



Legal Department

American Electric Power
1 Riverside Plaza
Columbus, OH 43215-2373
AEP.com

March 25, 2014

Chairman Todd Snitchler
Ohio Power Siting Board
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215-3793

Yazen Alami
Regulatory Services
(614) 716-2920 (P)
(614) 716-2950 (F)
yalami@aep.com

Re: **In the Matter of the Application of**)
Heidelberg University)
and Ohio Power Company) **Case No. 14-0467-EL-EEC**
for Approval of a Special Arrangement)
Agreement with a Mercantile Customer)

Dear Chairman Snitchler,

Attached please find the Joint Application of Ohio Power Company (OPCo) and mercantile customer Heidelberg University for approval of a Special Arrangement of the commitment of energy efficiency/peak demand reduction (EE/PDR) resources toward compliance with the statutory benchmarks for 2014.

Amended Substitute Senate Bill 221 sets forth in R.C. 4928.66 EE/PDR benchmarks that electric distribution utilities shall be required to meet or exceed. The statute allows utilities to include EE/PDR resources committed by mercantile customers for integration into the utilities programs to be counted toward compliance with a utility's EE/PDR benchmarks. The statute also enables the Commission to approve special arrangements for mercantile customers that commit EE/PDR resources to be counted toward compliance with EE/PDR benchmarks.

The Commission's Order in Case No. 10-834-EL-EEC, established a streamlined process to expedite review of these special arrangements by developing a sample application process for parties to follow for consideration of such programs implemented during the prior three calendar years. Attached is OPCo's version of that application and accompanying affidavit. Any confidential information referenced in the Joint Application has been provided to the Commission Staff for filing in Commission Docket 10-1799-EL-EEC, under a request for protective treatment. OPCo respectfully requests that the Commission treat the two cases as associated dockets.

Cordially,

/s/ Yazen Alami
Yazen Alami

Attachments



Case No.: 14-0467-EL-EEC

Mercantile Customer: HEIDELBERG UNIVERSITY

Electric Utility: Ohio Power

Program Title or Description: AEP Ohio Business Incentives for Energy Efficiency: Self Direct Program

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. [10-834-EL-POR](#)

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Company Information

Name: HEIDELBERG UNIVERSITY

Principal address: 310 E Market St, Tiffin, Oh 44883

Address of facility for which this energy efficiency program applies: 139 Rebecca St, Tiffin, Oh 44883-2454

Name and telephone number for responses to questions:

Rodney Morrison, Heidelberg University, (419) 448-2399

Electricity use by our company (check the box(es) that apply):

- ☒ The customer uses more than seven hundred thousand kilowatt hours per year at our facility. (Please attach documentation.)

See Confidential and Proprietary Attachment 4 – Calculation of Rider Exemption and UCT which provides the facility consumption for the last three years, benchmark kWh, and the last 12 months usage.

- ☐ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.) When checked, see Attachment 6 – Supporting Documentation for a listing of the customer's name and service addresses of other accounts in the AEP Ohio service territory.

Section 2: Application Information

A) The customer is filing this application (choose which applies):

- ☐ Individually, on our own.
- ☒ Jointly with our electric utility.

B) Our electric utility is: Ohio Power Company

The application to participate in the electric utility energy efficiency program is "Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application."

C) The customer is offering to commit (choose which applies):

- ☐ Energy savings from our energy efficiency program. (Complete Sections 3, 5, 6, and 7.)
- ☐ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)
- ☒ Both the energy savings and the demand reduction from the customer's energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (choose whichever applies):

- ☐ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)).
- ☒ Installation of new equipment to replace equipment that needed to be replaced. The customer installed new equipment on the following date(s): 8/13/2010
- ☐ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s):
- ☐ Behavioral or operational improvement.

B) Energy savings achieved/to be achieved by your energy efficiency program:

- 1) If you checked the box indicating that your project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) - (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

- 2) If you checked the box indicating that you installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) - (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Unit Quantity (watts) = Existing (watts x units) - Installed (watts x units)

kWh Reduction (Annual Savings) = Unit Quantity x (Deemed kWh/Unit)

Annual savings: 6,416 kWh

See Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation for annual energy savings calculations and Attachment 6 - Supporting Documentation for custom measures work papers that

provide all methodologies, protocols, and practices used in this application for custom measures, as needed.

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

See Attachment 6 – Supporting Documentation for the work papers that provide all methodologies, protocols, and practices used in this application for custom measures, as needed.

- 3) If you checked the box indicating that your project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

- 4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies):

- ☒ Coincident peak-demand savings from the customer's energy efficiency program.
- ☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)
- ☐ Potential peak-demand reduction (check the one that applies):
- ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.
 - ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

The coincident peak-demand savings are permanent installations that reduce demand through energy efficiency and were installed on the date specified in Section 3 A above.

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

Unit Quantity (watts) = Existing (watts x units) - Installed (watts x units)

KW Demand Reduction = Unit Quantity (watts) x (Deemed KW/Unit (watts))

.0 kW

See Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation for peak demand reduction calculation, and Attachment 6 - Supporting Documentation for custom measures for the work papers that provide all methodologies, protocols, and practices used in this application for custom measures, as needed.

Section 5: Request for Cash Rebate Reasonable Arrangement (Option 1) or Exemption from Rider (Option 2)

Under this section, check the box that applies and fill in all blanks relating to that choice.

Note: If Option 2 is selected, the application will not qualify for the 60-day automatic approval. All applications, however, will be considered on a timely basis by the Commission.

A) The customer is applying for:

☐ Option 1: A cash rebate reasonable arrangement.

OR

☒ Option 2: An exemption from the cost recovery mechanism implemented by the electric utility.

OR

☐ Commitment payment

B) The value of the option that the customer is seeking is:

Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):

☐ A cash rebate of \$ 384.96. (Rebate shall not exceed 50% project cost. Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for incentive calculations for this mercantile program.

Option 2: An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

☒ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for 4 months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

OR

- ☐ A commitment payment valued at no more than \$_____. (Attach documentation and calculations showing how this payment amount was determined.)

OR

- ☐ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of an ongoing efficiency program that is practiced by our organization. (Attach documentation that establishes your organization's ongoing efficiency program. In order to continue the exemption beyond the initial 24 month period your organization will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

- ☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____
(Continue to Subsection 1, then skip Subsection 2)
- ☒ Utility Cost Test (UCT) . The calculated UCT value is: .04 (Skip to Subsection 2.)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The utility's incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were \$ 1,819.34

The utility's program costs were \$ 38.50

The utility's incentive costs/rebate costs were \$ 384.96.

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment.

See Attachment 1 - Self Direct Project Overview and Commitment for a description of the project. See Attachment 6 - Supporting Documentation, for the specifications of the replacement equipment work papers that provide all methodologies, protocols, and practices used in this application for custom measures, as needed. Due to the length of time since the equipment replacement, the make, model and year of the replaced equipment is not available.

