

2019 Residential & Commercial HVAC Impact Evaluation Data Collection Launch



February 7, 2019



Why Evaluation

What do we all want?



Energy efficiency programs that save customers money and energy

To be trustworthy stewards of ratepayer money

Evaluation

What did we achieve?

How do we improve?



Impact Evaluation



Savings reliability
with independent
verification



Program
improvement
opportunities

The What and Why of this Evaluation

What: Residential HVAC

- **Why:**
 - Previous evaluation results not conclusive for some measures
 - Ductless Heat Pumps in Heating Zones 2 & 3 are Under Review by RTF
 - Bigger sample to produce more conclusive and statistically significant results

What: Commercial HVAC BPA Qualified (BPAQ)

- **Why:**
 - Opportunity to understand equipment characteristics
 - Review information recorded on forms

The Evaluation Team



The Team



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Evaluation Approaches Overview

Evaluation Measure Groups

2016-2018 Sample Years for all Measure Groups

Sector	Evaluation Measure Group
Residential	Air Source Heat Pump Conversions
	Variable Speed Heat Pump Conversions
	Duct Sealing
	Ductless Heat Pump – Electric Forced Air Furnace (Heating Zone 3)
	Ductless Heat Pump – Electric Zonal (Heating Zone 2 or 3)
Commercial	Air Source Heat Pumps (BPA Qualified)
	Ductless Heat Pumps (BPA Qualified)

Evaluation Approaches

Billing Analysis

- Estimate measure savings
- A function of electricity usage, weather and other factors

Project Forms Review

- Understand characteristics of Commercial HVAC BPA Qualified measures

Participant Survey (if needed)

- Collect information on household energy use characteristics to inform billing analysis

Exploratory Billing Analysis (if needed)

- Incorporate information from survey
- Refine & explain savings estimates

Data Collection Activities

Billing Data

- HVAC - Residential and Commercial BPA Qualified measures
- 26 utilities, nearly 8,000 total measures

Project Forms

- Commercial HVAC BPA Qualified measures
- 14 utilities*, 123 total measures

** Only requesting from those utilities in the residential HVAC sample*

Participant Survey (if needed)

- Phone and/or web
- Supplemental info for billing models
- Residential HVAC measures

Activities By Measure Group

Sector	Evaluation Measure Group	Measure Status	Billing Analysis	Forms Review	Phone Surveys	Exploratory Analysis
Residential	Air Source Heat Pump Conversions	Planning	✓		If needed	If needed
	Variable Speed Heat Pump Conversions	Planning	✓		If needed	If needed
	Duct Sealing	Planning	✓		If needed	If needed
	Ductless Heat Pump – Electric Forced Air Furnace (Heating Zone 3)	Proven	✓		If needed	If needed
	Ductless Heat Pump – Electric Zonal (Heating Zone 2 or 3)	Under Review	✓		If needed	If needed
Commercial	Air Source Heat Pumps	BPA Qualified	✓*	✓		
	Ductless Heat Pumps	BPA Qualified	✓*	✓		

* We plan to review consumption histories but not conduct a full billing analysis





Process

Timeline

Data Due April 22nd

- 8 week data collection timeline
- Alert us if you might need extra time!

Milestone	2019												2020			
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Sample Notification to Utilities	X															
Brownbag for Sampled Utilities		X														
Primary Data Collection		↔														
Analysis				↔												
Participant Survey <i>(if needed)</i>								↔								
Exploratory Billing Analysis <i>(if needed)</i>											↔					
Reporting														↔		
BPA Qualified Form Review				↔												

Data Security is a Priority



Secure file transfer options,
Evergreen's or your own
(if you prefer)



Anonymized data,
remove customer PII



NDA with Evergreen Economics

If you have any
data-related questions,
Evergreen Economics can help!
BPAdata@evergreenecon.com



Your Data Collection Workbook

Let's Walk Through Your Workbook

Instructions on the "START HERE" tab

INSTRUCTIONS

The purpose of this workbook is to provide you an easy mechanism to provide the data needed for the evaluation.

Start on the '**Your Sampled Projects**' tab. This tab includes:

- The project information for your sampled projects, as uploaded into the IS2.0 data system
- The sampled evaluation measure group each was selected for in this study
- Space to enter comments about your sampled projects

If you have any questions along the way,
please contact
Evergreen Economics
BPAdata@evergreenecon.com

We will help you transmit your data back to us securely. More information on this step is included on the '**How to Save & Send Data**' tab.

HOW IS THIS DATA BEING USED?

Our evaluation plan and kick-off presentation can be found [here](#).

SHEETS IN THIS WORKBOOK

Your Sampled Projects	The complete list of your sampled projects.
Definitions	All the data fields included on the 'Your Sampled Projects' tab are defined here for you.
How to Save & Send Data	Instructions for how to save and send files securely.
How to Provide Billing Data	Instructions for how to provide your billing data.
Billing Data Template	Template you will use to provide billing data for sampled projects.
Quick Data Clarifications	List of the key data descriptions to support the billing analysis.
BPAQ Forms - Commercial HVAC	Instructions for how to provide BPA Qualified installation forms.

