct Sealing Specifications

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	X		X
PTCS site registry measure ID	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 form(s) for the claimed measure have been accepted in the PTCS site registry of certified systems		X	
PTCS or Prescriptive Duct Sealing Form (handwritten form completed by the technician) available in the Document Library			X

Payment

MEASURE CATEGORY		PAYMENT
PTCS Duct Sealing	Manufactured homes	$200.00
	Existing single family homes	$250.00
Prescriptive Duct Sealing	Manufactured homes	$200.00
	Existing single family homes	$250.00

Additional Information

PTCS and Prescriptive Duct Sealing are subject to Quality Assurance oversight by a BPA-approved Quality Assurance Inspector.

10.10 LINE-VOLTAGE THERMOSTATS

Basis for Energy Savings

The base case (pre-existing state) is a home with zonal heat (baseboards or wall heaters) with no Line-Voltage Thermostats. The energy savings (per home) for Line-Voltage Thermostats uses a weighted average of heating loads multiplied by a percent reduction assuming an average of 3-5 thermostats will be installed per home. This savings arises from the Line-Voltage Thermostats maintaining temperature closer to the set temperature on the dial (smaller hysteresis) than older, bi-metal thermostats. The hysteresis, also known as deadband, refers to the temperature difference range between a thermostat coming on and shutting off.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

This measure is claimed on a per home or residence basis. 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 according to the current National Electric Code and must meet the following requirements:

- Have a digital display
- Be electronically anticipated
- Have a thermistor temperature sensing element accurate to within 1.5º or better
- Be UL or CSA listed for use with their application (i.e. fan-forced, baseboard, wall or ceiling radiant).

In addition, programmable thermostats must maintain temperature and program settings during power failures and have a temporary override feature.

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

Payment

Payments are per home as listed in the table below:

HEATING ZONE	PAYMENT
1	$115.00
2	$160.00
3	$160.00

10.11 NEW CONSTRUCTION

10.11.1 New ENERGY STAR Manufactured Homes

Basis for Energy Savings

The base case (pre-existing) is a current manufactured home built in the Pacific Northwest that tends to be slightly better than HUD-code. The base case considers individual components including envelope, HVAC,

Supporting Content

RTF Unit Energy Savings (UES) Measures

Simplified Energy Enthalpy Model (SEEM)

lighting, appliances, and water heating. Energy savings for a New ENERGY STAR Manufactured Home is based on multiple analyses using the SEEM simulation engine for baseline and efficient cases for a weighted average of five cities (to represent the NW) based on prototype and heating/cooling system type for single prototype square footage. Output of this analysis is then divided into three heating/cooling zones based on a weighted average of SEEM run results for the five locales. The SEEM model also accounts for interaction with the lighting power reduction of this measure.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

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 and is operated by Northwest Energy Works. Contact Northwest Energy Works (888) 370-3277 ext. 102 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	X		X
NEEM ENERGY STAR certificate of compliance			X

Payment

HEATING ZONE	PAYMENT
1	$850.00
2	$1,150.00
3	$1,450.00

10.11.2 New High Performance Manufactured Homes

Basis for Energy Savings

The base case (pre-existing) is a current manufactured home built in the Pacific Northwest that tends to be slightly better than HUD-code based on a state of the industry report prepared for BPA by Northwest Energy Works. The base case considers individual components including envelope, HVAC, lighting, appliances, and water heating. Energy savings for a New High Performance Manufactured Home is based on multiple analyses using the SEEM simulation engine for baseline and efficient cases for a weighted average of five cities (to represent the NW) based on prototype and heating/cooling system type for single prototype square footage. Output of this analysis is then divided into three heating/cooling zones based on a weighted average of SEEM run results for the five locales. The SEEM

Supporting Content

UES Measure List / IS 2.0

model also accounts for interaction with the lighting power reduction of this measure. Additional savings come from the efficiency gains from the ductless heat pump and the elimination of ducting.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Manufactured homes must be electrically-heated and designed, constructed and certified by NEEM as a new High Performance Manufactured Home.

NEEM has an online tracking and certification system and is operated by Northwest Energy Works. Contact Northwest Energy Works (888) 370-3277 ext. 102 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	X		X
NEEM High Performance Manufactured Home Certificate of compliance			X

Payment

BPA shall pay customers $4,500.00 per home.

10.11.3 New ENERGY STAR/Built Green Single-family Homes

Basis for Energy Savings

The base cased (pre-existing) is a code-minimum home for each state (OR, WA, ID, MT). Energy savings for New ENERGY STAR/Built Green Single-family Homes is based on the upgrades over a code-minimum home modeled through multiple runs with the SEEM simulation engine for baseline and efficient cases (an energy modeling software calibrated to real-world energy consumption). Output from this analysis are then divided into three heating/cooling zones based on a weighted average of SEEM run results for five representative Pacific Northwest locales (cities). The SEEM model also takes into account interaction with lighting and ventilation components and whole-house electrical savings are specific to the home's HVAC system.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

Single-family homes must be new and certified compliant with Northwest ENERGY STAR Homes standards by the state certifying organization or NEEA-approved RESNET Provider. Built Green opportunities must meet Northwest ENERGY STAR Homes standards. Current specifications for options below may be found on the Northwest ENERGY STAR website.

Supporting Content

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) (OR, ID, MT)
- ENERGY STAR Builder Option Package #2 for homes with zonal electric heat (OR, ID, MT)
- The ENERGY STAR Northwest Performance Path using the Northwest REM/Rate Modeling Software (OR, ID, MT, WA)

When the Northwest Performance Path is used to certify a home, the ENERGY STAR Home certificate will indicate the appropriate measure to use for claiming the BPA payment.

Qualifying measures differ by state.

Northwest ENERGY STAR single-family homes may 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
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
WA	Heat Pump	Hybrid "Ductless-Mini-Split" Heat Pump/ Electric Resistance Zonal Heat

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	X		X
Certification label from Northwest ENERGY STAR Provider organization that includes the name of the ENERGY STAR/Built Green home verifier/rater.			X

Payment

BPA shall pay customers as shown in the table below:

HOME TYPE	STATE	SPECIFICATION	PAYMENT/HOME
Northwest ENERGY STAR Homes*	ID, MT, OR, WA	• Zonal Electric Heat, ID, MT, and OR only • DHP/Zonal Electric Heat TCO** • PTCS Heat Pump	$1,500.00
		Gas Heat (electric savings only) ID, MT, and OR only	$200.00

* Built Green 4 Star Homes, in WA, are equivalent to Northwest ENERGY STAR Homes and should be claimed as such.

** Homes built to the DHP/Zonal Electric Heat TCO should be claimed as Heat Pump Home built to Building Option Package 1.

10.11.4 Montana House (v 2.0)

Basis for Energy Savings

The base cased (pre-existing) is a code-minimum home for Montana. Energy savings for the Montana House is based on the upgrades over a code-minimum home based on the Montana House 2 Program Specifications (RTF, 2011) as modeled through multiple runs with the SEEM simulation engine for baseline and efficient cases (an energy modeling software calibrated to real-world energy consumption) for homes with and without basements. SEEM analysis was performed for each foundation type and also takes into account interaction with lighting and ventilation components. Upgrades to HVAC efficiency are additive for the Montana House new construction measures.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

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 in Idaho, Wyoming and Nevada.