- A copy of the formal declaration or agreement that commits your program to the electric utility, including:

- 1) any confidentiality requirements associated with the agreement;

See Attachment 2 - Self Direct Program Project Blank Application including Rules and Requirements. All confidentiality requirements are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 - Self Direct Program Project Completed Application.)

- 2) a description of any consequences of noncompliance with the terms of the commitment;

See Attachment 2 - Self Direct Program Project Blank Application including Rules and Requirements. All consequences of noncompliance are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 - Self Direct Program Project Completed Application.

- 3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;

None required because the resources committed are permanent installations that reduce demand through increased efficiency during the Company's peak summer demand period generally defined as May through September and do not require specific coordination and communication to provide demand reduction capabilities to the Company.

- 4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,

See Attachment 2 - Self Direct Program Blank Application including Rules and Requirements granting such permission pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 - Self Direct Program Project Completed Application.

- 5) a commitment by you to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.

See Attachment 1 - Self Direct Project Overview and Commitment for the commitment to comply with any information and compliance reporting requirements imposed by rule or as part of the approval of this arrangement by the Public Utilities Commission of Ohio.

- A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.

The Company applies the same methodologies, protocols, and practices to Self Direct Program retrospective projects that are screened and submitted for approval as it does to prospective projects submitted through its Prescriptive and Custom Programs. The Commission has not published a technical reference manual for use by the Company so deviations can not be identified. The project submitted is a custom project and energy savings are determined as described in Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation, Attachment 6 - Supporting Documentation for custom measures work papers that provide all methodologies, protocols, and practices used in this application for custom measures, as needed.



Public Utilities Commission

Application to Commit
Energy Efficiency/Peak Demand
Reduction Programs
(Mercantile Customers Only)

Case No.: 14-0467-EL-EEC

State of Ohio :

Amanda McCraig, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

KEMA Services, Inc agent of Ohio Power HEIDELBERG UNIVERSITY

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

Amanda McCraig Energy Efficiency Engineer
Signature of Affiant & Title

Sworn and subscribed before me this 24th day of March, 2014 Month/Year

Brenda Walke
Signature of official administering oath

Brenda Walke, Notary
Print Name and Title

My commission expires on 01-16-2018



Brenda Walke
Notary Public, State of Ohio
My Commission Expires 01-16-2018



Self Direct Project Overview & Commitment

The Public Utility Commission of Ohio (PUCO) will soon review your application for participation in AEP Ohio's Energy Efficiency/Peak Demand Response program. Based on your submitted project, please select by initialing one of the two options below, sign and fax to 877-607-0740.

Customer Name	HEIDELBERG UNIVERSITY	
Project Number	AEP-13-12013	
Customer Premise Address	139 REBECCA ST, TIFFIN, OH 44883-2454	
Customer Mailing Address	310 E Market St, Tiffin, OH 44883	
Date Received	11/15/2013	
Project Installation Date	8/13/2010	
Annual kWh Reduction	6,416	
Total Project Cost	\$3,685.25	
Unadjusted Energy Efficiency Credit (EEC) Calculation	\$513.29	
Simple Payback (yrs)	7.8	
Utility Cost Test (UCT) for EEC	4.30	
Utility Cost Test (UCT) for Exemption	0.04	
<i>Please Choose One Option Below and Initial</i>		
Self Direct EEC: 75%	\$384.96	<input type="checkbox"/> Initial: _____
EE/PDR Rider Exemption	2 Months (After PUCO Approval)	<input checked="" type="checkbox"/> Initial: <i>RM</i>

Note: This is a one time selection. By selecting EEC, the customer will receive payment in the amount stated above. Selection of EE/PDR rider exemption, will result in the customer not being eligible to participate in any other energy efficiency programs offered by AEP Ohio during the period of exemption. In addition, the term of EE/PDR rider exemption is subject to ongoing review for compliance and could be changed by the PUCO.

If EEC has been selected, will the Energy Efficiency Funds selected help you move forward with other energy efficiency projects?

____ YES ____ NO

Note: Exemptions for periods beyond 24 months are subject to look-back or true-up adjustments every year to ensure that the exemption accurately reflects the EEDR savings. Applicants must file for renewal for any exemption beyond 12 months.

Project Overview:

The Self Direct (Custom) project that the above has completed and applied is as follows.

Installed heat recovery wheel saving 6,416.08 kWh in cooling

The documentation that was included with the application proved that the energy measures applied for were purchased and installed.

By signing this document, the Mercantile customer affirms its intention to commit and integrate the above listed energy efficiency resources into the utility's peak demand reduction, demand response, and energy efficiency programs. By signing, the Mercantile customer also agrees to serve as a joint applicant in any filings necessary to secure approval of this arrangement by the Public Utilities Commission of Ohio, and comply with any information and compliance reporting requirements imposed by rule or as part of that approval.

Ohio Power Company

By: *John J. Williams*

Title: Manager

Date: 3/14/2014

HEIDELBERG UNIVERSITY

By: *[Signature]*

Title: Associate U-P Facilities

Date: 03.14.14

Self-Direct Program Application

ENERGY IS PRECIOUS. LET'S NOT WASTE IT.



STEPS FOR SUBMITTING YOUR APPLICATION

Step 1: Verify Project, Equipment and Customer Eligibility

- ✓ Project must be a facility improvement that produces a permanent reduction in electrical energy usage (kWh).
- ✓ Facilities must be AEP electric customers that are considered "mercantile" under the definition of the Public Utilities Commission of Ohio (PUCO).
- ✓ Projects must operate at least 2,245 hours per year to qualify for credits. Projects with annual energy (kWh) savings greater than the facility's annual energy (kWh) consumption are not eligible.
- ✓ All installed equipment must meet or exceed the specifications outlined in the application.
- ✓ Equipment must be installed in facilities served by AEP Ohio.
- ✓ Customer must have a valid AEP Ohio account number on an eligible AEP Ohio non-residential account or approved agricultural account.

Step 2: Submit Application

- ✓ Complete the Checklist page.
- ✓ Read the Terms and Conditions.
- ✓ Attach the documentation listed:
 - Completed Applicant Information form
 - Completed and signed Customer Agreement form
 - Measure worksheet(s)
 - Scope of work (type, quantity, and wattage of old and new equipment)
 - Dated and itemized invoices for the purchase and installation of all equipment installed
 - Specifications for all equipment installed showing that it meets program specifications
- ✓ Submit a completed application via email, fax or mail prior to November 15, 2013, for any projects completed on or after January 1, 2010. Any applications received after the deadline may not be submitted to the Public Utilities Commission of Ohio (PUCO) by December 31, 2013, which may jeopardize approval.