START HERE

Your Sampled Projects

Definitions

How to Save & Send Data

How to Provide Billing Data

Billing Data Template



What Data Do We Need? ...Billing Data

Billing Data Requirements

Residential HVAC and Commercial HVAC BPA Qualified

Timeframe Requested

- January 1, 2015 to current billing period
- Measures installed between 2016 and 2018

Data Requested

- Monthly billing data
 - Meter read date
 - Read code
 - Days in read cycle
 - kWh usage
- Move-in/Move-out information
- Comm BPAQ: All meters in building

Key Data Fields

- Unique account and premise identifier
- Sample ID and Reference Number to link the data back to IS2.0

Tracking Move Ins & Move Outs

What we DO want:



Billing data for the unique combination of the sampled **end user** and the **site** at which the measure was installed

What we DON'T want:



Billing data for the sampled site **before** or **after** the participating end user lived there



Billing data for the participating end user **at a different site**

Commercial: Multiple Meters



If a business has multiple meters, please provide all meters associated with the installation address of the equipment



Optional: Identify which meter is associated with the installed equipment

Let's Walk Through Your Workbook

“How to Provide Billing Data” tab

How to Provide Your Billing Data

Thank you for participating in our billing data analysis!

Please use this workbook to provide your billing data. Specifically, use the ['Billing Data Template'](#) to provide your project energy consumption data, as well as the ['Quick Data Clarifications'](#) tab to provide some quick clarifications that will help our team better understand your data and reduce our follow-up questions.

Instructions
Beyond the FAQs below, our team is standing by to help! Please don't hesitate to reach out to Evergreen Economics (BPAdata@evergreenecon.com) with any questions.

Which projects are eligible? Eligible projects are any projects **installed between 1/2016 and 12/2018**. These are listed on the ['Your Sampled Projects'](#) tab.

What dates do we need? Please provide billing data from **1/1/2015 to the most current data available** for each site.
If your data are available starting later than January 2015, please use the earliest feasible start date.

Key fields on the 'Billing Data Template' tab. Please provide a unique end user identifier (e.g. account #) in **Column D**, and a unique site identifier (e.g. site ID) in **Column E**. If you use one identifier that tracks this data together, please include that in **Column D** and ignore **Column E**.
If you prefer, you can anonymize all identifying fields prior to sending us the data. For example, by using a proxy for account number and meter number.

What are we getting at? The evaluation team uses the unique combination of end user and site to track move ins/outs and distill billing data to the relevant combination of end user and site. If you have a parameter that tracks Move Ins/Outs directly, please provide that in **Column S and/or Column T**.
If you need more than two fields to do this, please feel free to add columns.

Multiple Meters? For commercial measures, please check the installation address and if there are multiple meters, please provide data from all meters. Different meter numbers can be tracked in Column M. If the meter associated with the installed HVAC equipment is known, please note it in Column U.


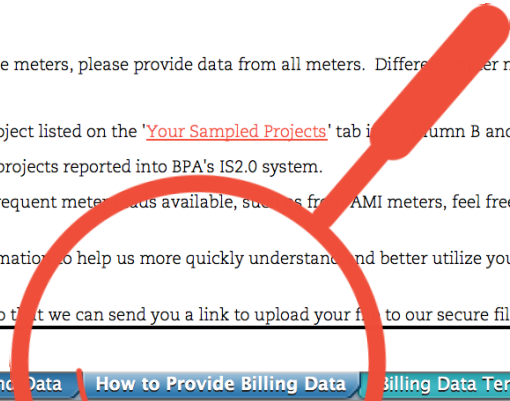
Important link to BPA's IS2.0 system. Please copy over the Sample ID and Reference Number for each project listed on the ['Your Sampled Projects'](#) tab into **Column B** and **Column C**.

Why do we need address? We will use the site address as an alternate way to link your data back to the projects reported into BPA's IS2.0 system.

What's the format? Please use a new row for each monthly or bi-monthly meter read. If you have more frequent meter reads available, such as from AMI meters, feel free to provide that data in a csv file.
Or give us a call with any questions.

Help us understand your data! On the ['Quick Data Clarifications'](#) tab, please provide the requested information to help us more quickly understand and better utilize your billing data. This data can be provided one time for all projects and measures for which you are providing billing data.

All Set? When your data is entered, please email Evergreen Economics at BPAdata@evergreenecon.com, so that we can send you a link to upload your file to our secure file transfer server.





What Data Do We Need? ...BPAQ Project Forms

Commercial DHP

Need: BPA Qualified Forms or Equivalent Information
 Don't need: Invoices

Ductless Heat Pumps (DHP)

Project Information Form

For Commercial, Industrial, and Agricultural Applications

Instructions: Complete this form and submit it to the serving electric utility. Incentives are only available for retrofits; new construction projects are not eligible.

