



Public Utilities Commission

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

Case No.: 14-1015-EL-EEC

Mercantile Customer: Akron Board of Education

Electric Utility: Ohio Edison Company

Program Title or
Description: New Construction Buchtel High School

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 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 for a period of up to 12 months will also qualify for the 60-day automatic approval. However, all applications requesting an exemption from the EEDR rider for longer than 12 months must provide additional information, as described within the Historical Mercantile Annual Report Template, that demonstrates additional energy savings and the continuance of the Customer's energy efficiency program. This information must be provided to the Commission at least 61 days prior to the termination of the initial 12 month exemption period to prevent interruptions in the exemption period.

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 altered or 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: Mercantile Customer Information

Name: Akron Board of Education

Principal address: 70 E Broadway, Akron, Ohio 44308

Address of facility for which this energy efficiency program applies: 1040 Copley Rd, Akron, Oh 44320

Name and telephone number for responses to questions: Rob Boxler 330-761-2977

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

- ☐ The customer uses more than seven hundred thousand kilowatt hours per year at the above facility. (Please attach documentation.)
- ☒ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.)

Section 2: Application Information

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

- ☐ Individually, without electric utility participation.
- ☒ Jointly with the electric utility.

B) The electric utility is: Ohio Edison Company

C) The customer is offering to commit (check any that apply):

- ☒ Energy savings from the customer's 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 capacity savings 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 (check those that apply):

- ☐ 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)). **If Checked, Please see Exhibit 1 and Exhibit 2**
- ☐ Installation of new equipment to replace failed equipment which has no useful life remaining. The customer installed new equipment on the following date(s): _____.
- ☒ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s):

07/16/2012.
- ☐ Behavioral or operational improvement.

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

- 1) If you checked the box indicating that the 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 the customer installed new equipment to replace failed equipment which had no useful life remaining, then calculate the annual savings [(kWh used by new standard equipment) - (kWh used by the optional higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe any less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

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

Annual savings: 489,324 kWh

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

- 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.

Annual savings: _____ kWh

Section 4: Demand Reduction/Demand Response Programs

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

- ☒ This project does not include peak demand reduction savings.
- ☐ 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?

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

_____ kW

Section 5: Request for Cash Rebate Reasonable Arrangement, Exemption from Rider, or Commitment Payment

Under this section, check all boxes that apply and fill in all corresponding blanks.

A) The customer is applying for:

☒ A cash rebate reasonable arrangement.

☐ An exemption from the energy efficiency cost recovery mechanism implemented by the electric utility.

☐ Commitment payment

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

A cash rebate reasonable arrangement.

☒ A cash rebate of \$24,099. (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.)

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 _____ months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

☐ 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 the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 12 month period, the customer will need to complete, and file within this application, the Historical Mercantile Annual Report

Template to verify the projects energy savings are persistent.

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

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: **See Exhibit 3** (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 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 **See Exhibit 3**

The utility's program costs were **See Exhibit 3**

The utility's incentive costs/rebate costs were **See Exhibit 3**

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.
- A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:
 - 1) any confidentiality requirements associated with the agreement;
 - 2) a description of any consequences of noncompliance with the terms of the commitment;
 - 3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
 - 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,
 - 5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.
- 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.



Public Utilities Commission

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

Case No.: 14-1015-EL-EEC

State of Ohio :

Debra Foulk, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Akron Board of Education

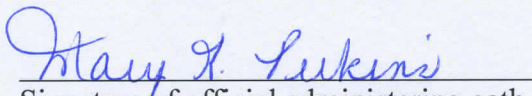
[insert customer or EDU company name and any applicable name(s) doing business as]

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.


Signature of Affiant & Title

Debra Foulk
Executive Director
Business Affairs

Sworn and subscribed before me this 5th day of June, 2014 Month/Year


Signature of official administering oath

Mary K. Perkins, Notary Public
Print Name and Title

My commission expires on June 29, 2018

MARY K. PERKINS
Notary Public, State of Ohio
My Commission Expires 06-29-18



Exhibit 1

Customer Legal Entity Name: Akron Public Schools

Site Address: Buchtel High School

Principal Address: 1040 Copley Road

Project No.	Project Name	Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment:	Description of methodologies, protocols and practices used in measuring and verifying project results	What date would you have replaced your equipment if you had not replaced it early? Also, please explain briefly how you determined this future replacement date.	Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.
1	Buchtel High School New Construction Lighting	Newly constructed LEEDS Certified Learning Center	See Lighting Calculator	N/A	N/A
2	Buchtel High School New Construction Electrical	Newly constructed LEEDS Certified Learning Facility	See LEEDS calculated savings doc for BMS and all electrical with the exception of lighting	N/A	N/A

Docket No. 14-1015

Site: 1040 Copley Road

Exhibit 2

Customer Legal Entity Name: Akron Public Schools
Site Address: Buchtel High School
Principal Address: 1040 Copley Road

		Unadjusted Usage, kwh (A)		Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (c) <i>Note 1</i>					
Average		0		0	0					
Project Number	Project Name	In-Service Date	Project Cost \$	50% of Project Cost \$	KWh Saved/Year (D) counting towards utility compliance	KWh Saved/Year (E) eligible for incentive	Utility Peak Demand Reduction Contribution, KW (F)	Prescriptive Rebate Amount (G) \$	Eligible Rebate Amount (H) \$ <i>Note 2</i>	Commitment Payment \$
1	Buchtel High School New Construction Lighting	11/15/2013	\$750,000	\$375,000	402,229	402,229	-	\$25,165	\$18,874	
2	Buchtel Hight School New Construction Electrical	11/15/2013	\$10,000,000	\$5,000,000	87,095	87,095	-	\$6,968	\$5,226	
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
Total			\$10,750,000		489,324	489,324	0	\$32,133	\$24,100	\$0

Docket No. 14-1015
Site: 1040 Copley Road

Notes
(1) Customer's usage is adjusted to account for the effects of the energy efficiency programs included in this application. When applicable, such adjustments are prorated to the in-service date to account for partial year savings.
(2) The eligible rebate amount is based upon 75% of the rebates offered by the FirstEnergy Commercial and Industrial Energy Efficiency programs or 75% of \$0.08/kWh for custom programs for all energy savings eligible for a cash rebate as defined in the PUCO order in Case NO.10-834-EL-EEC dated 9/15/2010, not to exceed the lesser of 50% of the project cost or \$250,000 per project. The rebate also cannot exceed \$500,000 per customer per year, per utility service territory.