Step 3: Project Review

- ✓ The program team will review your application. The review of some projects will require an inspection; the team will contact applicants requiring an inspection for scheduling.
- ✓ After approval by AEP Ohio, the customer will receive an Overview and Commitment form to sign and return. The project will then be submitted to the PUCO for consideration. The PUCO will assign a case number and review the project details prepared by AEP Ohio. The PUCO may request additional information, or approve or reject the energy efficiency credits.

Step 4: Receive Energy Efficiency Credits

- ✓ The program team will issue energy efficiency credits four to six weeks after the PUCO approves a project.
- ✓ In lieu of a one-time energy efficiency credit, you may elect to seek an exemption from the Energy Efficiency/Peak Demand Reduction (EE/PDR) rider for the associated electric account(s) for a defined period of time as stated in this application. For this exemption, the energy efficiency credit amount (Option 1) is compared to the estimated value of the EE/PDR obligation (Option 2), as calculated by AEP Ohio. The value of Option 2 will be approximately equal to the value of Option 1. If exemption is elected, the affected account is not eligible for other programs offered by AEP Ohio during the exemption period. Unless additional resources are committed, you will, after the specified number of months exempted, again be subject to the EE/PDR rider. New construction projects are not eligible to elect Option 2. Major renovation projects that do not have a representative billing history for three years prior to the project installation also are not eligible to elect Option 2.
- ✓ If the energy efficiency credit is elected, you remain in the EE/PDR rider for the period of time that an exemption would have been in effect and may also participate in AEP Ohio programs. However, during that period of time, you are not allowed to elect the Option 2 exemption for any additional self-direct projects for the same account number.
- ✓ You are allowed and encouraged to consider using all or a portion of the energy credits, as received from AEP Ohio under this program, to help fund other energy efficiency and demand-reduction projects you choose to initiate in the future. Future projects also can qualify for credits under the prescriptive or custom programs.

AEP Ohio Business Incentives Program

2740 Airport Drive, Suite 160

Columbus, OH 43219

Phone: (877) 607-0739

Fax: (877) 607-0740

aepohioincentives@dnvkema.com

Visit our website at aepohio.com/incentives.

Self-Direct Program Application

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CHECKLIST

FINAL APPLICATION

Required Attachments

- ☐ Completed and signed Applicant Information form
- ☐ Completed Final Payment Agreement form including Energy Efficiency Credits Requested section
- ☐ Itemized invoices
- ☐ Equipment specifications
- ☐ Scope of work
- ☐ W-9 (LLC, individual, partnership, property management companies)

Credit Worksheets¹

- ☐ Lighting
- ☐ HVAC
- ☐ Motors & Drives
- ☐ Compressed Air
- ☐ Refrigeration/Food Service
- ☐ Agriculture & Miscellaneous
- ☐ Transformer
- ☐ UPS
- ☐ Custom
- ☐ New Construction Lighting

Application date _____

Estimated project cost _____

Expected completion date _____

¹Incomplete applications will delay processing and receipt of energy efficiency credits.

Revised Submittal

Please complete below if this is a revised submittal.

Submittal date _____ AEP Project Number (if known) AEP - 1 ____ - ____ - ____ - ____

AEP Ohio Business Incentives Program

2740 Airport Drive, Suite 160

Columbus, OH 43219

Phone: (877) 607-0739

Fax: (877) 607-0740

aepohioincentives@dnvkema.com

Visit our website at aepohio.com/incentives.

TERMS AND CONDITIONS

AEP Ohio offers prescriptive and custom credits under the AEP Ohio Business Incentives Program to facilitate the implementation of past cost-effective energy efficiency improvements for non-residential customers. AEP Ohio provides energy efficiency credits (EEC) for the purchase and installation of qualifying cost-effective equipment in the customer's facility under the Terms and Conditions provided in this application and subject to regulatory approvals. EEC will only be provided in the form of a check or an Energy Efficiency/Peak Demand Reduction (EE/PDR) rider exemption under this program.

Please note that funds are limited and subject to availability.

Program Effective Dates

AEP Ohio Business Incentives Program offers credits until approved funds are exhausted or November 15, 2013, whichever comes first. The effective dates of the current AEP Ohio Business Incentives Program and application submittal requirements are as follows:

- Self-direct projects are projects completed since January 1, 2010. Self-direct projects are eligible to apply for EEC with this application. Current or future projects should apply using a prescriptive or custom application.
- All 2013 AEP Ohio Business Incentives Program applications should be received no later than November 15, 2013. Any applications received after the deadline may not be submitted to the Public Utility Commission of Ohio (PUCO) by December 31, 2013, which may jeopardize approval. AEP Ohio reserves the right to extend or shorten this timeline.

Program and Project Eligibility

The AEP Ohio Business Incentives Program offers both prescriptive credits for some of the more-common energy efficiency measures and custom credits for other eligible improvements not included on the list of prescriptive measures. Credits available under the AEP Ohio Business Incentives Program include non-residential accounts or approved agricultural accounts served on AEP Ohio's regulated retail rates.

Qualifying projects must be installed in a facility in AEP Ohio's electric service territory in Ohio. Credits are available to all non-residential accounts or approved agricultural accounts that pay into the EE/PDR rider and receive their electricity over AEP Ohio wires, regardless from which retail electric supplier the customer has chosen to purchase power. A customer may neither apply for nor receive credits for the same product, equipment or service from more than one utility.

Custom projects must involve measures that result in a reduction in electric energy usage due to an improvement in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a custom credit. The project simple payback prior to the credit payment generally should fall between 1 to 7 years, or pass cost-effectiveness test(s) determined by AEP Ohio to qualify for a credit.

Projects involving measures covered by the prescriptive credit portion of the program are not eligible for a custom credit. However, the applicant has the option to apply for a custom credit for whole building integrated projects or systems, even if they include prescriptive measures. Prescriptive elements may be capped at the deemed savings and/or credit level.

The self-direct program applies to customer facilities served by AEP Ohio's retail electric rates that are defined as "mercantile" and meet the minimum energy usage requirements of 700,000 kWh per year, or that are part of a national account involving multiple facilities in one or more states.

Facilities must be eligible under the definition of "mercantile" as designated by the PUCO. All applications are subject to review and approval by AEP Ohio, its contractor(s)/agent(s) and the PUCO prior to any EEC payments or exemptions from the EE/PDR rider in this program.

Project requirements under the AEP Ohio Business Incentives Program include the following:

- Projects must involve a new facility improvement with capital improvements that results in a permanent reduction in electrical energy usage (kWh). Existing/old equipment must be functional and in operation.
- Any measures installed at a facility must produce verifiable and persistent energy reduction and must be sustainable and provide 100% of the energy benefits as stated in the application for a period of at least five (5) years or for the life of the product, whichever is less. If the customer ceases to be a delivery service customer of AEP Ohio or removes the equipment or systems at any time during the 5-year period or the life of the product, the customer may be required to return a prorated amount of credit funds to AEP Ohio.
- All equipment must be new.
- All installed equipment must meet state, federal and local codes and requirements.
- Projects must be installed on the AEP Ohio electric account in Ohio served by an eligible electric rate.
- Equipment must be purchased, installed and operating (or capable of operating in the case of seasonal uses) prior to submitting an application for a credit.