Air Source Heat Pump, Variable Speed Heat Pump, Ground Source Heat Pumps (with or without DeSuperheater), Commissioning & Controls, or Duct Sealing may be combined the Shell Upgrade measures for the Montana House. Please see the Ducted Systems section for Requirements and Specifications. Note that the Commissioning, Controls and Sizing measures may not be claimed in combination with any other heat pump measure.

Supporting Content

Montana House Specifications

RTF Unit Energy Savings (UES) Measures

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		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
Documentation requirements for HVAC options per the Ducted Systems section.			X

Payment

BPA shall pay for the Montana House as indicated below. Air Source Heat Pump, Variable Speed Heat Pump, Ground Source Heat Pumps (with or without DeSuperheaters), Commissioning, Controls & Sizing, or Duct Sealing (PTCS or Prescriptive) payments can be combined with the Shell Upgrade payment

MEASURE	PAYMENT
Shell Upgrade only	$1,500.00
PTCS Air-Source Heat Pump (upgrade)	$500.00
PTCS Variable Speed Heat Pump (upgrade)	$500.00
Ground Source Heat Pump (with DeSuperheater)	$3,500.00
Ground Source Heat Pump (without DeSuperheater)	$3,000.00
Commissioning, Controls & Sizing (utility verified)	$300.00
Duct Sealing (PTCS or Prescriptive)	$200.00

Additional Information

To report Montana House with Ground Source Heat Pump customers will need to report those measures separately.

10.11.5 New ENERGY STAR Multifamily Construction

Basis for Energy Savings

The base cased (pre-existing) are code-minimum residential low-rise multifamily for each state as derived from 2009 WSEC or IECC, 2010 OREC code. Energy savings for New ENERGY STAR Multifamily Homes is based on upgrades over these code-minimums modeled through multiple runs with the SEEM simulation engine for baseline and efficient cases (an

Supporting Content

RTF Unit Energy Savings (UES) Measures

Builder Option Package 1

Builder Option Package 2

energy modeling software calibrated to real-world energy consumption). Output from this analysis are then divided into three heating/cooling zones based on a weighted average of SEEM run results for eight representative Pacific Northwest locales (cities). The SEEM model also takes into account interaction with lighting and ventilation components and whole-house electrical savings are specific to the home's HVAC system.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp

Requirements and Specifications

New residential multifamily construction may be made more efficient than code or standard practice per the Northwest Energy Star Homes Multifamily program. The following Builder Option Packages are available in the Document Library.

- The Northwest Multifamily Builder Option Package 1 (NWBOP1 MF) applies to multifamily units with gas heat or an air source, packaged terminal, or ductless mini-split heat pump.
- The Northwest Multifamily Builder Option Package 2 (NWBOP2 MF) applies to multifamily units with zonal electric 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		X
Northwest ENERGY STAR certificate documenting that the building meets or exceeds the ENERGY STAR Multifamily specification described in NW Multifamily BOP 1 or BOP 2			X

Payment

ENERGY STAR MULTIFAMILY SPECIFICATION	HEATING SYSTEM	PAYMENT
NWBOP 1 MF	Gas	$200.00
NWBOP 1 MF	Heat pump*	$500.00
NWBOP 2 MF	Zonal electric	$500.00

*Heat pump includes air-source, ground source, packaged terminal and ductless heat pumps.

10.12 WEATHERIZATION (STANDARD INCOME)

Weatherization measures include insulation, prime window replacement, insulated exterior doors and air sealing. All weatherization measures must be installed according to the 2014 BPA Residential Weatherization Specifications in the Document Library.

Weatherization measures must be installed in electrically heated homes with an electric heating system as the primary system (see definitions); or homes

Supporting Content

Weatherization Measure Changes

Document Library

must have one of the following as an existing heating system:

1. A permanently-installed electric heating system with either (a) no other functioning non-electric heating system or (b) a wood stove, pellet stove, fireplace, fireplace insert (wood or pellet) or wood furnace
2. An electric heat pump system integrated with a non-electric heating system (e.g., natural gas, propane, or wood supplementary/backup system)
3. A wood stove or pellet stove with no other non-electric space heating system, accompanied by the current usage of plug-in electric space heaters
4. An electric heat system and a separate functional or non-functional, non-electric space heating system (i.e. oil, natural gas, or wood furnace) with the entire non-electric space heating system decommissioned, removed, all penetrations sealed, and all fuel (electric, gas, oil) connections to the decommissioned heating system disconnected. System equipment includes furnace, air-handler, fuel lines, fuel tanks (abated in compliance with local code). If, however, construction limitations prevent the removal of the entire non-electric system (or other portions of the space heating equipment), then the remainder of the system must be decommissioned, removed, all penetrations sealed, and all fuel (electric, gas, oil) connections to the decommissioned heating system disconnected.

10.12.1 Insulation

Basis for Energy Savings

The base case (pre-existing state) is defined as a range of R-values for a building component before insulation is installed. The efficient case for Insulation measures are defined as meeting a minimum insulation R-value in that building component. Energy savings for Insulation measures are estimated using SEEM, an energy modeling software calibrated to real-world energy consumption using prototype homes representative of Northwest construction assuming all other weatherization measures have been installed in the home. "Average electric heat" measures are a weighted average of homes with an electric furnace, electric zonal, or a heat pump based on the RBSA. Savings are reduced by the percentage of heat supplied by supplemental fuels for an average home.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp.

Requirements and Specifications

This measure is available for all types of residential buildings (single-family, manufactured and multifamily).

Insulation measures must be installed according to the 2014 BPA Residential Weatherization Specifications found in the Document Library

Supporting Content

Weatherization Measure Changes

Document Library

Interim Solution 2.0 Files - UES Measure List

HOME TYPE	INSULATION	OBSERVED EXISTING INSULATION RANGE	MEASURE STARTING R-VALUE	MEASURE ENDING R-VALUE:
Single Family	Attic	R-0 to R-7	R-0	R-38 or R-49
		R-8 to R-11	R-11	R-38 or R-49
		R-12 to R-19	R-19	R-38 or R-49
		R-20 to R-30	R-30	R-38 or R-49
		R-31 to R-38	R-38	R-49
	Floor	R-0 to R-11*	R-0	R-19, R-25, or R-30
		R-12* to R-19	R-19	R-30
	Wall	No insulation present	R-0	R-11
Manufactured Home	Attic	R-0 to R-11	R-0	R-19 or R-30
		R-12* to R-19	R-19	R-30
	Floor	R-0 to R-7*	R-0	R-11, R-22
		R-8 to R-11*	R-11	R-22
Multifamily	Attic	R-0 to R-11*	R-0	R-19, R-38, or R-49
		R-12* to R-19	R-19	R-38 or R-49
		R-20 to R-38	R-38	R-49
	Floor	R-0 to R-11*	R-0	R-19 or R-30
		R-12* to R-19	R-19	R-30
	Wall	No insulation present	R-0	R-11

*Precondition definitions were modified for consistency across building types, where possible.