Exhibit 3 Utility Cost Test

UCT = Utility Avoided Costs / Utility Costs

Project	Total Annual Savings, MWh (A)	Utility Avoided Cost \$/MWh (B)	Utility Avoided Cost \$ (C)	Utility Cost \$ (D)	Cash Rebate \$ (E)	Administrator Variable Fee \$ (F)	Total Utility Cost \$ (G)	UCT (H)
1	402	\$ 308	\$ 123,999	\$ 2,025	\$18,874	\$4,022	\$ 24,921	5.0
2	87	\$ 308	\$ 26,850	\$ 2,025	\$5,226	\$871	\$ 8,122	3.31
Total	489	\$ 308	150,849	4,050	\$24,100	\$4,893	33,043	4.6

Notes

- (A) From Exhibit 2, = kWh saved / 1000
- (B) This value represents avoided energy costs (wholesale energy prices) from the Department of Energy, Energy Information Administration's 2009 Annual Energy Outlook (AEO) low oil prices case. The AEO represents a national average energy price, so for a better representation of the energy price that Ohio customers would see, a Cinergy Hub equivalent price was derived by applying a ratio based on three years of historic national average and Cinergy Hub prices. This value is consistent with avoided cost assumptions used in EE&PDR Program Portfolio and Initial Benchmark Report, filed Dec 15, 2009 (See Section 8.1, paragraph a).
- (C) = (A) * (B)
- (D) Represents the utility's costs incurred for self-directed mercantile applications for applications filed and applications in progress. Includes incremental costs of legal fees, fixed administrative expenses, etc.
- (E) This is the amount of the cash rebate paid to the customer for this project.
- (F) Based on approximate Administrator's variable compensation for purposes of calculating the UCT, actual compensation may be less.
- (G) = (D) + (E) + (F)
- (H) = (C) / (G)

Akron Public Schools ~ Buchtel High School
Docket No. 14-1015

Site: 1040 Copley Road

	Baseline	kW	Proposed	kW		Baseline	kW	Proposed	kW		Baseline	kW	Proposed	kW	
Buchtel High School	139,197	246	52,441	151	Hatton CLC	671,370	701	78,847	80	Seiberling CLC	577,206	643	70,263	66	
	336,259	84	56,362	27		35,671	89	17,515	98		30,611	112	18,495	96	
	60,755	54	28,153	35		97,800	33	138,511	23		86,228	33	124,333	20	
	332,938	113	717,687	210		71,685	32	89,808	42		69,499	31	93,753	44	
	245,948	115	245,948	115		83,950	25	71,685	32		64,620	29	69,499	31	
	20,148	5	0	0		11,158	6	83,950	25		20,358	13	64,620	29	
	17,112	12	17,112	12		5,606	2	11,158	6		6,338	3	20,358	13	
	54,853	12	54,853	12		57,144	28	5,606	2		89,790	17	6,338	3	
	136,539	22	136,539	22		7,200	18	57,144	28		88,705	20	89,790	17	
	40,599	54	40,599	54		134,106	33	7,200	18				88,705	20	
149,405	68	149,405	68					134,106	33						
				Difference						Difference				Difference	
	1,533,753	785	1,446,658	555	87,095	1,175,689	967	695,530	386	480,159	1,033,355	900	646,154	337	387,201

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	402,229
Total Change in Connected Load	87.88

Annual Estimated Cost Savings	\$40,222.90
Annual Operating Hours	3,880

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$18,474.85
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$1,564.75
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$5,125.00

Total Calculated Incentive	\$25,164.60
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	2142
Total Lamp Quantity for retrofit Screw-In CFLs	0
Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	205
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	69.84
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Lighting Form

Lighting Inventory Form

Applicant Name:	Alison Board of Education
Facility Name:	Buckley High School
Date:	5/23/2014
Latitude/Longitude/Address:	Latitude: 39.0

Instructions: Please use one line for each fixture type in a room or area.
For existing or proposed control, choose OCC for Occupancy Sensor, DAY for photosensor, HI-Lo for hi-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.
The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

[illegible]

Lighting Form

[illegible]

Ohio Edison • The Illuminating Company • Toledo Edison

Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	LEEDS BMS AHU Electrical
Site Name:	Buchtel High School
Completed by (Name):	Michele DiFrancesco
Date completed:	5/23/2014

Energy Conservation Measure	Annual Energy Savings kWh	Eligible Prescriptive Rebate Amount kWh * \$0.08
See LEEDS Summary Doc	87,095	6967.60
Total Project Energy Savings kWh	87,095	
Total Custom Prescriptive Rebate Amount \$	\$	6,967.60

Notes about this rebate calculation:	
LEEDS Certification Calculations	



COMcheck Software Version 3.9.2

Mechanical Compliance Certificate

90.1 (2004) Standard

Section 1: Project Information

Project Type: **New Construction**

Project Title : Buchtel/Perkins CLC

Construction Site:

1040 Copley Rd.
Akron, OH 44320

Owner/Agent:

Akron Public Schools
Akron, Ohio

Designer/Contractor:

GPD Group
520 S. Main St.
Akron, OH 44311

Section 2: General Information

Building Location (for weather data):

Akron, Ohio

Climate Zone:

5a

Section 3: Mechanical Systems List

Quantity System Type & Description

- | | |
|---|---|
| 2 | AHU 1 & 2 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 440 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 570 kBtu/h, Air Economizer
No minimum efficiency requirement applies |
| 2 | AHU 3 & 7 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 240 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 340 kBtu/h, Air Economizer
No minimum efficiency requirement applies |
| 1 | AHU 4 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 315 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 489 kBtu/h, Air Economizer
No minimum efficiency requirement applies |
| 1 | AHU 5 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 430 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 600 kBtu/h, Air Economizer
No minimum efficiency requirement applies |
| 2 | AHU 6 & 8 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 430 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 520 kBtu/h, Air Economizer
No minimum efficiency requirement applies |
| 1 | AHU 9 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 451 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 370 kBtu/h, Air Economizer
No minimum efficiency requirement applies |
| 2 | AHU 10 & 11 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 346 kBtu/h
No minimum efficiency requirement applies |

Cooling: 1 each - Hydronic Coil, Capacity = 313 kBtu/h, Air Economizer
No minimum efficiency requirement applies