Self-Direct Program Application

ENERGY IS PRECIOUS. LET'S NOT WASTE IT.



TERMS AND CONDITIONS

- AEP Ohio will issue credit payments in the form of checks, not utility bill credits.
- The credit is paid as a one-time, one-program offer and cannot be combined with incentive payments from other AEP Ohio programs. The customer may be eligible to participate in other programs offered by AEP Ohio, as long as no project receives more than one credit or incentive.

Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the PUCO for further review and approval.

Projects that are NOT eligible for a credit include the following:

- Fuel switching (e.g., electric to gas or gas to electric)
- Changes in operational and/or maintenance practices or simple control modifications not involving capital costs (Please visit aepohio.com/incentives for Retro-Commissioning Program or Continuous Improvement Program)
- Removal or termination of existing processes, facilities and/or operations
- On-site electricity generation
- Projects involving gas-driven equipment in place of or to replace electric equipment (such as a chiller)
- Projects focused primarily on power factor improvement
- Projects that involve peak-shifting (and not kWh savings)
- Used or rebuilt equipment
- Costs associated with internal labor
- Renewables (Please visit aepohio.com/save for Renewables Program)
- Projects required by state or federal law, building or other codes, or projects that are standard industry practice
- Projects easily reverted/removed or projects installed entirely for reasons other than improving energy efficiency
- Other conditions to be determined by AEP Ohio

Energy Efficiency Credit Limits

For both prescriptive and custom measures in this application, **total EEC shall be 75% the lesser of:** 1) The calculated credit as approved by AEP Ohio or 2) 50% of total project cost (not including internal labor). In calculating the savings and EEC for custom measures, please contact the AEP Ohio Business Incentives Program office to determine an appropriate baseline for savings. In addition to the above project cost limit, credit payment rates vary when a customer's calculated credit exceeds the tiers listed below:

PROGRAM ENERGY EFFICIENCY CREDITS	
Energy efficiency credit levels for one-year energy savings	See tables for prescriptive credits. Custom credits: \$0.08/kWh x 75%.
Minimum/maximum simple payback before energy efficiency credit applied	Must pass cost effectiveness test(s) determined by AEP Ohio; generally between one and seven years
Maximum payout	75% of 50% of the total cost (additional measure caps may apply)
Energy efficiency credit levels for projects completed since 1/1/2010	Calculated amount on the prescriptive or custom worksheets attached and subject to funding limits
Credit limit	See Credit Limits and Tiering section
Credit calculation order	Measure credit caps are applied first. Project-cost credit limits are applied second. Credit tiering is applied third. Lastly, 75% factor is applied to credit.

Energy Efficiency Credit Tiering

The total credit paid for any self-direct application cannot exceed 50% of the total project cost (not including internal labor). In addition to the above project cost limit, credit payment rates vary when a customer's calculated credit exceeds the tiers listed below:

- Tier 1 \$0 - \$100,000 = 100% of eligible calculated credit value
- Tier 2 \$100,001 - \$300,000 = 50% of eligible calculated credit value
- Tier 3 \$300,001 - \$500,000 = 25% of eligible calculated credit value
- Tier 4 \$500,001 - beyond = 10% of eligible calculated credit value

Application Review Process

Applications are not a guarantee of program acceptance and energy efficiency credits. AEP Ohio will review applications for eligibility and completeness. Completed applications will be reviewed in the order received. Funds are reserved for the project when AEP Ohio receives a completed application and determines that the project meets the program eligibility requirements. Upon review of the application, the program will notify applicants who submit incomplete applications of deficiencies; applicants may lose their place in the review process until receipt of all requested information. Applications must be completed and all information received by the deadlines defined above to begin processing. Applicants are encouraged to call the program hotline with any questions about documentation requirements.

TERMS AND CONDITIONS

Application

Projects completed on or after Jan 1, 2010, must submit an application and all required supporting documentation by November 15, 2013, to be applicable for the 2013 program year. Any applications received after the deadline may not be submitted to the PUCO by December 31, 2013, and could jeopardize approval.

A signed application with supporting project documentation verifying project installation and capital improvements must be submitted to AEP Ohio prior to application approval. Project documentation, such as (but not limited to) copies of dated invoices for the purchase and installation of the measures, equipment specification sheets, energy-savings analysis, complete application and W-9 forms (LLC, individual, partnership, property management companies), is required. The invoice should provide sufficient detail to separate the project cost from the costs of other services not related to the energy efficiency project and other repairs. The location or business name on the invoice must be consistent with the application information.

AEP Ohio reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the PUCO and the evaluators. Requested information could include equipment purchase dates, installation dates, proof that the equipment is operational, manufacturer specifications, savings calculation documentation, monitoring data, warranty information and proof of customer co-payment.

Inspections

The AEP Ohio Business Incentives Program reserves the right to inspect all projects to verify compliance with the program rules and verify the accuracy of project documentation. This may include installation inspections, verification of detailed lighting layout descriptions, metering, data collection, interviews and utility bill or monitoring data analysis. Customers are required to allow access to project documents and the facility where the measures were installed for a period of five years after receipt of credit payment by AEP Ohio. In the event a building(s) are turned over to a new account holder/owner before AEP Ohio officially measures and verifies incentivized equipment, AEP Ohio reserves the right to do so under new ownership. Customer understands and agrees that program installations may also be subject to inspections by the PUCO or its designee, and photographs of installation may be required.

Requirements for Custom Project Electricity Savings Calculation

The annual electricity savings must be calculated for custom projects using industry-accepted engineering algorithms or simulation models. The applicant may estimate the annual electricity usage of both the existing and proposed equipment based on the current operation of the facility. A listing of the pre-existing information requirements is provided at the end of the custom application section. If equipment is replaced prior to the end of its rated service life in order to achieve energy savings, the existing equipment performance may be used as the baseline in the energy-savings calculations. Documentation of early replacement decision and/or actual equipment energy usage will be required. If equipment is replaced due to failure or for other reasons (such as obsolescence or a need for more capacity), the baseline performance used in the savings calculation should be either the minimum performance that would be required by code for that equipment type and application (where a code applies) or the performance of the equipment that would have been selected as the customer's standard practice when a code does not apply.

If the previous equipment was at the end of its useful life, the applicant must use, as the baseline, the equipment that would meet the applicable federal and local energy codes unless an "as found" baseline is being used by the applicant. If the applicant is using an "as found" baseline, additional specific information on the pre-existing information must be provided.