* Open cavity or unfinished framed walls (e.g., knee walls in attic spaces) must fill to R-13 minimum. Refer to the Weatherization Specifications 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		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 pre and post insulation R-values and square footage of installed insulation			X
A description of home type (single-family, multifamily or manufactured)			X
A description of primary heating type (electric zonal, electric forced air furnace, air source heat pump, ground/water source heat pump, ductless heat pump)			X

Payment

Payments and busbar energy savings for specific measures are available in the UES Measure List in the Interim Solution 2.0 Files.

Additional Information

Final installed R-values for a reportable measure must meet the required final R-value at a minimum unless a physical barrier prevents the full depth of insulation from being installed.

Manufactured home floors with intact rodent barriers that are fully insulated with blown-in insulation are considered to be R-22.

The RTF is currently analyzing weatherization measures for manufactured and multifamily homes. We anticipate that savings and payments will be reduced similar to the changes in single family measures.

The Any Electric Heat measures assume a weighted average of reported measures. Utilities who report Single Family Insulation to the HVAC-specific measures should not also use the Any Electric measures on the same invoice submitted to BPA. Utilities may switch to Any Electric if reporting to the HVAC specific measures delivers little benefit.

10.12.2 Prime Window and Patio Door Replacement

Basis for Energy Savings

The base case (pre-existing state) is a single pane window with any frame type, or a double-pane window with a metal frame. The efficient case for Prime Window replacement measures is the U-Factor for the efficient replacement window. Energy savings for Prime Window replacement measures are estimated using SEEM, an energy modeling software calibrated to real-world energy consumption using prototype homes representative of Northwest construction assuming all other weatherization measures have been installed in the home. "Average electric heat" measures are a weighted average of homes with an electric furnace, electric zonal, or

Supporting Content

Weatherization Measure Changes

Document Library

a heat pump based on the RBSA. Savings are reduced by the percentage of heat supplied by supplemental fuels for an average home.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp.

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) minimum U-value of 0.30 or 0.22 for windows; 0.35 or 0.30 for patio doors.

Window and patio door measures must be installed according to the 2014 BPA Residential Weatherization Specifications found 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		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 (a) of number and square footage of windows or patio doors replaced (b) pre condition (frame type, ie. wood, metal, single/double pane) and (c) post condition U-value			X
Description of home (single-family, multifamily or manufactured)			X
A description of primary heating type (electric zonal, electric forced air furnace, air source heat pump, ground/water source heat pump, ductless heat pump)			X

Payment

Single-family	Single pane window, any frame type or double pane window, metal frame type	0.30	Any Electric	$3.00
			EFAF*	$4.00
			Zonal/DHP*	$3.00
			Ducted HP*	$2.00
	Single pane patio door, any frame type or double pane patio door, metal frame type	0.35	Any Electric	$3.00
			EFAF*	$4.00
			Zonal/DHP*	$3.00
			Ducted HP*	$2.00
	Single pane window, any frame type or double pane window, metal frame type	0.22	Any Electric	$4.00
			EFAF*	$5.00
			Zonal/DHP*	$4.00
			Ducted HP*	$3.00
	Single pane patio door, any frame type or double pane patio door, metal frame type	0.30	Any Electric	$4.00
			EFAF*	$5.00
			Zonal/DHP*	$4.00
			Ducted HP*	$3.00
Manufactured	Single pane window, any frame type or double pane window, metal frame type	0.30	Any Electric	$3.00
	Single pane patio door, any frame type or double pane patio door, metal frame type	0.35	Any Electric	$3.00
	Single pane window, any frame type or double pane window, metal frame type	0.22	Any Electric	$4.00
	Single pane patio door, any frame type or double pane patio door, metal frame type	0.30	Any Electric	$4.00
Multifamily	Single pane window, any frame type or double pane window, metal frame type	0.30	Any Electric	$6.00
	Single pane patio door, any frame type or double pane patio door, metal frame type	0.35	Any Electric	$6.00
	Single pane window, any frame type or double pane window, metal frame type	0.22	Any Electric	$8.00
	Single pane patio door, any frame type or double pane patio door, metal frame type	0.30	Any Electric	$8.00

Additional Information

The RTF is currently analyzing weatherization measures for manufactured and multifamily homes. We anticipate that savings and payments will be reduced similar to the changes in single family measures.

The Any Electric Heat measures assume a weighted average of reported measures. Utilities who report Single Family Windows to the HVAC-specific measures should not also use the Any Electric measures on the same invoice submitted to BPA. Utilities may switch to Any Electric if reporting to the HVAC specific measures delivers little benefit.

10.12.3 Insulated Exterior Doors (BPA Qualified)

Basis for Energy Savings

The base case (pre-existing state) is a substandard exterior door such as one that does not contain an insulating material or one for which the weather stripping has degraded by at least 50%. The efficient case for an Insulated Exterior Door is a pre-hung ENERGY STAR door. Energy savings comes from the improvement to the building envelope and the reduction of infiltration.

BPA documentation requirements consider these factors for this BPA qualified measure.

Requirements and Specifications

This measure is available for existing single-family or manufactured homes. Multifamily does not qualify at this time.

The door must be a pre-hung ENERGY STAR qualified door, include replacement of the threshold and replace an un-insulated or otherwise substandard (e.g., from a thermal perspective) exterior door.

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		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.)			X
Documentation of number of doors replaced and pre and post conditions			X
Description of home type (single-family or manufactured)			X

Payment

BPA shall pay $40.00 per door.

10.12.4 Whole House Air Sealing and Testing

Basis for Energy Savings

Whole House Air Sealing is an incremental improvement in leakage of a home, measured with a blower door. Energy savings for Whole House Air Sealing are estimated using SEEM, an energy modeling software calibrated to real-world energy consumption, assuming all other weatherization measures have been installed in the home. "Average electric heat" measures are a weighted average of homes with an electric furnace, electric zonal, or a heat pump based on the RBSA. Savings are reduced by the percentage of heat supplied by supplemental fuels for an average home.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp.

Requirements and Specifications

- Whole house air sealing requires the use of a blower door to measure and identify air leakage locations in the home. Mechanical ventilation may be required.
- If PTCS duct sealing is performed at the same time as air sealing, the baseline blower door CFM_{50} reading for the whole house air sealing and testing 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.
- 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 present or be installed.

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		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 the following conditions are required: • Pre and post conditions CFM_{50} (CFM at 50 Pascals) • Total square footage of the pressure zone tested and sealed (typically this is the interior space (conditioned) heated floor area of the home) • Building volume • Notes on mechanical ventilation requirement • Age and description of home type (single family/manufactured)			X
A description of primary heating type (electric zonal, electric forced air furnace, air source heat pump, ground/water source heat pump, ductless heat pump)			X

Supporting Content

October 2015 Weatherization Measure Changes

Document Library

Interim Solution 2.0 Files - UES Measure List

Payment

BPA payment is based on the reduction in air infiltration per reduction in CFM_{50}, rounded to the nearest whole number. Payments and busbar energy savings are available in the UES Measure List in the Interim Solution 2.0 Files.