- 1 AHU 12 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 626 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 580 kBtu/h, Air Economizer
No minimum efficiency requirement applies
- 2 AHU 13 & 14 (Multiple-Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 300 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Hydronic Coil, Capacity = 420 kBtu/h, Air Economizer
No minimum efficiency requirement applies
- 2 FC 1 & 4 (Single Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 50 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 50 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 13.00 SEER, Required Efficiency = 12.00 SEER
- 1 FC 2 (Single Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 114 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 95 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 13.00 EER, Required Efficiency = 10.10 EER
- 1 FC 3 (Single Zone) :
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 18 kBtu/h
No minimum efficiency requirement applies
- 1 ECU 1 (Single Zone) :
Heating: 1 each - Other, Electric, Capacity = 16 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 38 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 13.00 SEER, Required Efficiency = 12.00 SEER
- 2 ERU 1 & 2 (Single Zone) :
Heating: 1 each - Other, Hot Water, Capacity = 36 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Rooftop Package Unit, Capacity = 52 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 12.00 SEER, Required Efficiency = 12.00 SEER
- 2 ERU 3 & 4 (Single Zone) :
Heating: 1 each - Other, Hot Water, Capacity = 52 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Rooftop Package Unit, Capacity = 66 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 12.00 EER, Required Efficiency = 10.10 EER
- 1 MAU 1 (Single Zone) :
Heating: 1 each - Other, Gas, Capacity = 200 kBtu/h
No minimum efficiency requirement applies
- 1 MAU 2 (Single Zone) :
Heating: 1 each - Other, Gas, Capacity = 1000 kBtu/h
No minimum efficiency requirement applies
- 1 MAU 3 (Single Zone) :
Heating: 1 each - Other, Gas, Capacity = 1200 kBtu/h
No minimum efficiency requirement applies
- 1 Chilled Water Plant:
Cooling: Water Chiller, Capacity 450 tons, Condenser Water-Cooled, Non-Standard Centrifugal Chiller: leaving chilled water temperature = 44.0 deg. F, entering condenser water temperature = 85.0, condenser flow rate = 3 gpm/ton, with Propeller or Axial Fan Cooling Tower
Proposed Efficiency: 6.09 COP, Required Efficiency: 6.10 COP
PLANT COMPLIANCE FAILS: PROPOSED EFFICIENCY FAILS TO MEET CODE REQUIREMENTS.
- 1 Heating Water Plant:
Heating: Hot Water Boiler, Capacity 5400 kBtu/h, Gas
Proposed Efficiency: 90.00 % Ec, Required Efficiency: 80.00 % Ec

Section 4: Requirements Checklist

Requirements Specific To: AHU 1 & 2 :



BETA

LEED for Schools 2007 Submittal Template
EA Credit 1: Optimize Energy Performance

(Responsible Individual)

(Company Name)

I, Dan Ritchey, from GPD Group
verify that the information provided below is accurate, to the best of my knowledge.

CREDIT COMPLIANCE

- ☒ Performance Rating Method, ASHRAE 90.1-2004 Appendix G or equivalent (up to 10 points possible, 2 points required)

**PERFORMANCE RATING METHOD**

I confirm that the energy simulation software used for this project has all capabilities described in EITHER section 'G2 Simulation General Requirements' in Appendix G of ASHRAE 90.1-2004 OR the analogous section of the alternative qualifying energy code used.



I confirm that the baseline building and proposed building in this project's energy simulation runs use the assumptions and modeling methodology described in EITHER Appendix G of ASHRAE 90.1-2004 OR the analogous section of the alternative qualifying energy code used.

Complete the following sections to document compliance :

- Section 1.1 - General Information
- Section 1.2 - Space Summary
- Section 1.3 - Advisory Messages
- Section 1.4 - Comparison of Proposed Design Versus Baseline Design Energy Model Inputs
- Section 1.5 - Energy Type Summary
- Section 1.6 - On-Site Renewable Energy (*if applicable*)
- Section 1.7 - Exceptional Calculation Measure Summary (*if applicable*)
- Section 1.8 - Performance Rating Method Compliance Report

Section 1.1 - General Information

Provide the following data for your project

Simulation Program:

Hourly Analysis Program (HAP)

Quantity of Stories:

2

Principal Heating Source:

Fossil Fuel

Weather File:

HAP TM2 - Akron, Ohio

Energy Code Used:

ASHRAE 90.1-2004 Appendix G

Climate Zone:

5A

New Construction Percent:

100 %

Existing Renovation Percent:

0 %

Enter the Target Finder score for your building from the Energy Star website (http://www.energystar.gov/index.cfm?fuseaction=target_finder.&CFID=154897). The score has no bearing on the number of EAc1 points earned. Use the following process to evaluate the Target Finder score:

1. Enter the facility information
2. Enter the facility characteristics. Select each primary and secondary space type that applies to the project. Then complete the required information for each space type.
4. Enter the total energy use per energy source for your project based on the totals reflected in the Proposed Design energy simulation output report.

Target Finder Score:

72

**Section 1.2 - Space Summary**

Provide the space summary for your project

(click "CLEAR" to clear the contents of any row All numeric entries must be entered as whole numbers without commas):

Table 1.2 - Space Summary				
Building Use (Occupancy Type)	Conditioned Area (sf)	Unconditioned Area (sf)	Total Area (sf)	
First Floor - Student Dining	13,685		13,685	<input type="button" value="CLEAR"/>
First Floor - Gymnasiums	25,240		25,240	<input type="button" value="CLEAR"/>
First Floor - Corridors/Restrooms	24,585		24,585	<input type="button" value="CLEAR"/>
First Floor - Mechanical/Electrical Rooms	3,200		3,200	<input type="button" value="CLEAR"/>
First Floor - Office Areas	9,110		9,110	<input type="button" value="CLEAR"/>
First Floor - Classrooms	68,458		68,458	<input type="button" value="CLEAR"/>
First Floor - Auditorium/Stage	1,070		1,070	<input type="button" value="CLEAR"/>
Second Floor - Corridors/Restrooms	13,950		13,950	<input type="button" value="CLEAR"/>
Second Floor - Mechanical/Electrical Rooms	8,100		8,100	<input type="button" value="CLEAR"/>
Second Floor - Office Areas	870		870	<input type="button" value="CLEAR"/>
Second Floor - Class Rooms	54,805		54,805	<input type="button" value="CLEAR"/>
Total:	223,073		223,073	

Section 1.3 - Advisory Messages

Complete the following information from the simulation output files (all entries should be entered as whole numbers, without commas)

TABLE 1.3 - Advisory Messages	Proposed Building	Baseline Building (0 deg. rotation)	Difference
Number of hours heating loads not met:	0	35	35
Number of hours cooling loads not met:	0	0	0
Number of warning messages:	0	0	0
Number of error messages:	0	0	0
Number of defaults overridden:	0	0	0

**Section 1.4 - Comparison of Proposed Design Versus Baseline Design Energy Model Inputs**

Use **Table 1.4** to document the Baseline and Proposed design energy model inputs for your project. Include descriptions for:

1. Exterior wall, underground wall, roof, floor, and slab assemblies including framing type, assembly R-values, assembly U-factors, and roof reflectivity when modeling cool roofs. (Refer to ASHRAE 90.1 Appendix A)
2. Fenestration types, assembly U-factors (including the impact of the frame on the assembly), SHGCs, and visual light transmittances, overall window-to-gross wall ratio, fixed shading devices, and automated movable shading devices.
3. Interior lighting power densities, exterior lighting power, process lighting power, and lighting controls modeled for credit.
4. Receptacle equipment, elevators or escalators, refrigeration equipment, and other process loads.
5. HVAC system information including types and efficiencies, fan control, fan supply air volume, fan power, economizer control, demand control ventilation, exhaust heat recovery, pump power and controls, and any other pertinent system information. (Include the ASHRAE 90.1-2004 Table G.3.1.1B Baseline System Number).
6. Domestic hot water system type, efficiency and storage tank volume.
7. General schedule information

Documentation should be sufficient to justify the energy and cost savings numbers reported in the Performance Rating Table.

(Click "CLEAR" to clear the contents of any row.)