The applicant must be able to clearly describe the method used to calculate the savings. The applicant must provide all assumptions used in the calculations and document the sources for these assumptions. If no savings analysis is provided by the customer/contractors, AEP Ohio reserves the right to utilize its approved methodology and analysis to determine energy savings.

The method and assumptions used by the applicant to calculate the annual savings will be reviewed by AEP Ohio. AEP Ohio is solely responsible for the final determination of the annual energy savings and peak-demand reduction used in calculating the credit amount. AEP Ohio also reserves the right to require specific measurement and verification activities, including monitoring the retrofit to determining the credit. Verification of the pre-existing consumption may also be required.

For custom and "as found" projects, the applicant is required to provide information in order to allow AEP Ohio to verify the baseline usage of the pre-existing equipment. AEP Ohio may need to conduct inspections of projects to verify equipment and operating conditions.

TERMS AND CONDITIONS

Customers are encouraged to submit projects that warrant special treatment (i.e., non-typical projects) to be considered on a case-by-case basis by AEP Ohio.

Tax Liability

Credits are taxable and, if more than \$600, will be reported to the IRS unless the customer is exempt. AEP Ohio is not responsible for any taxes that may be imposed on your business as a result of your receipt of credit. A W-9 (for LLC, individual, partnership, property management companies) must be provided with all applications.

Disclaimer

Any and all energy savings and coincident demand generated by the project described in this application are hereby committed to AEP Ohio. That retained demand can be used to count against AEP Ohio's benchmark requirements in S.B. 221, regardless; any retained demand provided to PJM generation auctions must be done so by AEP Ohio only.

Peak-demand reduction is defined as the reduction in average load over the performance hours as a result of replacing existing electrical equipment with more-efficient electrical equipment. Peak performance hours are defined as the time between June 1 and August 31 on weekdays and non-holidays, between the hours 3:00 p.m. and 6:00 p.m. Eastern Standard Time. PJM Peak Hours are defined as the time between June 1 and August 31 on weekdays and non-holidays, between the hours 2:00 p.m. and 6:00 p.m. Eastern Standard Time.

AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for credits under this program. AEP Ohio has no obligations regarding and does not endorse or guarantee any claims, promises, work or equipment made, performed or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures. AEP Ohio is not responsible for the proper disposal/recycling of any waste generated as a result of this project. AEP Ohio is not liable for any damage caused by the operation or malfunction of the installed equipment.

Self-Direct Program Application

ENERGY IS PRECIOUS. LET'S NOT WASTE IT.



APPLICANT INFORMATION

Important: Please read the Terms and Conditions before signing and submitting this application. Complete all information and provide required documentation to avoid processing delays.

Project Information

Business Type

(Select One) _____

W-9 Tax Status

(Select One) _____

How Did You Hear About the Program?

(Select One) _____

Shift

(Select One) _____

Affected Area Square Footage

Dodge Report Number

Building Operating Hours

Equipment Operating Hours

Name of Applicant's Business _____

Project Name (if applicable) _____ Name as It Appears on Utility Bill _____

AEP Ohio Account Number Where Measure Installed _____ Taxpayer ID (SSN/FEIN) _____

Mailing Address _____ City _____ State ^{OH} Zip _____

☐ Check if mailing address and installation address are the same.

Installation Address _____ City _____ State ^{OH} Zip _____

Customer Contact

Please provide all contacts we may need to process this project. List the project decision-maker, the technical contact, etc. as the contractor contact.

Name of Contact (preferred contact for documentation) _____

Title of Contact _____ Phone # _____ Ext. _____

Contact Fax # _____ Contact Email _____

Solution Provider/Contractor Information¹

Name of Contracting Company _____

Name of Contact Person _____ Title of Contact _____

Mailing Address _____ City _____ State ^{OH} Zip _____

Phone # _____ Ext. _____ Contact Fax # _____ Contact Email _____

If there are questions about the application who should we contact? ☐ Customer ☐ Contractor

¹Solution provider/contractor is the party involved in the application submittal (i.e., specs, scope of work, etc.).

FINAL PAYMENT AGREEMENT

Final Payment Agreement

I understand that the application and all required documentation should be received by the AEP Ohio Business Incentives Program by November 15, 2013, for any projects completed on or after January 1, 2010. Any applications received after the deadline may not be submitted to the PUCO by December 31, 2013, and could jeopardize approval of any credit by the PUCO. All equipment must be purchased, installed and fully operational prior to submitting the application.

I understand that AEP Ohio or its representatives have the right to ask for additional information at any time. AEP Ohio Business Incentives Program will make the final determination of credit levels for this project.

I understand that this project must involve a facility improvement that results in improved energy efficiency.

As an eligible AEP Ohio account holder, I certify that decisions to acquire and install the indicated energy efficiency measures, which will be demonstrated with supporting documentation required by AEP Ohio, were made after January 1, 2010, and that work was completed on this project on or after January 1, 2010. The energy efficiency measures are for use in my business facility and not for resale.

I understand that the location and business name on the project documentation must be consistent with the application information. Project documentation, product specification sheets and details of measure installation are included. Documentation indicating contract dates prior to November 16, 2012, may render this application ineligible. I understand that all submissions become the property of AEP Ohio. It is recommended to keep a copy for your records.

I agree that if: (1) I did not install the related product(s) identified in my application or (2) I remove the related product(s) identified in my application before a period of five (5) years or the end of the product life, whichever is less, I shall refund a prorated amount of energy efficiency credits to AEP Ohio based on the actual period of time the related product(s) were installed and operating. This is necessary to assure that the project's related energy benefits will be achieved. (3) AEP Ohio will pay 75% of the lesser of: 1) The calculated credit as approved by AEP Ohio, subject to funding limits or 2) 50% of the project cost (subject to application caps). I understand that AEP Ohio or its representatives have the right to ask for additional information at any time. AEP Ohio Business Incentives Program will make the final determination of energy efficiency credit levels for this project.

I agree to be responsible to comply with any applicable codes

or ordinances. I also understand that all materials removed, including lamps and PCB ballasts, must be permanently taken out of service and disposed of in accordance with local codes and ordinances. I understand it is my responsibility to be aware of any applicable codes or ordinances. Information about hazardous waste disposal can be found at epa.gov/epawaste/hazard/index.htm.

I agree to verification by the utility or its representatives of both sales transactions and equipment installation. I understand that these credits are available to all non-residential accounts or approved agricultural accounts that pay into the Energy Efficiency and Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires, regardless from which retail electric supplier the customer has chosen to purchase power.

I understand that AEP Ohio reserves the right to refuse payment and participation if the customer or contractor violates program rules and requirements. AEP Ohio is not liable for energy efficiency credits promised to customers as a result of misrepresentation of the program.

I understand that AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measure eligible for energy efficiency credits under this program. Furthermore, AEP Ohio has no obligations regarding any claims, promises, work or equipment made, performed or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures and does not endorse or guarantee same.

