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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laureng@apexanalyticsllc.com
Evaluation Approaches Overview
## Evaluation Measure Groups

**2016-2018 Sample Years for all Measure Groups**

<table>
<thead>
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<th>Sector</th>
<th>Evaluation Measure Group</th>
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<td>Duct Sealing</td>
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<td>Ductless Heat Pumps (BPA Qualified)</td>
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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

<table>
<thead>
<tr>
<th>Sector</th>
<th>Evaluation Measure Group</th>
<th>Measure Status</th>
<th>Billing Analysis</th>
<th>Forms Review</th>
<th>Phone Surveys</th>
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<td>If needed</td>
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<td>BPA Qualified</td>
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*We plan to review consumption histories but not conduct a full billing analysis*
Process
# Timeline

**Data Due April 22**

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

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<th>2020</th>
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<td>Exploratory Billing Analysis <em>(if needed)</em></td>
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<td>Reporting</td>
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<td>BPA Qualified Form Review</td>
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</table>

*15*
Data Security is a Priority

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

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

Anonymized data, remove customer PII

NDA with Evergreen Economics
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

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.

If you have any questions along the way, please contact Evergreen Economics BPAdata@evergreenec.com
Let's Walk Through Your Workbook

"Your Sampled Projects" tab

Your projects that have been sampled for the evaluation study are listed below. The columns on this tab are grouped and color coded as follows:

- Randomly assigned sample ID, used by evaluation contractor to track each unique project throughout the evaluation process.
- Your sampled project information, as reported into IS2.0.
- The evaluation measure group of your sampled project(s).
- The type of data we need for each sampled project.
- Provide any comments about your sampled projects in this column.

### Sampled Project Information

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<thead>
<tr>
<th>Sample ID</th>
<th>Reference Number</th>
<th>Completion Date</th>
<th>Unique Site ID</th>
<th>Street</th>
<th>City</th>
<th>State</th>
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</table>
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

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 (BPAdatat@evergrenecon.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 BPAdatat@evergrenecon.com, so that we can send you a link to upload your file to our secure file transfer server.
Let’s Walk Through Your Workbook

“Billing Data Template” tab

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<th>Sample ID</th>
<th>Reference Number</th>
<th>Parameter that represents a Unique Customer Account</th>
<th>Parameter that represents a Unique Address (e.g., Premise ID)</th>
<th>Contact Name</th>
<th>Phone Number</th>
<th>State</th>
<th>City</th>
<th>Zip</th>
<th>Street Address</th>
<th>Additional Address Info (e.g., unit)</th>
<th>Meter Number</th>
<th>Meter Read Date</th>
<th>Read Code</th>
<th>Days In Read Cycle</th>
<th>kWh Usage</th>
<th>Rate Class</th>
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What Data Do We Need?

...BPAQ Project Forms
# Commercial DHP

## Need: BPA Qualified Forms or Equivalent Information

**Don’t need:** Invoices

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### 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.

### BUSINESS AND SITE INFORMATION

<table>
<thead>
<tr>
<th>Customer Name</th>
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<tbody>
<tr>
<td>Installation Address (Street, City, State, Zip)</td>
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<tr>
<td>Customer Phone Number</td>
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### EXISTING EQUIPMENT INFORMATION

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<th>Existing Equipment Information</th>
<th>Space 1</th>
<th>Space 2</th>
<th>Space 3</th>
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<td>The space conditioned by the new DHP was heated by either zonal or forced air electric resistance heat as the primary system.</td>
<td>Yes</td>
<td>No (if “No”, project is not eligible for incentives)</td>
<td>Yes</td>
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<td>The space conditioned by the new DHP was previously conditioned by an air source, ground source, or ductless heat pump.</td>
<td>Yes (if “Yes”, project is not eligible for incentives)</td>
<td>No</td>
<td>Yes (if “Yes”, project is not eligible for incentives)</td>
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<tr>
<td>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</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### NEW EQUIPMENT INFORMATION

<table>
<thead>
<tr>
<th>DHP Information</th>
<th>Space 1</th>
<th>Space 2</th>
<th>Space 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The DHP installed is on the Qualified Products List available at:</td>
<td>Yes</td>
<td>No (if “No”, project is not eligible for incentives)</td>
<td>Yes</td>
</tr>
<tr>
<td>Available at</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor unit cooling capacity (tons)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### INSTALLER INFORMATION

<table>
<thead>
<tr>
<th>Company Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Installer Signature</td>
<td></td>
</tr>
<tr>
<td>Total Installed Cost (before rebate) including equipment, labor, and purchase date. Please include invoice with this project form</td>
<td></td>
</tr>
</tbody>
</table>
**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

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)
  - [ ] New building or new construction application will be heated by an efficient heat pump
  - [ ] Existing building retrofit: Existing heat pump will be upgraded to more efficient heat pump

### NEW EQUIPMENT INFORMATION

<table>
<thead>
<tr>
<th>New Equipment Information</th>
<th>Heat Pump 1</th>
<th>Heat Pump 2</th>
<th>Heat Pump 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The heat pump installed meets BPA’s Heat Pump Tier 1 or Tier 2 Specification available at: <a href="https://www.bpa.gov/EE/Policy/Manual/Pages/PlM_DocumentLibrary.aspx">https://www.bpa.gov/EE/Policy/Manual/Pages/PlM_DocumentLibrary.aspx</a></td>
<td>Yes</td>
<td>No (if “No”, project is not eligible for incentives)</td>
<td>Yes</td>
</tr>
<tr>
<td>The heat pump installed is an air-to-air heat pump system, 20 tons or less of cooling capacity</td>
<td>Yes</td>
<td>No (if “No”, project is not eligible for incentives)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 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

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?**
  - [ ] Yes
  - [ ] No (if “No”, project is not eligible for incentives)

### NEW EQUIPMENT INFORMATION

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### 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
Questions?
pakelsven@bpa.gov

www.bpa.gov/goto/evaluation