TABLE 1.4 - Comparison of Proposed Design Versus Baseline Design

Model Input Parameter	Proposed Design Input	Baseline Design Input	
Exterior Wall Construction	8" Concrete Masonry Units, 3" rigid insulation, 1" air gap, and 4" brick veneer, Assembly R-18.7/ U=.052	Ashrae Steel Framed, R-13+3.8 Batt (U=0.084)	CLEAR
Roof Construction	Horizontal Roof, 1.5" steel deck, 4" rigid insulation, EPDM membrane roof, R-25/ U=.04	Ashrae Roof Insulation entirely above deck, R-15 Board (U=0.063)	CLEAR
Floor/Slab Construction	Slab on grade, Unheated, U=.1, edge insulation R-7.5	Slab on grade, Unheated,, F-value = 0.73, R=0	CLEAR
Window-to-gross wall ratio	20%	20%	CLEAR
Fenestration type	Dual-pane metal frame low-E glass windows with thermal break	Ashrae Baseline Window	CLEAR
Fenestration U-factor	N, E, S, & W = .38	.57	CLEAR
Fenestration SHGC - North	N & E = .38	.39	CLEAR
Fenestration SHGC - Non-North	S & W = .27	.39	CLEAR
Fenestration Visual Light Transmittance	N & E = .7 S & W = .64	1.0	CLEAR
Shading Devices	None	None	CLEAR
			CLEAR
Interior Lighting Power Density (W/sf)	Building Area Method Overhead Lighting = .81 W/sf	Building Area Method Overhead Lighting = 1.2 W/sf	CLEAR



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TABLE 1.4 - Comparison of Proposed Design Versus Baseline Design

Model Input Parameter	Proposed Design Input	Baseline Design Input	
			CLEAR
			CLEAR
Exterior Lighting Power (kW)	12.9	31.5	CLEAR
Process Lighting (kW)	None	None	CLEAR
Receptacle Equipment Power Density (W/sf)	.63	.63	CLEAR
Elevators	60kw	60kw	CLEAR
Primary HVAC System Type	Cooling Tower/Water Cooled Centrifugal Chiller and Condensing Boilers System with Central station air handlers and terminal units	Table G3.1.1B System #7 Packaged Rooftop VAV w/ reheat.	CLEAR
			CLEAR
Economizer Control	Integrated Enthalpy control	Integrated Enthalpy control	CLEAR
Demand Control Ventilation	Provided for Gymnasium spaces	As required by Ashrae 90.1	CLEAR
			CLEAR
			CLEAR
Chiller parameters	44 Degree F CW/.562 kw/ton	44 Degree F CW/.71 kw/ton (Ashrae 90.1)	CLEAR
Chilled water loop & pump parameters	29 watts/gpm (Design)	22 watts/gpm (Ashrae 90.1)	CLEAR
Boiler parameters	High Efficiency Condensing Boiler 90%	Ashrae Boiler 80%	CLEAR
Hot water loop & pump parameters	33 watts/gpm (Design)	19 watts/gpm (Ashrae 90.1)	CLEAR
Cooling tower parameters	Variable Speed Tower fan	Two Speed Tower fan (Ashrae 90.1)	CLEAR
Condenser water loop & pump parameters	11 watts/gpm (Design)	19 watts/gpm (Ashrae 90.1)	CLEAR
			CLEAR
			CLEAR
			CLEAR



Section 1.5 - Energy Type Summary

List the energy types used by your project (i.e. electricity, natural gas, purchased chilled water or steam, etc.) for either the Baseline or Proposed design. Also describe the utility rate used for each energy type (i.e. Feswick County Electric LG-S), as well as the units of energy used, and the units of demand used. (Click "CLEAR" to clear the contents of any row):

TABLE 1.5 - Energy Type Summary

Energy Type	Utility Rate Description	Units of Energy	Units of demand	
Electricity	Akron Public Schools Electric	kWh	kW	<input type="button" value="CLEAR"/>
Natural Gas	Akron Public Schools Nat. Gas	therms	MBH	<input type="button" value="CLEAR"/>
				<input type="button" value="CLEAR"/>
				<input type="button" value="CLEAR"/>

Energy Units:

1 kBtu = 1,000 Btu
1 kWh = 3,412 kBtu
1 therm = 100 kBtu

1 MBtu = 1,000 kBtu
1 MWh = 3,412 kBtu
1 ton hr = 12 kBtu

Demand Units

1 MBH = 1,000 Btu/h
1 kW = 3,412 MBH

1 MMBtuh = 1,000 MBH
1 ton = 12 MBH



Section 1.6 - On-Site Renewable Energy

If the project does not include on-site renewable energy, skip to Section 1.7

☐ The project includes On-Site Renewable Energy

How is the on-site renewable energy cost calculated?

- ☒ This form will automatically calculate the *Renewable Energy Cost* based on the "virtual" energy rate from the proposed design energy model results. This form will subtract the *Renewable Energy Cost* from the proposed design energy model results to calculate the *Proposed Building Performance Rating*. (You do NOT need to fill out the "Renewable Energy Cost" field in Table 1.6 below)
- ☐ *Renewable Energy Cost* for each on-site renewable source is analyzed separately from the energy model based on local utility rate structures. The *Renewable Energy Cost* for each renewable source is reported in Table 1.6 below, This form will subtract the reported *Renewable Energy Cost* from the proposed design energy model results to calculate the *Proposed Building Performance Rating*.
- ☐ On-site renewable energy is modeled directly in the energy model. *Renewable Energy Cost* is already credited in the proposed design energy model results (i.e. the energy model already reflects zero cost for on-site renewable energy, and this form will NOT subtract the *Renewable Energy Cost* a second time).aa

Indicate the on-site renewable energy source(s) used, the backup energy type for each source (i.e. the fuel that is used when the renewable energy source is unavailable - ASHRAE 90.1-2004, Section G2.4), the rated capacity for the source, and the annual energy generated from each source.

TABLE 1.6 - Renewable Energy Source Summary

Renewable Source	Backup Energy Type	Annual Energy Generated		Rated Capacity	Renewable Energy Cost	
						CLEAR
						CLEAR



Section 1.7 - Exceptional Calculation Measure Summary

(If the energy analysis does not include exceptional calculation methods, skip to Section 1.8)

☐ The energy analysis includes exceptional calculation method(s) (ASHRAE 90.1-2004, G2.5)

How is the exceptional calculation measure cost savings determined?



This form will automatically calculate the exceptional calculation measure cost savings based on the "virtual" energy rate from the proposed design energy model results. This form will subtract this cost savings from the proposed design energy model results to calculate the *Proposed Building Performance Rating*.



Exceptional calculation measure cost for each exceptional calculation measure is analyzed based on local utility rate structures. The *cost savings* for each exceptional calculation is reported below. This form will subtract the reported exceptional calculation cost savings from the proposed design energy model results to calculate the *Proposed Building Performance Rating*.