Total Payment = Quantity x Payment

Quantity = Difference between pre and post CFM_{50}

Additional Information

The RTF is currently analyzing weatherization measures for manufactured and multifamily homes. We anticipate that savings and payments will be reduced similar to the changes in single family measures.

The Any Electric Heat measures assume a weighted average of reported measures. Utilities who report Single Family Whole House Air Sealing to the HVAC-specific measures should not also use the Any Electric measures on the same invoice submitted to BPA. Utilities may switch to Any Electric if reporting to the HVAC specific measures delivers little benefit.

10.12.5 Prescriptive Air Sealing

Basis for Energy Savings

Prescriptive Air Sealing is an incremental improvement in the leakage of a home. Leakage reductions are based on the attic or crawlspace portion of an average Whole House Air Sealing project. Energy savings for Prescriptive Air Sealing are estimated using SEEM, an energy modeling software calibrated to real-world energy consumption, assuming all other weatherization measures have been installed in the home. "Average electric heat" measures are a weighted average of homes with an electric furnace, electric zonal, or a heat pump based on the RBSA. Savings are reduced by the percentage of heat supplied by supplemental fuels for an average home.

BPA documentation requirements consider these factors. More detailed information is available on the RTF's UES web page at http://rtf.nwcouncil.org/measures/Default.asp.

Requirements and Specifications

This measure is available for existing single-family homes only. Multifamily and manufactured homes do not qualify at this time.

Prescriptive air sealing must be done according to the checklists found in sections 4.2 and 6.2 of the BPA Residential Weatherization Specifications Effective October 1, 2014 in the Document Library.

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 present or be installed.

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		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 square footage of area air sealed (attic and/or crawlspace) air sealed and the age of home			X

Payment

Payments and busbar energy savings are available in the UES Measure List in the Document Library and are based on the square footage of the area where prescriptive air sealing is performed.

10.12.6 LOW-INCOME WEATHERIZATION, DUCTLESS HEAT PUMPS AND DUCT SEALING

Low-income household eligibility is defined in the Federal Weatherization Assistance Program as 200% of the poverty income levels. Approved statewide eligibility definitions may substitute for federally established low income levels, if provided.

Customers shall retain documentation of the total number of individuals in the household and proof that the end user's income eligibility was reviewed from a verifiable source.[25]

Customers may use the eligible measures listed below to run low-income weatherization programs themselves, through an implementation firm or Community Action Program agency, but must retain responsibility for and control over the program.

Basis for Energy Savings

The basis for savings for measures in the Low Income Weatherization, Ductless Heat Pumps and Duct Sealing section are found in each of the measure sections for the corresponding measures.

Requirements and Specifications – Low Income Weatherization

All housing types (single family, manufactured and multifamily) are eligible for low income weatherization, although not all measures are applicable to each housing type. See chart below for eligible measures.

All weatherization measures must be installed according to the 2014 BPA Residential Weatherization Specifications in the Document Library and follow the Specification, Requirements and Documentation requirements as listed under Weatherization (Standard Income) above.

To be eligible, homes must have an electric heating system as the primary

[25] "Verifiable" refers to any documentation that can be verified by another source (e.g. pay stub, copies of IRS form 1040, Section 8 eligibility, certification by a CAP agency, etc.)

Supporting Content

October 2015 Weatherization Measure Changes

Weatherization Specifications

Document Library

Interim Solution 2.0 Files - UES Measure List

Prescriptive Duct Sealing Specifications (effective 10/01/2015)

system (see definitions); or homes must have one of the following as an existing heating system:

1. A permanently-installed electric heating system with either (a) no other functioning non-electric heating system or (b) a wood stove, pellet stove, fireplace, fireplace insert (wood or pellet) or wood furnace

2. An electric heat pump system integrated with a non-electric heating system (e.g., natural gas, propane, or wood supplementary/backup system)

3. A wood stove or pellet stove with no other non-electric space heating system, accompanied by the current usage of plug-in electric space heaters

4. An electric heat system and a separate functional or non-functional, non-electric space heating system (i.e. oil, natural gas, or wood furnace) with the entire non-electric space heating system decommissioned, removed, all penetrations sealed, and all fuel (electric, gas, oil) connections to the decommissioned heating system disconnected. System equipment includes furnace, air-handler, fuel lines, fuel tanks (abated in compliance with local code). If, however, construction limitations prevent the removal of the entire non-electric system (or other portions of the space heating equipment), then the remainder of the system must be decommissioned, removed, all penetrations sealed, and all fuel (electric, gas, oil) connections to the decommissioned heating system disconnected.

Requirements and Specifications – Low Income HVAC (Ductless Heat Pumps and Duct Sealing)

Single family and manufactured homes are eligible for low-income Ductless Heat Pump and Duct Sealing.

Low income HVAC measures must be installed according to the corresponding Best Practices for Installing Ductless Heat Pumps and Duct Sealing Specifications in the Document Library and follow the Specification, Requirements and Documentation requirements as listed under Ductless Heat Pump and Duct Sealing (Standard Income) sections above.

The table below summarizes eligible measures, which must be individually reported to BPA.

Documentation Requirements

DOCUMENTATION DESCRIPTION	RETENTION/SUBMITTAL LOCATIONS			
	BPA ENERGY EFFICIENCY REPORTING SYSTEM	EEDOCS@BPA.GOV OR FAX 1-866-535-7955	PTCS SITE REGISTRY	CUSTOMER FILE
End-user identifying information including unique site ID and address	X			X
Documentation of total number of individual's in the household and documentation that the end user's income eligibility was reviewed from a verifiable source (e.g. paystub, Section 8 voucher, etc.)				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 of installed measures, and (d) cost of any related repairs				X
Description of home type (single-family, multifamily or manufactured)				X
Insulation (if installed): square feet and pre/post R-value documentation				X
Prime window/Patio door: (a) number and square footage of windows or patio doors replaced, (b) pre-condition (frame type/ ie. Wood, metal, single/double pane) and (c) NFRC stickers or other verification of U-values.				X
Exterior insulated doors: Documentation of number of doors replaced and pre and post conditions.				X
Ductless Heat Pumps: DHP Installation form				X
PTCS or Prescriptive Duct Sealing Form (handwritten form completed by technician)				X
PTCS/Prescriptive Duct Sealing information entered into the PTCS Site Registry			X	
PTCS site registry measure ID	X		X	

Payment

BPA allows customers to report costs directly attributable to the installation of the measure as eligible for dollar-for-dollar payment (except as noted in the table below, not to exceed 100% of actual cost). This includes any cost incurred for meeting requirements and specifications (e.g. verification of income, attic and crawl space ventilation, removal of knob & tube wiring, underfloor moisture barriers).