Energy efficiency credits will be based upon the Final Application and program terms and conditions, as well as the availability of funds.

I understand that the program has a limited budget. Applications will be processed until allocated funds are reserved or spent. Final Applications should be received by November 15, 2013, to be eligible for funding under the current program period.

I certify that the information on this application is true and correct, and that the taxpayer ID number, tax status and W-9 are the applicant's. I understand that credits exceeding \$600 will be reported to the IRS, unless the applicant is exempt. I understand that credits assume related energy benefits over a period of five (5) years or for the life of the product, whichever is less.

I understand that the program may be modified or terminated without prior notice.

I understand and agree that all other terms and conditions as specified in the application, including all attachments and exhibits

FINAL PAYMENT AGREEMENT

attached to this application, will serve as a contract for the customer's commitment of energy and demand resources to AEP Ohio and shall apply.

Any and all energy savings and coincident demand generated by the project described in this application are hereby committed to AEP Ohio. That retained demand can be used to count against AEP Ohio's benchmark requirements in S.B. 221, regardless; any retained demand provided to PJM generation auctions must be done so by AEP Ohio only.

Self-Direct Program Application

ENERGY IS PRECIOUS. LET'S NOT WASTE IT.



CUSTOMER AGREEMENT

- ☐ I have read and understand the program requirements, measure specifications, and Terms and Conditions set forth in this application and agree to abide by those requirements. Furthermore, I concur that I must meet all eligibility criteria in order to be paid under this program.

All equipment must be installed and operational. A customer signature is required for payment. Signed applications received by email or fax will be treated the same as original applications received by mail.

All submissions become the property of AEP Ohio. Keep a copy for your records.

Digital Signature Instructions

1. Click in the signature box.
2. Follow the digital signature directions displayed in the "Add Digital ID" pop-up box.
3. Establish a digital ID and password.
4. In the "Sign Document" pop-up box, you can select to change the signature appearance from typed font to an imported graphic.
5. Follow directions to save signed application; signature and verification information will appear in the signature box.

Total Project Cost

Customer Signature (AEP Ohio Customer)

Date

03/08/13

Total Credits Requested¹

Print Name

Project Completion Date

SUBMIT VIA EMAIL

PRINT APPLICATION

¹AEP Ohio will pay the lesser of 1) the calculated credit as approved by AEP Ohio or 2) 50% of the total project cost.

AIR HANDLING UNIT SCHEDULE

MANUFACTURER'S MODEL NUMBER BASED ON TEMTROL UNLESS OTHERWISE NOTED.

MZ - MULTI-ZONE; H & A/C - HEATING AND AIR CONDITIONING; H & V - HEATING & VENTILATING; F.C. - FORWARD CURVED; A.F. - AIR FOL; A.T.L. - ACROSS THE LINE; VAV - VARIABLE AIR VOLUME; VFD - VARIABLE FREQUENCY DRIVE

UNIT UNIT				SUPPLY FAN DATA							SUPPLY FAN MOTOR DATA				COOLING COIL DATA								HEATING COIL DATA								RETURN FAN DATA					RETURN FAN MOTOR DATA				GEN. INFORMATION			REMARKS										
UNIT NUMBER	LOCATION	MFR. & MODEL NUMBER	TYPE	CFM	TOTAL S.P. "W.G."	EXT. S.P. "W.G."	RPM	WHEEL TYPE & SIZE	TIP SPEED F.P.M.	O.V. F.P.M.	MOTOR H.P.	B.H.P. REQ'D.	VOLTS		TYPE MOTOR STARTING	CFM	ROWS & FINS PER INCH	GPM	WTR. P.D. FT. HD.	COIL F.A. SQ. FT.		ENT. AIR TEMP.		LVG. AIR TEMP.		CFM	ROWS & TYPE FIN	GPM	WTR. P.D. FT. HD.	AIR TEMP.		CFM	TOTAL S.P. "W.G."	EXT. S.P. "W.G."	RPM	WHEEL TYPE & SIZE	TIP SPEED F.P.M.	O.V. F.P.M.	MOTOR H.P.	B.H.P. REQ'D.	VOLTS			TYPE MOTOR STARTING	ARRANG.	FILTER AREA	MIN. %						
													PHASE	PHASE						D.B. (°F)	W.B. (°F)	D.B. (°F)	W.B. (°F)	ENT. (°F)	LVG. (°F)																												
AHU-1	BASEMENT	TEMPROL	--	8,900	6.5	2.5	---	20"	---	---	(2) 10.0	14.1	208		3	ARL	8,900	10	10	68	15.8	0.94	23	82	67.5	48.8	48.7	8,900	2	9	31.3	5.5	0.14	21.08	46	106	8,900	3.50	1.0	---	18"	----	----	(2) 5.0	10	7.42	208	3	ATL	DRAW THRU	23.0	100	(1)

① UNIT TO BE PROVIDED WITH HEAT WHEEL MODEL ECW 64, 64" x 8, HEAT WHEEL MOTOR, 1.0 HP, 120V, 1Ø. HEAT WHEEL SHALL HAVE THE FOLLOWING CHARACTERISTICS:
EXHAUST AIR
9,149 CFM (INCLUDING PURGE)
OUTSIDE AIR
9,149 CFM (INCLUDING PURGE)
SUMMER
82°F DB
67°F WB
37.46 WRH
RETURN AIR
8,900 CFM
SUMMER
75°F DB
63°F WB
34.16 WRH
SUPPLY AIR
8,900 CFM
SUMMER
82°F DB
67°F WB
31.7 WRH