For each exceptional calculation method employed, document the predicted energy savings by energy type, the energy cost savings (if option 2 above is selected), and a narrative explaining the exceptional calculation method performed, and theoretical or empirical information supporting the accuracy of the method. Reference any applicable Credit Interpretation Rulings. [Note: if an end-use has an energy loss rather than an energy savings, enter it as a negative number]

Exceptional Calculation Measure Short Description:

CLEAR

Energy Type(s)	Annual Energy Savings by Energy Type	Annual Cost Savings	Exceptional Calculation Measure Narrative:

Exceptional Calculation Measure Short Description:

CLEAR

Energy Type(s)	Annual Energy Savings by Energy Type	Annual Cost Savings	Exceptional Calculation Measure Narrative:

**Section 1.8 - Performance Rating Method Compliance Report**

In **Table 1.8.1**, list each energy end use for your project (including all end uses reflected in the baseline and proposed designs). Then check whether the end-use is a process load, select the energy type, and list the energy consumption and peak demand for each end-use for all four Baseline Design orientations. In **Table 1.8.1 (b)** indicate the total baseline energy cost for each energy type for all four Baseline Design orientations. If either the baseline or proposed design uses more than one energy type for a single end use (i.e. electric resistance reheat, and central natural gas heating), enter each energy type as a separate end use (i.e. *Heating - Electric*, and *Heating, NG*).

Fill out the Proposed Design energy consumption and peak demand for each end use in **Table 1.8.2**. In **Table 1.8.2 (b)** indicate the total proposed energy cost for each energy type. [Note: Process loads for the proposed design must equal those listed in the Baseline design. Any process load energy savings for the project must be reported in Section 1.7.]

(Click "CLEAR" to clear the contents of any end use)

Table 1.8.1 - Baseline Performance - Performance Rating Method Compliance

End Use	Process?	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Baseline (0° rotation)	Baseline (90° rotation)	Baseline (180° rotation)	Baseline (270° rotation)	Baseline Design	
Interior Lighting	<input type="checkbox"/>	Electricity	Energy Use (kWh)	455,644	455,644	455,644	455,644	455,644	CLEAR
			Demand (kW)	204.7	204.7	204.7	204.7	204.7	
Exterior Lighting (Tradable)	<input type="checkbox"/>	Electricity	Energy Use (kWh)	137,970	137,970	137,970	137,970	137,970	CLEAR
			Demand (kW)	31.5	31.5	31.5	31.5	31.5	
Space Heating	<input type="checkbox"/>	Natural Gas	Energy Use (therms)	105,110	105,574	109,956	105,474	106,528.5	CLEAR
			Demand (MBH)	9,272.5	9,273.3	9,666.5	9,272.5	9,371.2	
Space Cooling	<input type="checkbox"/>	Electricity	Energy Use (kWh)	139,940	138,311	139,210	139,327	139,197	CLEAR
			Demand (kW)	245.6	244.5	245.8	244.6	245.1	
Pumps	<input type="checkbox"/>	Electricity	Energy Use (kWh)	336,400	334,884	338,611	335,141	336,259	CLEAR
			Demand (kW)	83.8	83.6	84.3	83.4	83.8	
Heat Rejection	<input type="checkbox"/>	Electricity	Energy Use (kWh)	61,564	60,118	60,314	61,023	60,754.8	CLEAR
			Demand (kW)	53.8	53.7	54.3	53.6	53.9	
Fans - Interior	<input type="checkbox"/>	Electricity	Energy Use (kWh)	331,939	331,939	334,746	333,127	332,937.8	CLEAR
			Demand (kW)	114.2	114.1	112.6	112.6	113.4	
Kitchen	<input checked="" type="checkbox"/>	Natural Gas	Energy Use (therms)	29,915	29,915	29,915	29,915	29,915	CLEAR
			Demand (MBH)	1,602	1,602	1,602	1,602	1,602	
Service Water Heating	<input type="checkbox"/>	Natural Gas	Energy Use (therms)	12,712	12,712	12,712	12,712	12,712	CLEAR
			Demand (MBH)	759	759	759	759	759	
Receptacle Equipment	<input checked="" type="checkbox"/>	Electricity	Energy Use (kWh)	245,948	245,948	245,948	245,948	245,948	CLEAR
			Demand (kW)	115.2	115.2	115.2	115.2	115.2	



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EA Credit 1: Optimize Energy Performance

Table 1.8.1 - Baseline Performance - Performance Rating Method Compliance

End Use	Process?	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Baseline (0° rotation)	Baseline (90° rotation)	Baseline (180° rotation)	Baseline (270° rotation)	Baseline Design	
Exterior Lighting (Non-Tradable ⁺)	<input type="checkbox"/>	Electricity	Energy Use (kWh)	20,148	20,148	20,148	20,148	20,148	CLEAR
			Demand (kW)	4.6	4.6	4.6	4.6	4.6	
Exhaust Fans	<input type="checkbox"/>	Electricity	Energy Use (kWh)	17,112	17,112	17,112	17,112	17,112	CLEAR
			Demand (kW)	12.2	12.2	12.2	12.2	12.2	
Data Center Equipment	<input checked="" type="checkbox"/>	Electricity	Energy Use (kWh)	54,853	54,853	54,853	54,853	54,853	CLEAR
			Demand (kW)	12.1	12.1	12.1	12.1	12.1	
Refrigerators/Freezers	<input checked="" type="checkbox"/>	Electricity	Energy Use (kWh)	136,539	136,539	136,539	136,539	136,539	CLEAR
			Demand (kW)	22.4	22.4	22.4	22.4	22.4	
Elevators & Kilns	<input checked="" type="checkbox"/>	Electricity	Energy Use (kWh)	40,599	40,599	40,599	40,599	40,599	CLEAR
			Demand (kW)	53.6	53.6	53.6	53.6	53.6	
TV's/Projectors	<input checked="" type="checkbox"/>	Electricity	Energy Use (kWh)	149,405	149,405	149,405	149,405	149,405	CLEAR
			Demand (kW)	68	68	68	68	68	
Baseline Energy Totals:		Total Annual Energy Use (MBtu/year)		22,035	22,065	22,530	22,067	22,174	
		Annual Process Energy (MBtu/year)						5,132	

Note: Process Cost equals at least 25% of Baseline Performance, as required for showing credit compliance.