Customers may also report costs related to repair work directly associated with the installation of the measure that is required for health and safety or to ensure the efficacy of the measure (e.g. replace rotting wood in window frame, repair hole in roof). Repair costs must be documented on contractor invoices and reported separately.

Customers may combine funding sources within a residence, but may not combine funding from multiple BPA sources for the same measure.

[31] "Verifiable" refers to any documentation that can be verified by another source (e.g. pay stub, copies of IRS form 1040, Section 8 eligibility, certification by a CAP agency, etc.)

HOME TYPE	LOW INCOME QUALIFYING MEASURE	INSTALLED MEASURE COST PAYMENT - DOLLAR FOR DOLLAR (EXCEPT AS NOTED)	*REPAIR COST PAYMENT - DOLLAR FOR DOLLAR (EXAMPLES PROVIDED)*
Single-family	Attic Insulation (up to R49)	Dollar for dollar	*Examples include: repair roof leak, re-build external entrance covering, fix hole in siding*
	Floor Insulation (up to R30)	Dollar for dollar	
	Wall Insulation (up to R11)	Dollar for dollar	
	Prime Window	Dollar for dollar, not to exceed $20.00/square foot	*Examples include: address dry-rot in window framing, replace rotten threshold, repair cracked header*
	Patio Door	Dollar for dollar, not to exceed $20.00/square foot	
	Exterior Insulated Door	Dollar for dollar, not to exceed $400.00/door	
	Whole House Air sealing	Dollar for dollar	*Examples include: re-frame attic access hatch, repair pull-down stair*
	Prescriptive Air Sealing	Dollar for dollar	
	PTCS duct Sealing	Dollar for dollar, not to exceed $500.00	*Examples include: replace rusted duct work, repair broken filter slot*
	Prescriptive Duct Sealing	Dollar for dollar, not to exceed $500.00	
	Ductless Heat Pump	Dollar for dollar, not to exceed $3,800.00	*Examples include: improve structural support for interior head*
Multifamily	Attic Insulation (up to R49)	Dollar for dollar	*Examples include: repair roof leak, re-build external entrance covering, fix hole in siding*
	Floor Insulation (up to R30)	Dollar for dollar	
	Wall Insulation (up to R11)	Dollar for dollar	
	Prime Window	Dollar for dollar, not to exceed $20.00/square foot	*Examples include: address dry-rot in window framing, replace rotten threshold, repair cracked header*
	Patio Door	Dollar for dollar, not to exceed $20.00/square foot	

HOME TYPE	LOW INCOME QUALIFYING MEASURE	INSTALLED MEASURE COST PAYMENT - DOLLAR FOR DOLLAR (EXCEPT AS NOTED)	*REPAIR COST PAYMENT - DOLLAR FOR DOLLAR (EXAMPLES PROVIDED)*
Manufactured	Attic Insulation (up to R30)	Dollar for dollar	*Examples include: repair roof leak, re-build external entrance covering*
	Floor Insulation (up to R22)	Dollar for dollar	
	Prime Window	Dollar for dollar, not to exceed $20.00/square foot	*Examples include: address dry-rot in window framing, replace rotten threshold, repair cracked header*
	Patio Door	Dollar for dollar, not to exceed $20.00/square foot	
	Exterior Insulated Door	Dollar for dollar, not to exceed $400.00/door	
	Whole House Air sealing	Dollar for dollar	*Examples include: install whole-house ventilation fan*
	PTCS Duct Sealing	Dollar for dollar, not to exceed $400.00	*Examples include: replace rusted duct work, repair broken filter slot*
	Prescriptive Duct Sealing	Dollar for dollar, not to exceed $400.00	
	Ductless Heat Pump	Dollar for dollar, not to exceed $3,800.00/DHP	*Examples include: improve structural support for interior head*

Additional Information

The RTF is currently analyzing weatherization measures for manufactured and multifamily homes. We anticipate that savings will be reduced similar to the changes in single family measures. The Any Electric Heat measures assume a weighted average of reported measures. Utilities who report Single Family Weatherization to the HVAC-specific measures should not also use the Any Electric measures on the same invoice submitted to BPA. Utilities may switch to Any Electric if reporting to the HVAC specific measures delivers little benefit.

10.13 RESIDENTIAL CUSTOM PROJECTS

Requirements and Specifications

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

Documentation Requirements

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

10.14 MULTI-SECTOR OPPORTUNITIES

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

- Processes
- Measures and Initiatives

1. Green Motors Rewind Initiative
2. Non-Residential Lighting Program
3. Generator Block Heaters
4. Vehicle Block Heater Controls
5. Limited Availability Emerging Technology Field Test Projects
6. Variable Frequency Drives in Small Compressed Air Systems
7. ENERGY STAR Commercial Clothes Washers - Multifamily Common Areas
8. Multifamily, Multi-Sector Measure

Section 11: 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 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 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.

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

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 (optional)	TSP	n/a	Customer or TSP	n/a
Custom project proposal submittal (optional)	Customer	n/a	Customer	n/a
Custom project proposal review, if proposal is submitted	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

See the custom projects documentation requirements.

Payment

See the custom projects payment table.

Section 12: Multi-Sector

Please check the changes and corrections summary to see if revisions were made to any of the measures in this sector.

This section contains general information applicable across sectors.

12.1 PAYMENT SUMMARY*	
PROGRAM COMPONENT OR MEASURE	**PAYMENT**
Green Motors	$2.00/hp
Non-Residential Lighting Program	See the lighting calculators.
Generator Block Heaters	$200.00-$1,500.00/unit
Vehicle Block Heater Controls	$160/unit
Limited Availability Emerging Technology Field Test Projects	See the custom projects payment table.
Variable Frequency Drives in Small Compressed Air System	See the custom projects payment table.
ENERGY STAR Commercial Clothes Washers – Multifamily Common Areas	$25.00-$100.00/unit
Multifamily, Multi-Sector Measures	See the specific measure section.

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

12.1 PROCESSES

12.2.1 COTR Request and Acknowledgment Procedure

Under the COTR Request and Acknowledgment 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.

12.2.2 Measure Distribution Processes

Measures requiring distribution may allow one or more of the following distribution methods: Retail, By Request, Mailed Non-Request and Direct Install. Allowable distribution methods are listed in the specific measure section, and the requirements herein apply.

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12.3.6 Limited Availability Emerging Technology Field Test Projects 145
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12.3.9 Multifamily, Multi-Sector Measures 147

Supporting Content

Measure Distribution Log

! - These sections have language adjustments (new measure, removal of a requirement, or a clarification) that are effective April 1, 2016. Please see the "April Changes and Corrections Summary for 2015-2016 Implementation Manual" for specifics. Per utility request, no edits were made within the body of this "annual manual".