12 degree F temperature change

CHILLED BEAM SCHEDULE

MANUFACTURER'S MODEL NUMBER BASED ON DADANGO

							AIR SIDE							WATER SIDE							UNIT HEATING						
UNIT TAG	QTY.	ZONE ID	ZONE NAME	MODEL NUMBER	NOMINAL LENGTH (FEET)	NOZZLE CONFIGURATION	PRIMARY AIR PRESSURE (IN. W.C.)	PRIMARY AIR (CFM)	SECONDARY AIR (CFM)	SUPPLY AIR (CFM)	SUPPLY AIR TEMP. OUT (°F)	PRIMARY AIR COOLING (BTU/H)	LATENT COOLING (BTU/H)	SECONDARY AIR COOLING (BTU/H)	TOTAL COOLING (BTU/H)	TOTAL COOLING (BTU/H)	SCHW WATER FLOW (GPM)	WATER PRESSURE DROP (FT. W.C.)	LEAVING WATER TEMP. (°F)	PRIMARY AIR OFFSET CAPACITY (BTU/H)	COIL HEATING CAPACITY (BTU/H)	NET UNIT HEATING CAPACITY (BTU/H)	HEATING HOT WATER FLOW (GPM)	WATER PRESSURE DROP (FT. W.C.)	LEAVING WATER TEMP. (°F)	SUPPLY AIR TEMP. (°F)	
CB-1-1	2	112	LOUNGE	ACB20-1050.242	4	66-SN		71	181	252	60.5	771	1101	3195	3965	5066	3.2	3.5	58.0	308	8894	9202	4.8	7.2	116.3	101.6	
CB-1-2	6	101	CLASSROOM	ACB20-1650.242	6	118-MN	0.4	176	336	512	63.4	1915	2735	4561	6476	9211	1.0	0.5	65.6	766	15976	16742	4.8	11.3	113.3	98.1	
CB-1-3	1	108	MENS	ACB20-500.242	2	28-MN	0.2	29	63	92	60.1	316	452	1178	1495	1946	1.0	0.2	58.5	126	3364	3491	4.8	3.4	118.6	102.8	
CB-1-4	1	107	WOMENS	ACB20-500.242	2	28-MN	0.2	29	63	92	60.1	316	452	1178	1495	1946	1.0	0.2	58.5	126	3364	3491	4.8	3.4	118.6	102.8	
CB-1-5	3	102	CONFERENCE	ACB20-1050.242	4	74-MN	0.3	95	181	276	62.4	1033	1476	2738	3772	5247	1.0	0.3	61.7	413	8860	9274	4.8	7.2	116.3	99.0	
CB-1-6	4	104	CLASSROOM	ACB20-1650.242	6	118-MN	0.3	152	286	437	62.8	1647	2353	4132	5779	8132	1.0	0.5	64.7	659	13958	14617	4.8	11.3	114.1	98.8	
CB-1-7	1	114	CORRIDOR	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
CB-2-1	2	206	LOBBY	ACB20-1650.242	6	120-MN	0.6	222	426	647	61.9	2408	3439	6832	9240	12679	3.2	5.5	60.3	963	19351	20314	4.8	11.3	111.9	96.9	
CB-2-2	1	202	CORRIDOR	ACB20-1050.242	4	66-MN	0.5	111	233	344	61.3	1204	1719	3931	5134	6854	3.2	3.5	58.5	481	11002	11483	4.8	7.2	115.4	98.7	
CB-2-3	6	201	CLASSROOM	ACB20-1650.242	6	120-MN	0.5	201	383	584	63.0	2189	3126	5403	7561	10717	1.3	1.1	64.5	875	17784	18659	4.8	11.3	112.5	97.4	
CB-2-4	2	203	ADMIN	ACB20-1050.242	4	60-MN	0.5	101	225	325	61.9	1094	1563	3552	4646	6209	1.6	1.0	60.5	438	10666	11104	4.8	7.2	115.5	99.4	
CB-2-5	1	203B	TESTING	ACB20-1050.242	4	60-SN	0.3	56	148	204	61.0	603	862	2502	3105	3967	1.3	0.7	59.9	241	7451	7692	4.8	7.2	116.9	102.8	
CB-2-6	2	203C	OFFICE	ACB20-500.242	2	34-MN	0.7	68	136	204	61.8	739	1056	2182	2921	3977	2.5	1.1	57.7	296	6199	6495	4.8	3.4	117.4	97.3	
CB-2-7	6	204	CLASSROOM	ACB20-1650.242	6	118-MN	0.4	176	336	512	62.2	1915	2735	5216	7131	9866	1.6	1.6	62.6	766	15976	16742	4.8	11.3	113.3	98.1	
CB-2-8	1	203A	TELECOM	----	4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
CB-3-1	1	309	CORRIDOR	ACB20-1650.242	6	94-MN	0.6	174	393	566	61.3	1886	2694	6566	8452	11145	4.1	8.7	59.2	754	18141	18895	4.8	11.3	112.4	98.7	
CB-3-2	1	310	LOUNGE	ACB20-1050.242	4	72-MN	0.5	121	239	360	61.5	1313	1876	3985	5298	7173	2.9	2.8	58.8	525	11248	11774	4.8	7.2	115.3	98.1	
CB-3-3	1	301	SUITE	ACB20-1050.242	4	68-MN	0.5	114	235	350	62.4	1240	1771	3528	4768	6540	1.3	0.7	61.6	496	11093	11589	4.8	7.2	115.3	98.5	
CB-3-4	1	301A	OFFICE	ACB20-1050.242	4	46-SN	0.5	56	170	225	60.4	603	861	2962	3566	4427	2.2	1.8	58.7	241	8394	8635	4.8	7.2	116.5	103.3	
CB-3-5	2	301B	OFFICE	ACB20-1050.242	4	42-SN	0.5	51	159	210	61.0	551	787	2650	3200	3987	1.3	0.7	60.2	220	7955	8175	4.8	7.2	116.7	103.8	
CB-3-6	1	301C	OFFICE	ACB20-1050.242	4	60-MN	0.5	101	225	325	61.6	1094	1563	3642	4737	6300	1.9	1.3	59.8	438	10666	11104	4.8	7.2	115.5	99.4	
CB-3-7	1	301D	OFFICE	ACB20-1650.242	6	82-SN	0.5	99	289	388	60.3	1075	1536	5111	6186	7721	4.1	8.7	58.5	430	14081	14511	4.8	11.3	114.1	102.5	
CB-3-8	2	301E	OFFICE	ACB20-500.242	2	36-MN	0.5	60	114	175	61.4	657	938	1921	2578	3516	2.9	1.4	57.3	263	5385	5648	4.8	3.4	117.7	97.8	
CB-3-9	1	301F	OFFICE	ACB20-1050.242	4	42-SN	0.5	51	159	210	60.6	551	787	2727	3277	4064	1.6	1.0	59.4	220	7955	8175	4.8	7.2	116.7	103.8	
CB-3-10	1	302	MENS	ACB20-500.242	2	36-MN	0.5	60	114	175	62.7	657	938	1675	2332	3269	1.0	0.2	59.5	263	5385	5648	4.8	3.4	117.7	97.8	
CB-3-11	1	303	WOMENS	ACB20-1050.242	4	72-MN	0.5	121	239	360	61.1	1313	1876	4110	5423	7299	4.8	7.2	57.7	525	11248	11774	4.8	7.2	115.3	98.1	
CB-3-12	1	308	OFFICE	ACB20-1050.242	4	42-SN	0.5	51	159	210	60.0	551	787	2864	3415	4201	3.2	3.5	57.8	220	7955	8175	4.8	7.2	116.7	103.8	
CB-3-13	2	304	OFFICE	ACB20-500.242	2	34-MN	0.7	68	136	204	62.1	739	1056	2121	2861	3917	1.9	0.6	58.2	296	6199	6495	4.8	3.4	117.4	97.3	
CB-3-14	2	305	CONFERENCE	ACB20-1650.242	6	112-SN	0.5	135	337	472	63.2	1468	2097	4568	6037	8134	1.0	0.5	65.6	587	16011	16598	4.8	11.3	113.3	100.4	
CB-3-15	1	306	SUITE	ACB20-1050.242	4	60-MN	0.5	101	225	325	62.9	1094	1563	3175	4269	5832	1.0	0.3	62.7	438	10666	11104	4.8	7.2	115.5	99.4	
CB-3-16	1	306A	OFFICE	ACB20-1050.242	4	46-SN	0.5	56	170	225	60.4	603	861	2962	3566	4427	2.2	1.8	58.7	241	8394	8635	4.8	7.2	116.5	103.3	
CB-3-17	2	306B	OFFICE	ACB20-1050.242	4	42-SN	0.5	51	159	210	61.6	551	787	2506	3060	3846	1.0	0.3	61.3	220	7955	8175	4.8	7.2	116.7	103.8	
CB-3-18	1	306C	OFFICE	ACB20-1050.242	4	42-SN	0.5	51	159	210	61.0	551	787	2650	3200	3987	1.3	0.7	60.2	220	7955	8175	4.8	7.2	116.7	103.8	
CB-3-19	1	306D	OFFICE	ACB20-1050.242	4	50-SN	0.5	60	179	239	60.6	656	936	3096	3752	4688	2.2	1.8	58.8	262	8793	9055	4.8	7.2	116.3	102.8	
CB-3-20	2	306E	OFFICE	ACB20-500.242	2	36-MN	0.5	60	114	175	61.4	657	938	1921	2578	3516	2.9	1.4	57.3	263	5385	5648	4.8	3.4	117.7	97.8	
CB-3-21	1	306F	WORKROOM	ACB20-1050.242	4	42-MN	0.5	51	159	210	60.6	551	787	2727	3277	4064	1.6	1.0	59.4	220	7955	8175	4.8	7.2	116.7	103.8	
CB-4-1	1	400	CORRIDOR	ACB20-500.242	2	28-MN	0.2	29	63	92	60.1	316	452	1178	1495	1946	1.0	0.2	58.5	126	3364	3491	4.8	3.4	118.6	102.8	
CB-4-2	5	401	VIDEO CONF.	ACB20-1050.242	4	68-MN	0.5	114	235	350	62.4	1240	1771	3528	4768	6540	1.3	0.7	61.6	496	11093	11589	4.8	7.2	115.3	98.5	
CB-4-3	1	402	KITCHENETTE	ACB20-500.242	2	30-MN	0.5	50	109	159	60.9	547	781	1891	2438	3220	4.8	3.4	56.8	219	5175	5394	4.8	3.4	117.8	99.2	
CB-4-4	6	403	LOUNGE	ACB20-1050.242	4	62-MN	0.3	80	171	250	61.6	866	1236	2788	3654	4890	1.3	0.7	60.4	346	8432	8779	4.8	7.2	116.5	100.3	
CB-4-5	4	404	COLLABORATION	ACB20-1050.242	4	68-MN	0.5	114	235	350	62.4	1240	1771	3528	4768	6540	1.3	0.7	61.6	496	11093	11589	4.8	7.2	115.3	98.5	
CB-4-6	1	404A	HUDDLE	ACB20-1050.242	4	68-MN	0.5	114	235	350	61.8	1240	1771	3776	5016	6787	1.9	1.3	60.0	496	11093	11589	4.8	7.2	115.3	98.5	
CB-4-7	1	404B	HUDDLE	ACB20-1050.242	4	72-MN	0.5	121	239	360	61.9	1313	1876	3824	5137	7013	1.9	1.3	60.0	525	11248	11774	4.8	7.2	115.3	98.5	