Table 1.8.1(b) - Baseline Energy Costs

Energy Type	Baseline Cost (0° rotation)	Baseline Cost (90° rotation)	Baseline Cost (180° rotation)	Baseline Cost (270° rotation)	Baseline Building Performance
Electricity	\$204,294	\$203,853	\$204,586	\$204,176	\$204,227
Natural Gas	\$153,795	\$154,278	\$158,840	\$154,174	\$155,271
Total Baseline Costs:	\$358,089	\$358,131	\$363,426	\$358,350	\$359,498

Table 1.8.2 - Performance Rating Table - Performance Rating Method Compliance

End Use	Process?	Proposed Design Energy Type	Proposed Design Units	Proposed Building Results	Baseline Building Units	Baseline Building Results	Percent Savings
Interior Lighting		Electricity	Energy Use (kWh)	307,631	Energy Use (kWh)	455,644	32.5 %
			Demand (kW)	138.2	Demand (kW)	204.7	32.5 %



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LEED for Schools 2007 Submittal Template
EA Credit 1: Optimize Energy Performance

Table 1.8.2 - Performance Rating Table - Performance Rating Method Compliance

End Use	Process?	Proposed Design Energy Type	Proposed Design Units	Proposed Building Results	Baseline Building Units	Baseline Building Results	Percent Savings
Exterior Lighting (Tradable)		Electricity	Energy Use (kWh)	56,502	Energy Use (kWh)	137,970	59 %
			Demand (kW)	12.9	Demand (kW)	31.5	58.9 %
Space Heating		Natural Gas	Energy Use (therms)	51,591	Energy Use (therms)	106,528.5	51.6 %
			Demand (MBH)	3,549.3	Demand (MBH)	9,371.2	62.1 %
Space Cooling		Electricity	Energy Use (kWh)	52,441	Energy Use (kWh)	139,197	62.3 %
			Demand (kW)	151	Demand (kW)	245.1	38.4 %
Pumps		Electricity	Energy Use (kWh)	56,362	Energy Use (kWh)	336,259	83.2 %
			Demand (kW)	26.8	Demand (kW)	83.8	68.1 %
Heat Rejection		Electricity	Energy Use (kWh)	28,153	Energy Use (kWh)	60,754.8	53.7 %
			Demand (kW)	35	Demand (kW)	53.9	35 %
Fans - Interior		Electricity	Energy Use (kWh)	717,687	Energy Use (kWh)	332,937.8	-115.6 %
			Demand (kW)	209.6	Demand (kW)	113.4	-85.2 %
Kitchen	X	Natural Gas	Energy Use (therms)	29,915	Energy Use (therms)	29,915	0 %
			Demand (MBH)	1,602	Demand (MBH)	1,602	0 %
Service Water Heating		Natural Gas	Energy Use (therms)	11,452	Energy Use (therms)	12,712	9.9 %
			Demand (MBH)	683.7	Demand (MBH)	759	10 %
Receptacle Equipment	X	Electricity	Energy Use (kWh)	245,948	Energy Use (kWh)	245,948	0 %
			Demand (kW)	115.2	Demand (kW)	115.2	0 %
Exterior Lighting (Non-Tradable +)		Electricity	Energy Use (kWh)	4,818	Energy Use (kWh)	20,148	76.1 %
			Demand (kW)	1.1	Demand (kW)	4.6	80 %
Exhaust Fans		Electricity	Energy Use (kWh)	17,112	Energy Use (kWh)	17,112	0 %
			Demand (kW)	12.2	Demand (kW)	12.2	0 %
Data Center Equipment	X	Electricity	Energy Use (kWh)	54,853	Energy Use (kWh)	54,853	0 %
			Demand (kW)	12.1	Demand (kW)	12.1	0 %
Refrigerators/Freezers	X	Electricity	Energy Use (kWh)	136,539	Energy Use (kWh)	136,539	0 %
			Demand (kW)	22.4	Demand (kW)	22.4	0 %
Elevators & Kilns	X	Electricity	Energy Use (kWh)	40,599	Energy Use (kWh)	40,599	0 %
			Demand (kW)	53.6	Demand (kW)	53.6	0 %
TV's/Projectors	X	Electricity	Energy Use (kWh)	149,405	Energy Use (kWh)	149,405	0 %
			Demand (kW)	68	Demand (kW)	68	0 %
Energy Totals:		Total Annual Energy Use (MBtu/year)		15,670		22,174	29.3 %
		Annual Process Energy (MBtu/year)		5132		5,132	0 %



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Table 1.8.2(b) - Energy Cost and Consumption by Energy Type - Performance Rating Method Compliance

Energy Type	Proposed Design		Baseline Design		Percent Savings	
	Energy Use	Cost	Energy Use	Cost	Energy Use	Cost
Electricity	1,868,050 kWh	\$179,333	2,127,365 kWh	\$204,227	12.2 %	12.2 %
Natural Gas	92,958 therms	\$96,770	149,155 therms	\$155,271	37.7 %	37.7 %
	0		0		0 %	0 %
	0		0		0 %	0 %
Subtotal (Model Outputs):	15,670 (MBtu/year)	\$276,103	22,174 (MBtu/year)	\$359,498	29.3 %	23.2 %
On-Site Renewable Energy	Energy Generated	Renewable Energy Cost				
Exceptional Calculations	Energy Savings	Cost Savings				
	Proposed Design		Baseline Design		Percent Savings	
	Energy Use	Cost	Energy Use	Cost	Energy	Cost
Total:	15,670 (MBtu/year)	\$276,103	22,174 (MBtu/year)	\$359,498	29.3 %	23.2 %



DOCUMENTATION DESCRIPTION LOG

Please upload the compliance summaries for ASHRAE 90.1-2004 (or qualifying local energy code) and/or LEED if available from the energy simulation software used. Please also upload the energy rate tariff from the project's energy providers if the project is not using the default rates in the LEED-NC v2.2 Reference Guide.

If the software is incapable of producing the energy code or LEED compliance summaries please provide output summaries and example input summaries for both the baseline and proposed buildings that support the data entered in the template tables above.

- * Output summaries must include simulated energy consumption by end use as well as total building energy consumption and cost by energy type used in the building.
- * Example input summaries must be a sampling of model input assumptions, focusing on the most common systems present in the building. The example input summaries should be taken from the simulation software's standard input reports if available; if the software will not produce input summary reports then screen captures of representative inputs are acceptable. The example input summaries must include samples of the following input information:

1. Occupancy and usage patterns
2. Assumed envelope component sizes and traits (area, R-value, U-value, etc.)
3. Assumed mechanical equipment types and traits (capacity, efficiency, etc.)

Please note that uploaded documents should be SUMMARIES, and not large quantities of detailed data

Documentation Description Log

In the text box below, please reference the file name of each uploaded file (e.g. simulationsummary.pdf)

Baseline System Inputs.pdf, eia.doe.gov electric.pdf, eia.doe.gov nat gas.pdf, ASHRAE 90.1 Compliance.pdf, Baseline Chiller-Boiler Plant Inputs.pdf, Baseline Space Inputs.pdf, Envelope Inputs.pdf, Proposed System Inputs.pdf, Schedule Inputs.pdf, Weather Inputs.pdf, Hap unmet Hours-EA credit #1 report/pdf, Proposed Chiller-Boiler Plant Inputs.pdf, Proposed Space Inputs.pdf, Targetfinder.pdf



I have provided the appropriate supporting documentation in the document upload section of LEED Online. Please refer to the above sheets.

**NARRATIVE (Optional)**

Please provide any additional comments or notes regarding special circumstances or considerations regarding the project's credit approach.

- ☐ The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the "Alternative Compliance Points Documented" field below).