DISTRIBUTION TYPE	REQUIREMENTS AND SPECIFICATIONS	DOCUMENTATION DESCRIPTION (RETAIN IN CUSTOMER FILE)
Retail	Retail mechanisms include in-store markdowns midstream/upstream promotions and coupons. See specific measure for complete requirements and specifications.	For in-store markdown or midstream/upstream promotions customers must submit a store sales report or invoice detailing: date period for sales, sales by store location, qualified product make, model and manufacturer sufficient to assign corresponding energy efficiency measure. Reports must document the allocation methodology when a store serves multiple customers. Retail appliance, showerheads and advanced power strip measures must be reported using the Retail Sales Allocation Tool. 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) provide store.
By Request	Applies to other delivery mechanisms that include distributing products "over the counter", at events, or otherwise directly to the end user upon their request. The customer must document the request by the end user. Also applies to reimbursing end users for a qualified purchase. Additional requirements such as: documenting water heater fuel for showerheads and distributing a Customer Survey for Advanced Power Strips may apply. See specific measure for complete requirements and specifications.	Product invoice documenting that product meets BPA's requirements. The customer must document the request by the end user. Examples of end user requests may be postcards, Measure Distribution Log (available in the Document Library) or equivalent form with required information. Mailed By Request also requires documentation of mailing, air waybill or bill of lading to document the date the product entered the mail stream (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).
Mailed, Non-Request (CFL and LED bulbs only)	Applies to CFLs and LED bulbs only. Limited to 4 bulbs per fiscal year, per household. See specific measure for complete requirements and specifications.	Product invoice documenting that product meets BPA's requirements. Documentation of mailing, air waybill or bill of lading to document the date the product entered the mail stream (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).
Direct Install	Measures must be (1) installed by the customer or their agent, (2) witnessed by the customer or their agent, or (3) visually inspected by a representative sample after installation by another party. Additional requirements such as: documenting water heater fuel for showerheads and distributing a customer survey for Advanced Power Strips may apply. See specific measure for complete requirements and specifications.	Product invoice documenting that product meets BPA's requirements. Completed Measure Distribution Log (available in the Document Library) or equivalent form with required information.

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

12.3 MEASURES AND INITIATIVES

12.3.1 Electric Storage Water Heaters

Information Moved

Effective October 1, 2015 electric storage hot water heaters will not be eligible for incentives in the residential sector. Incentive information for qualifying electric storage hot water heaters can now be found in the commercial sector.

12.3.2 Green Motors Rewind Initiative

Basis for Energy Savings

The base case is induction motors between 15 and 5000 hp that require motor repair and rewinding that are repaired and rewound by motor service centers that use methods and equipment that do not meet the ANSI/EASA Standard AR100-2010 requirements. The efficient case is to test and verify each motor to be sure there is no permanent motor core damage and then repair and rewind by a Green Motors Initiative certified motor service center that follows the ANSI/EASA Standard AR100-2010. Energy savings are based on the UES approved by the RTF for this set of measures.

More details on the testing and motor service center requirements and a list of certified motor service centers can be found here: www.greenmotors.org/gmi.htm

More details on the recommended practice for the repair of rotating electrical apparatus can be found here: www.easa.com/sites/files/resource_library_public/EASA_AR100-2010_1010.pdf

Requirements and Specifications

The Green Motors Rewind Initiative uses Direct Acquisition. The incentives paid through the Green Motors Rewind Initiative are paid by BPA as part of the third party program and are not counted against customer's EEI budget. No payments are required to BPA, the program implementer, or the participating end user. Customers receive credit for all energy savings achieved by the program in their service territory.

Qualified motors include National Electric Manufacturers Association (NEMA) standard 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. Customers may enroll using the COTR Request and Acknowledgment Procedure.

A monthly report and annual report is created and sent to participating customers with end user names, total hp rewound, energy savings and incentives paid. Monthly reports will only be created/sent to customers with end user participation in their service territory.

Customers may be contacted by the program implementer to verify an end users' eligibility to receive incentives through the program.

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 monthly reports			X
Third-party provided annual reports			X

Payment

A payment of $2.00 per hp is made to the service center that rewound the motor. The service center acknowledges the payment 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.

12.3.3 Non-Residential Lighting Program

The Non-Residential Lighting Program applies to the following:

1. Existing building (retrofit/upgrade)
2. New construction projects in the agricultural, commercial, federal and industrial sectors
3. All High Intensity Discharge (HID) (metal halide, high pressure sodium, low pressure sodium and mercury vapor) lighting in exterior applications regardless of sector (installations in residential settings must be reported as commercial).

To participate in the program, customers capture project data in the lighting calculator and submit it to BPA for review and approval.

Lighting Calculator Basis for Savings

Site specific calculators are used to determine energy savings when there is too much variability in the range of savings associated with a given technology and / or application. In the case of non-residential lighting, the unique hours of operation by space use type and wide variety of building types and applications create the demand for a comprehensive lighting calculator instead of a suite of lighting focused UES measures. BPA's lighting calculator attempts to align with the RTF Non-Residential Lighting Protocol around issues like baseline determination, control savings fractions, and HVAC interactive effects. These factors are built into the lighting calculators algorithms so that the user only needs to enter information specific to the project such as hours of operation by space, existing technology, and proposed technology. Lighting Calculator 3.3 produces utility and customer project reports which detail the accounting of all savings values. More information about lighting calculator baselines and interactive effects can be found in the Lighting Formulas and Adjustments document contained within the lighting tool itself. More information on the RTF non-residential lighting protocol can be found on the RTF website: http://rtf.nwcouncil.org/subcommittees/nonreslighting/.

Lighting Calculators

Option 1 customers must use an eligible BPA lighting calculator. BPA will periodically release updated lighting calculators with improved functionality and other changes necessary to respond to an evolving marketplace. When a new lighting calculator is released, it will be posted in the Document Library, upon which time customers may begin using it immediately. The

Supporting Content

COTR Request & Acknowledgment Procedure

Lighting Calculator v3.3

Custom Projects

Custom Project Payments

Custom Project Documentation Requirements

table below shows the effective dates and retirement dates for lighting calculators that are currently in use.

CALCULATOR	EFFECTIVE DATE	RETIREMENT DATE*
LC 3.3 (and LC 3.35, the promotional version of LC 3.3)	October 1, 2014	To Be Determined

* Note that "retirement date" means the last date that customers may submit a completed calculator to the BPA reporting system.

Measure Types and Approval Procedures

The lighting program includes two types of measures: (1) deemed and (2) calculated, which are submitted as projects, as discussed below.

1. Deemed Lighting Measures. Deemed measures have been pre-approved by BPA and do not require review by BPA prior to submission to the BPA reporting system. Available deemed lighting measures are in the Program Offerings section of the BPA lighting calculator.
2. Calculated Lighting Measures. If a proposed measure is not on the Deemed Measure List, it may be submitted as a calculated measure. There are three types of calculated lighting measures:
    - Decommissioning: the number of proposed fixtures is less than the number of existing fixtures.
    - Fixture Increase: the number of proposed fixtures is greater than the number of existing fixtures.
    - Non-Standard: the measure is not deemed, decommissioning, or a fixture increase.

No BPA approval is required for decommissioning or fixture increase measures. The BPA lighting calculator will automatically apply a calculated payment.