This is a template for use by BPA customer utilities.

LOGO

BUSINESS AND SITE INFORMATION

Customer Name	
Installation Address (Street, City, State, Zip)	
Customer Phone Number	

EXISTING EQUIPMENT INFORMATION

Existing Equipment Information	Space 1	Space 2	Space 3
The space conditioned by the new DHP was heated by either zonal or forced air electric resistance heat as the primary system	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)
The space conditioned by the new DHP was previously conditioned by an air source, ground source, or ductless heat pump.	<input type="checkbox"/> Yes (If "Yes", project is not eligible for incentives) <input type="checkbox"/> No	<input type="checkbox"/> Yes (If "Yes", project is not eligible for incentives) <input type="checkbox"/> No	<input type="checkbox"/> Yes (If "Yes", project is not eligible for incentives) <input type="checkbox"/> No
The space conditioned by the new DHP was previously conditioned by an air source, ground source, or ductless heat pump that is no longer working, and is currently conditioned by backup zonal or forced-air electric resistance heat	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

NEW EQUIPMENT INFORMATION

DHP Information	Space 1	Space 2	Space 3
The DHP installed is on the Qualified Products List available at: https://www.bpa.gov/EE/Policy/Manual/Pages/IM-Document-Library.aspx (Note: For <i>quillhead</i> systems, the outdoor unit must be listed on the Qualified Products List)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)
Manufacturer			
Model			
Outdoor unit cooling capacity (tons)			

INSTALLER INFORMATION

Company Name	
Installer Signature	
Total Installed Cost (before rebate) including equipment, labor, and purchase date. Please include invoice with this project form.	



Commercial Heat Pumps

Need: BPA Qualified Forms or Equivalent Information
Don't need: Invoices

Heat Pump Upgrade

Project Information Form
For Commercial, Industrial, and Agricultural Applications

This is a template for use
by BPA customer utilities.



Instructions: Complete this form and submit it to the serving electric utility. Retrofits and new installations are eligible for incentives.

BUSINESS AND SITE INFORMATION

Customer Name	
Installation Address (Street, City, State, Zip)	
Customer Phone Number	

EXISTING EQUIPMENT INFORMATION

Existing Equipment Information	
Heat pump application (select one)	<input type="checkbox"/> New building or new construction application: will be heated by an efficient heat pump <input type="checkbox"/> Existing building retrofit: Existing heat pump will be upgraded to more efficient heat pump

NEW EQUIPMENT INFORMATION

New Equipment Information	Heat Pump 1	Heat Pump 2	Heat Pump 3
The heat pump installed meets BPA's Heat Pump Tier 1 or Tier 2 Specification available at: https://www.bpa.gov/EE/Policy/Manual/Pages/IM-Documents-Library.aspx	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)
The heat pump installed is an air-to-air heat pump system, 20 tons or less of cooling capacity	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)
Heat pump manufacturer			
Heat pump model			
Tons of cooling capacity			

INSTALLER INFORMATION

Company Name	
Installer Signature	
Total Installed Cost (before rebate) including equipment, labor, and purchase date. Please include invoice with this project form.	
Date	

By signing this form, I confirm that the above information is correct to the best of my knowledge.

Heat Pump Conversion

Project Information Form
For Commercial, Industrial, and Agricultural Applications

This is a template for use
by BPA customer utilities.



Instructions: Complete this form and submit it to the serving electric utility. Retrofits are eligible for incentives. New construction applications are not eligible.

BUSINESS AND SITE INFORMATION

Customer Name	
Installation Address (Street, City, State, Zip)	
Customer Phone Number	

EXISTING EQUIPMENT INFORMATION

Existing Equipment Information	
Was area conditioned by heat pump previously heated with electric resistance heat?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)

NEW EQUIPMENT INFORMATION

New Equipment Information	Heat Pump 1	Heat Pump 2	Heat Pump 3
The heat pump installed meets BPA's Heat Pump Tier 1 or Tier 2 Specification available at: https://www.bpa.gov/EE/Policy/Manual/Pages/IM-Documents-Library.aspx	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)
The heat pump installed is an air-to-air heat pump system, 20 tons or less of cooling capacity	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If "No", project is not eligible for incentives)
Heat pump manufacturer			
Heat pump model			
Tons of cooling capacity			

INSTALLER INFORMATION

Company Name	
Installer Signature	
Total Installed Cost (before rebate) including equipment, labor, and purchase date. Please include invoice with this project form.	
Date	

By signing this form, I confirm that the above information is correct to the best of my knowledge.



Concurrent Studies

NEEA DHPs Forms Request

- Residential DHP measures
- NEEA requesting project forms
- Shorter timeline than our evaluation

NEEA Home Energy Metering Study

- Evergreen Economics leading this study
- Looking for end use customers with DHPs in Heating Zones 2 and 3
- Please let us know if we can contact your customers for this study

Bonneville
POWER ADMINISTRATION



Questions?
pakelsven@bpa.gov



www.bpa.gov/goto/evaluation