 Alternative Compliance Points Documented

Project Name: Akron PSD, Buchtel/Perkins 7-12 CLC

Credit: EA Credit 1: Optimize Energy Performance

Points Documented:

4

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today's date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

Dan	Ritchey	1-10-11	dritchey@gpdco.com	
First Name	Last Name	Date	Username (Email Address)	Password

SAVE TEMPLATE TO LEED-ONLINE

PRINT TEMPLATE

Letter Template Version 00000864

MECHANICAL NARRATIVE

HVAC SYSTEMS

COOLING PLANT

One 500 Ton open cooling tower located outside the mechanical room in the equipment yard and one indoor water-cooled centrifugal chiller located inside the Mechanical Equipment Room shall provide chilled water for the building. The overall chiller capacity shall be selected for 100% of the overall peak block load. The chilled water system will be a variable-primary configuration consisting of two (2) variable speed, base mounted, primary chilled water pumps. Chilled water coils in the air handling units will utilize two-way, modulating control valves.

HEATING PLANT

Gas-fired, condensing type, heating hot water boilers located in the Mechanical Equipment Room shall provide heating hot water for the building. The heating hot water system will be a variable-primary configuration. Three (3) variable-speed, base-mounted, primary heating hot water pumps will supply heating hot water to the air handling units heating coils, terminal unit reheat coils, unit heaters, and other HVAC equipment. The HVAC equipment will utilize two-way, modulating control valves.

AIR DISTRIBUTION

All Air Handling Units are located in Mechanical Equipment Rooms. Air handling units serving the Classrooms, Music, Kitchen, Reading Room and Art Room, will be variable volume air handling type systems and shall incorporate enthalpy wheels, chilled water coils, hot water coils, 30-35% efficient pre-filter and 65% efficient final filter, double wall cabinet construction and a mixing box. Variable volume air handlers shall incorporate variable frequency drives on the supply and return/relief fans. All units shall incorporate a dry-bulb economizer cycle, except for the Administration unit.

All the Classrooms, Music Room, Art Room and Reading Room shall be heated and cooled with single duct fan powered variable air volume terminal unit with a hot water reheat coil. The Remaining Rooms/zones shall have a single duct variable air volume terminal unit with hot water reheat. Supply ductwork from the VAV air handler units to the terminal units shall be medium-pressure construction. Supply ductwork from the CV air handler units, terminal units to diffusers, return and exhaust ductwork shall be low-pressure construction.

Exhaust systems will be provided for the Art Room, Toilet Rooms, Storage Rooms, Electrical Closets, etc. with ceiling exhaust fans or roof mounted units.

An independent air-cooled split system air conditioning system shall be provided for the Administration area for all year round cooling of the offices.

An independent air cooled packaged air conditioning system shall be provided for the Main Cross-Connect room for all year round cooling of heat generating electronic equipment

A gas-fired make-up air unit shall be provided for the main Type I Kitchen Exhaust Hood interlocked with the Hood Suppression system.

CONTROLS

The building management systems will monitor and control through the use of a “Lon mark” protocol Building Automation System (BAS), with a centrally controlled station identified for the building management system. This system will allow control and monitoring from a single point, but sub-systems will be stand-alone and operable without the requirement of a central interface.

ENERGY CONSERVATION MEASURES

Energy saving features includes:

- Variable speed drive supply and return fans on variable volume air handlers.
- High-efficiency gas-fired boilers.
- High-efficiency chiller.
- Economizing mode is enabled based on outside air dry-bulb temperature.
- Supply air static pressure reset for variable volume air handling systems.
- Unoccupied night setback and setup mode through BAS.
- Variable speed drive on primary chilled water and hot water pumps and two-way chilled water and hot water coil control valves.
- Hot water supply temperature reset based on outside air temperature.
- Enthalpy wheels on all AHU units for heat recovery for classrooms and student dining/stage areas.
- Demand Control Ventilation based on CO2 detection in Gymnasium.

Mercantile Customer Project Commitment Agreement
Cash Rebate Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT (“Agreement”) is made and entered into by and between Ohio Edison Company, its successors and assigns (hereinafter called the “Company”) and Akron Board of Education, Taxpayer ID No. 34-6000033 its permitted successors and assigns (hereinafter called the “Customer”) (collectively the “Parties” or individually the “Party”) and is effective on the date last executed by the Parties as indicated below.

WITNESSETH

WHEREAS, the Company is an electric distribution utility and electric light company, as both of these terms are defined in R.C. § 4928.01(A); and

WHEREAS, Customer is a mercantile customer, as that term is defined in R.C. § 4928.01(A)(19), doing business within the Company’s certified service territory; and

WHEREAS, R.C. § 4928.66 (the “Statute”) requires the Company to meet certain energy efficiency and peak demand reduction (“EE&PDR”) benchmarks; and

WHEREAS, when complying with certain EE&PDR benchmarks the Company may include the effects of mercantile customer-sited EE&PDR projects; and

WHEREAS, Customer has certain customer-sited demand reduction, demand response, or energy efficiency project(s) as set forth in attached Exhibit 1 (the “Customer Energy Project(s)”) that it desires to commit to the Company for integration into the Company’s Energy Efficiency & Peak Demand Reduction Program Portfolio Plan (“Company Plan”) that the Company will implement in order to comply with the Statute; and

WHEREAS, the Customer, pursuant to the Public Utilities Commission of Ohio’s (“Commission”) September 15, 2010 Order in Case No. 10-834-EL-EEC, desires to pursue a cash rebate of some of the costs pertaining to its Customer Energy Project(s) (“Cash Rebate”) and is committing the Customer Energy Project(s) as a result of such incentive.

WHEREAS, Customer’s decision to commit its Customer Energy Project(s) to the Company for inclusion in the Company Plan has been reasonably encouraged by the possibility of a Cash Rebate.

WHEREAS, in consideration of, and upon receipt of, said cash rebate, Customer will commit the Customer Energy Project(s) to the Company and will comply with all other terms and conditions set forth herein.

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties, intending to be legally bound, do hereby agree as follows:

1. **Customer Energy Projects.** Customer hereby commits to the Company and Company accepts for integration into the Company Plan the Customer Energy Project(s) set forth on attached Exhibit 1. Said commitment shall be for the life of the Customer Energy Project(s). Company will incorporate said project(s) into the Company Plan to the extent that such projects qualify. In so committing, and as evidenced by the affidavit attached hereto as Exhibit A, Customer acknowledges that the information provided to the Company about the Customer Energy Project(s) is true and accurate to the best of its knowledge.