To request a non-standard measure in the BPA lighting calculator, the user should select the "non-standard" option from the available drop-down menu. The calculator will highlight the measure in red and will indicate that the measure is non-standard and requires BPA approval. The customer must send the lighting calculator and any applicable product documentation requested by the BPA Lighting Team such as cut sheets, product specification sheets or third party tests (e.g. LM-79) to lighting@bpa.gov for review and acceptance.

The BPA Lighting Team will review the non-standard measures and notify the customer whether or not the measures were accepted. Once the measures are accepted, the red highlighting and Project-Level Alert about needing BPA approval will disappear. No further documentation is required for non-standard measures.

As solid state lighting continues to proliferate, new wattage options emerge on the market which may not be included in the calculator drop down menus. In the event the lighting calculator does not list the exact proposed wattage a utility may choose one of two options.

1. A utility may round the selected wattage in the lighting calculator to the nearest available value in the drop down menu. Utilities may not round more than 10 watts.

2. A utility may manually enter the value of the efficient product which will result in a non-standard calculated measure.

Project Types and Requirements

There are four types of projects: (1) new construction, (2) retrofit, (3) batch and (4) custom projects. This section outlines eligibility criteria, requirements and payments for each of these project types.

1. New Construction Projects

Eligibility: A non-residential lighting project is new construction if the answer to any of the following questions is "yes."

- Is this a newly-constructed facility or newly-constructed exterior area with new lighting fixtures?
- Is this a newly-constructed addition to an existing facility that adds usable floor area?
- Is the project a major renovation? A project is considered a major renovation whenever a whole building permit is required.
- Is there a change in occupancy type (e.g. office to food service or retail to office)?

Requirements: For new construction lighting projects, enter the Lighting Power Allowance (i.e., total watts allowed by applicable lighting code) and the project's Proposed Lighting Power (total watts of project) from the applicable code compliance form into the lighting calculator. The project must achieve at least a 20% kWh reduction from the Lighting Power Allowance.

Payments: Payments are calculated at $0.18 per kWh saved, using the fully adjusted savings (factoring in HVAC and busbar adjustments).

2. Retrofit Projects for Existing Buildings

Eligibility: Non-residential lighting projects which do not meet the criteria for new construction are eligible as retrofit projects.

Requirements: The project must achieve at least a 25% kWh reduction. For non-standard measures, the minimum payment to the end user is $5.00 per measure, and the minimum fully adjusted savings as determined by the lighting calculator must be at least 10% per measure.

Payments: See the Program Offerings page in the lighting calculator for payments.

3. Batch Lighting Projects

Eligibility: Retrofit projects that target a specific technology and specific application across an entire customer service territory (such as customer-owned street lights or area lights) may be submitted in a BPA lighting calculator or in a customer-generated spreadsheet in batch form. These projects may cover multiple pre and post conditions but are limited to a single technology and application.

Requirements: For site address, enter the customer's address. Enter the project addresses or locations in the notes section of the lighting calculator or in a customer-generated spreadsheet. In cases where a street address is not applicable, enter the nearest street intersection.

Payments: See the Program Offerings page in the lighting calculator for payments.

4. Custom Lighting Projects

Eligibility: Any non-residential lighting project may be submitted as a custom project.

Requirements: Custom lighting projects may be submitted using a BPA custom project calculator or an equivalent, such as a vendor-provided lighting calculator or energy modeling software, and must follow the custom projects requirements of the Manual. BPA will review the calculator or energy model and supporting documentation to determine whether the project qualifies as a custom lighting project. Once the project is accepted as a custom lighting project, it must meet the following requirements:

- Equivalent calculators must use all current BPA baselines (as determined by applicable baseline on project start date), controls and requirements.
- If the measures contain additional 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).
- 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.
- The actual input power of all new or existing LED and high-intensity discharge (HID) fixtures must measure true root-mean-square power.
- Customers may use the manufacturer's stated wattage or lighting power estimates in the form of the submitted lighting calculator for all other non-HID or non-LED lights.
- 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.
- Non-fixed schedule controls (e.g., occupancy sensors and day lighting) require a minimum of two weeks of data logging to accurately determine hours of operation. Foot candle measuring is acceptable.

Payment

See the custom projects payment table.

Lighting Promotions

Periodically, BPA may promote specific lighting measures and applications by temporarily offering higher incentives and/or allowing the total incentive to cover up to 100% of the project cost. To claim these promotions, customers must contact Lighting@bpa.gov, and BPA will modify customers' existing version of 3.3 (creating version 3.35) to accommodate the promotions. This modified calculator may only be used for the specific lighting measures eligible within the promotion. If a project also contains non-promotional measures, such measures must be submitted on a non-promotional lighting calculator.

Promotions will be announced through normal communication channels.

Baselines

Baselines are used by the lighting calculator to determine the savings delta reportable to BPA. As the market changes and federal codes and standards take effect, BPA modifies reportable baselines as applicable. The table below follows the guidance offered by the RTF Lighting Protocols for baseline determination

BASELINE	APPLICATION	NOTES
Preconditions Baseline	Retrofit projects; technologies not deemed obsolete by RTF lighting protocols or covered by codes or standards	The Preconditions Baseline is the same as "what's in the ceiling."
Energy Policy Act: General Service Fluorescent Lamp	All 4' and 8' T12 linear fluorescent lamps	See the Market Average Baseline table.
State and/or local Codes	New construction	The maximum lighting power allowance is the baseline.
Energy Independence and Security Act (EISA)	All 100, 75, 60, and 40 watt standard incandescent A lamps	See the EISA Baseline table.

MARKET AVERAGE BASELINE		
EXISTING OBSOLETE EQUIPMENT (APPLIES TO ALL BALLAST TYPES)		NEW MARKET BASELINE
LIGHTING SYSTEM CATEGORIES	EXISTING T12 LAMP WATTAGES	REPORTABLE FIXTURE WATTAGE/LAMP (MULTIPLY BY NUMBER OF LAMPS IN FIXTURE TO SCALE)
All 4' T12	34	28.7
	40	
All Slim line 8' T12	60	51.7
	75	
All HO 8' T12	95	90
	110	
All VHO 8' T12	185	131.5
	215	

EISA BASELINE	
EXISTING 'OBSOLETE' EQUIPMENT	**REPORTABLE LAMP WATTAGE**
100 watt incandescent	72
75 watt incandescent	53
60 watt incandescent	43
40 watt incandescent	29

Documentation Requirements

DOCUMENTATION DESCRIPTION	RETENTION/SUBMITTAL LOCATIONS		
	BPA REPORTING SYSTEM	EEDOCS@BPA.GOV OR FAX 1-866-535-7955	CUSTOMER FILE
New Construction Lighting Projects			
Completed lighting calculator	X		X
Applicable code compliance form documenting the source of Lighting Power Allowance (watts) and Proposed Lighting Power (watts) figures used in lighting calculator.			X
Retrofit Lighting Projects			
Completed lighting calculator.	X		X
Project invoice(s) documenting site address and total project cost including costs incurred from equipment, labor, permits and disposal fees.			X
Batch Lighting Projects			
Completed lighting calculator.	X		X
Documentation of location and quantity of fixtures in batch, either in customer-generated spreadsheet or in the "notes" section of the lighting calculator.			X
Custom Lighting Projects			
Custom projects must follow the custom projects documentation requirements.			