HEAT RECOVERY UNIT SAVINGS ANALYSIS

INPUTS

Minimum Fraction Outdoor Air:	31%	
Heat Recover Effectiveness:	62.0%	
Summer Set Point Temperature:	75 F	
Set Point Enthalpy:	28.43 Btu/lba	
Supply Air Temperature:	82 F	
Supply Air Enthalpy:	31.83 Btu/lba	
Supply Air Volume:	8900 cfm	
Supply Air Density:	0.075 lb/ft^3	

IEER	12.4
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Energy Savings	
Cooling kWh:	6,416.08

AHU Cooling Informaton from Schedule	
Airflow, q (CFM)	8,900.0
Entering Air (DB Temp, F)	82
Leaving Air (DB Temp, F)	48.8

Cp (sensible heat constant)	1.08
Total Energy, Q	319,118.40
% Savings	2%

Bin temperature range (°F)		Temp.	Enthalpy	
Start Temp	End Temp	Toa(°F)	hoa(Btu/lba)	Hours
105	109	107.0	0	0
100	104	102.0	0	0
95	99	97.0	38.5	0
90	94	91.3	40.2	11
85	89	87.7	37.6	57
80	84	82.1	34.3	229
75	79	76.7	32.1	289
70	74	72.5	30.6	246
65	69	67.9	28.7	260
60	64	62.6	24.7	243
55	59	57.2	21.7	172
50	54	52.1	19	192
45	49	47.4	16.7	133
40	44	43.0	14.6	199
35	39	37.4	12.4	248
30	34	32.1	10.6	182
25	29	27.6	8.9	146
20	24	23.1	7.4	100
15	19	17.4	5.8	110
10	14	12.0	4.1	58
5	9	7.4	2.6	20
0	4	2.6	1.3	19
-5	-1	-1.7	0.3	6
-10	-6	-7.1	0	0

2,920.0

TMY3 data, hours 9-16.

Temp.		Enthalpy	Energy Savings
Fraction Outdoor Air	Tma(°F)	hma(Btu/lba)	Q (mmBTU)
31%	85.1	19.50	0.00
31%	83.5	19.50	0.00
32%	82.0	31.63	0.00
43%	82.0	33.48	1.38
55%	82.0	33.48	7.15
99%	82.0	34.22	32.91
100%	76.7	32.10	26.34
31%	74.2	29.11	4.16
31%	72.8	28.51	0.55
31%	71.1	27.26	7.07
31%	69.4	26.32	29.11
31%	67.8	25.47	28.45
31%	66.3	24.75	17.32
31%	64.9	24.09	22.66
31%	63.2	23.40	23.98
31%	61.5	22.83	15.05
31%	60.1	22.30	10.13
31%	58.7	21.82	5.77
31%	56.9	21.32	4.98
31%	55.2	20.79	1.85
31%	53.8	20.32	0.41
31%	52.3	19.91	0.19
31%	50.9	19.59	0.01
31%	49.2	19.50	0.00

239.48

Summer months
(Cooling savings)

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in

Case No(s). 14-0467-EL-EEC

Summary: Application Heidelberg University and Ohio Power Company for approval of a special arrangement agreement with a mercantile customer electronically filed by Mr. Yazen Alami on behalf of Ohio Power Company