12.3.4 Generator Block Heaters (BPA Qualified)

Basis for Energy Savings

The following two block heater sizes were used to calculate energy savings:

1. Less than 3 kW, and
2. Greater than or equal to 3 kW.

The Generator Block Heater base case used to calculate energy savings are thermosiphon heaters, which are electric-resistance heaters ***without*** a pump. The efficient case used forced-circulation heaters, which are electric resistance heaters ***with*** a pump. The measure savings for the two block heater sizes are based on weighted averages of the base and efficient case energy usage from a BPA emerging technology pilot. The emerging technology pilot found that in addition to energy savings, forced-circulation heaters provide better block temperature control and less extreme temperatures, possibly extending hose lifetimes, reducing maintenance costs and improving generator reliability.

Requirements and Specifications

Generator Block Heater installations must meet the following requirements:

- The forced-circulation Generator Block Heater must replace a thermo-siphon, electric-resistance block heater.
- The generator or engine must be stationary and fixed.
- The installation must be performed by a manufacturer-certified installer.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Generator Block Heaters (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

GENERATOR BLOCK HEATER SIZE	PAYMENT
< 3 kW	$200.00
≥ 3 kW	$1,500.00

12.3.5 Vehicle Block Heater Controls (BPA Qualified)

Basis for Energy Savings

Smart vehicle engine block heater controls use a combination of temperature sensing and heater cycling to save energy. Studies confirmed energy savings for all heating zones associated with controls that keep block heaters off when the ambient air temperature is above the temperature setting, and deliver only as much heat as necessary when the temperature drops below the setting. Savings assume the factory default-temperature setting. Good candidates include any vehicle that uses block heaters during cold months. Also, since this measure is only for hard-wired controls, vehicle fleets that are regularly parked in the same location are good candidates.

Requirements and Specifications

- Qualifying Vehicle Block Heater Control applications must meet the following requirements:
- Vehicle Block Heater Controls must be hard-wired, either in the form of a controlled outlet that the engine block heater is plugged in to, or controls installed directly on the engine block heater.
- Controls that do not qualify include those that are portable and can be un-plugged, such as extension cord models.

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		X
Invoice showing installed cost and new equipment order/purchase date.			X
Completed Project Information Form for Vehicle Block Heater Controls (located in the IM Document Library) showing that the measure requirements have been met. A utility may create and submit their own form if it collects the same information as the Project Information Form and has been BPA-approved.		X	X

Payment

VEHICLE BLOCK HEATER CONTROLS	HEATING ZONES	PAYMENT PER HARD-WIRED CONTROL UNIT
Vehicle Block Heater Controls	1, 2, 3	$160

12.3.6 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 UES 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 Website, BPA maintains a list of available emerging technology projects with defined eligibility requirements, number of installations targeted, participation obligations, savings and payment.

If a customer is eligible and wishes to participate in a project, they 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' payment or savings.

Documentation Requirements

Customers must follow the Option 1 custom project documentation requirements and may be required to provide end-user billing information and contact information.

Payment

See the custom projects payment table.

Supporting Content

BPA Emerging Technologies Website

Custom Project Payments

Custom Project Documentation Requirements

12.3.7 Variable Frequency Drives in Small Compressed Air Systems

Basis for Energy Savings

The base case for this measure is an air compressor that operates at a fixed speed, with some variation in compressed airflow requirements. The efficient case would have a variable frequency drive to better match the compressors' performance to compressed air system requirements.

Requirements and Specifications

VFDs applied to a single air compressor 75 hp or less must use the RTF-approved Small Compressed Air Savings Calculator (available in the Document Library). 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.

Supporting Content

VFDs in Small Compressed Air Savings Calculator

Custom Project Payments

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 (e.g., field location, meter number, GPS coordinates, or legal property description)	X		X
Equipment/contractor invoice is to include: manufacturer, model number, and size (hp) of equipment or product installed/used, quantity, order/purchase date, and cost.			X
Completed RTF-approved Small Compressed Air Savings Calculator (available in the Document Library)		X	X

Payment

Though this is not a custom project, payment is paid according to the custom projects payment table.

12.3.8 ENERGY STAR Commercial Clothes Washers – Multifamily Common Areas

Requirements and Specifications

The clothes washer must be ENERGY STAR and installed in the common area of a multifamily building.

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.)			X

Payment

MEASURE NAME	PAYMENT
Clothes Washers ENERGY STAR Electric Water Heater/Electric Dryer Multifamily Common Area	$100.00
Clothes Washers ENERGY STAR Electric Water Heater/Gas Dryer Multifamily Common Area	$50.00
Clothes Washers ENERGY STAR Gas Water Heater/Gas Dryer Multifamily Common Area	$25.00
Clothes Washers ENERGY STAR Gas Water Heater/Electric Dryer Multifamily Common Area	$50.00

12.3.9 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 • ENERGY STAR CFLs and Fixtures • ENERGY STAR Solid-State Lighting/ LED Bulbs and Fixtures	Multi-Sector • Non-Residential Lighting
Appliances	Residential Sector • ENERGY STAR Refrigerator and Freezer • ENERGY STAR Clothes Washer • Refrigerator and Freezer Decommissioning	Commercial Sector • Commercial Food Service Reach-in Refrigerators and Freezers • Commercial Combination and Convection Ovens • Commercial Dishwashers Multi-Sector • Commercial Clothes Washers – Multifamily Common Areas

MEASURE	MEASURE INSTALLATION LOCATION	
	RESIDENTIAL UNIT	COMMON AREA
Showerheads	Residential Sector • Showerheads	Commercial Sector • Commercial Showerheads
Power strips	Residential Sector • Advanced Power Strips	Commercial Sector • Smart Strips (offices)
Water Heating		Multi-Sector • Commercial Electric Water Heaters Commercial Sector • Heat Pump 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 Residential Sector • Insulation • Prime Window Replacement	Custom Projects Commercial Sector • Commercial Insulation
HVAC	Custom Projects	Custom Projects Commercial Sector • Unitary Air Conditioning Equipment in Commercial Buildings • Ductless Heat Pumps in Commercial Buildings • Heat Pump Equipment Conversion and Upgrade in Commercial Buildings

Documentation Requirements

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

Payment

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

Effective October 1, 2015, Residential Electric Storage Water Heater measures will expire and no longer be available.

Updates/Revisions

The table below contains a directory of any revisions made to this Manual outside 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	RATIONALE	EFFECTIVE DATE (POSTED DATE)	LOCATION
General			
Introduction			
Funding			
General Requirements			
Custom Projects			
Custom Programs			
Agricultural Sector			
Commercial Sector			
Fedral Sector			
Industrial Sector			
Residential Sector			

CHANGE DESCRIPTION	RATIONALE	EFFECTIVE DATE (POSTED DATE)	LOCATION
Utility Distribution Sector			
Multi-Sector			