- a. By committing the Customer Energy Project(s) to the Company, Customer acknowledges and agrees that the Company shall control the use of the kWh and kW reductions resulting from said projects for purposes of complying with the Statute. By committing the Customer Energy Project(s), Customer has the ability to either:
 - i. Take ownership of the Energy Efficiency resource credits resulting from their Customer Energy Project(s) and may be able to bid - or sell - the Energy Efficiency resource credits into the market operated by the grid operator, PJM Interconnection, Inc. (PJM), provided several prerequisites are met; or
 - ii. Allow the Company to take ownership of the Energy Efficiency resource credits associated with their Customer Energy Project(s). The Company shall, at its sole discretion, aggregate said capacity into the PJM market through an auction. Any proceeds from any such bids accepted by PJM will be used to offset the costs charged to the Customer and other of the Company's customers for compliance with state mandated energy efficiency and/or peak demand requirements.

Please indicate your preference as to the treatment of your Energy Efficiency resource credits:

- ☐ Customer would like to retain ownership of its Energy Efficiency resource credits.
- ☒ Customer assigns ownership of its Energy Efficiency resource credits to Company for purposes of bidding these credits into PJM.

- b. The Company acknowledges that some of Customer's Energy Projects contemplated in this paragraph may have been performed under certain other federal and/or state programs in which certain parameters are required to be maintained in order to retain preferential financing or other government benefits (individually and collectively, as appropriate, "Benefits"). In the event that the use of any such project by the Company in any way affects such Benefits, and upon written request from the Customer, Company will release said Customer's Energy Project(s) to the extent necessary for Customer to meet the prerequisites for such Benefits. Customer acknowledges that such release (i) may affect Customer's cash rebate discussed in Article 3 below; and (ii) will not affect any of Customer's other requirements or obligations.
 - c. Any future Customer Energy Project(s) committed by Customer shall be subject to a separate application and, upon approval by the Commission, said projects shall become part of this Agreement.
 - d. Customer will provide Company or Company's agent(s) with reasonable assistance in the preparation of the Commission's standard joint application for approval of this Agreement ("Joint Application") that will be filed with the Commission, with such Joint Application being consistent with then current Commission requirements.
 - e. Upon written request and reasonable advance notice, Customer will grant employees or authorized agents of either the Company or the Commission reasonable, pre-arranged access to the Customer Energy Project(s) for purposes of measuring and verifying energy savings and/or peak demand reductions resulting from the Customer Energy Project(s). It is expressly agreed that consultants of either the Company or the Commission are their respective authorized agents.
2. **Joint Application to the Commission.** The Parties will submit the Joint Application using the Commission's standard "Application to Commit Energy Efficiency/Peak Demand Reduction Programs" ("Joint Application") in which they will seek the Commission's approval of (i) this

Agreement: (ii) the commitment of the Customer Energy Project(s) for inclusion in the Company Plan; and (iii) the Customer's Cash Rebate.

The Joint Application shall include all information as set forth in the Commission's standard form which, includes without limitation:

- i. A narrative description of the Customer Energy Project(s), including but not limited to, make, model and year of any installed and/or replaced equipment;
 - ii. A copy of this Agreement; and
 - iii. A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results.
3. **Customer Cash Rebate.** Upon Commission approval of the Joint Application, Customer shall provide Company with a W-9 tax form, which shall at a minimum include Customer's tax identification number. Within the greater of 90 days of the Commission's approval of the Joint Application or the completion of the Customer Energy Project, the Company will issue to the Customer the Cash Rebate in the amount set forth in the Commission's Finding and Order approving the Joint Application.
 - a. Customer acknowledges: i) that the Company will cap the Cash Rebate at the lesser of 50% of Customer Energy Project(s) costs or \$250,000; ii) the maximum rebate that the Customer may receive per year is \$500,000 per Taxpayer Identification Number per utility service territory; and iii) if the Customer Energy Project qualifies for a rebate program approved by the Commission and offered by the Company, Customer may still elect to file such project under the Company's mercantile customer self direct program, however the Cash Rebate that will be paid shall be discounted by 25%; and
 - b. Customer acknowledges that breaches of this Agreement, include, but are not limited to:
 - i. Customer's failure to comply with the terms and conditions set forth in the Agreement, or its equivalent, within a reasonable period of time after receipt of written notice of such non-compliance;
 - ii. Customer knowingly falsifying any documents provided to the Company or the Commission in connection with this Agreement or the Joint Application.
 - c. In the event of a breach of this Agreement by the Customer, Customer agrees and acknowledges that it will repay to the Company, within 90 days of receipt of written notice of said breach, the full amount of the Cash Rebate paid under this Agreement. This remedy is in addition to any and all other remedies available to the Company by law or equity.
4. **Termination of Agreement.** This Agreement shall automatically terminate:
 - a. If the Commission fails to approve the Joint Agreement;
 - b. Upon order of the Commission; or
 - c. At the end of the life of the last Customer Energy Project subject to this Agreement.

Customer shall also have an option to terminate this Agreement should the Commission not approve the Customer's Cash Rebate, provided that Customer provides the Company with written

notice of such termination within ten days of either the Commission issuing a final appealable order or the Ohio Supreme Court issuing its opinion should the matter be appealed.

5. **Confidentiality.** Each Party shall hold in confidence and not release or disclose to any person any document or information furnished by the other Party in connection with this Agreement that is designated as confidential and proprietary ("Confidential Information"), unless: (i) compelled to disclose such document or information by judicial, regulatory or administrative process or other provisions of law; (ii) such document or information is generally available to the public; or (iii) such document or information was available to the receiving Party on a non-confidential basis at the time of disclosure.
 - a. Notwithstanding the above, a Party may disclose to its employees, directors, attorneys, consultants and agents all documents and information furnished by the other Party in connection with this Agreement, provided that such employees, directors, attorneys, consultants and agents have been advised of the confidential nature of this information and through such disclosure are deemed to be bound by the terms set forth herein.
 - b. A Party receiving such Confidential Information shall protect it with the same standard of care as its own confidential or proprietary information.
 - c. A Party receiving notice or otherwise concluding that Confidential Information furnished by the other Party in connection with this Agreement is being sought under any provision of law, to the extent it is permitted to do so under any applicable law, shall endeavor to: (i) promptly notify the other Party; and (ii) use reasonable efforts in cooperation with the other Party to seek confidential treatment of such Confidential Information, including without limitation, the filing of such information under a valid protective order.
 - d. By executing this Agreement, Customer hereby acknowledges and agrees that Company may disclose to the Commission or its Staff any and all Customer information, including Confidential Information, related to a Customer Energy Project, provided that Company uses reasonable efforts to seek confidential treatment of the same.
6. **Taxes.** Customer shall be responsible for all tax consequences (if any) arising from the payment of the Cash Rebate.
7. **Notices.** Unless otherwise stated herein, all notices, demands or requests required or permitted under this Agreement must be in writing and must be delivered or sent by overnight express mail, courier service, electronic mail or facsimile transmission addressed as follows:

If to the Company:

FirstEnergy Service Company
76 South Main Street
Akron, OH 44308
Attn: Victoria Nofziger
Telephone: 330-384-4684
Fax: 330-761-4281
Email: vmnofziger@firstenergycorp.com

If to the Customer:

Akron Board of Education
70 East Broadway
Akron, Ohio 44308
Attn: Debra Foulk
Telephone: 330-761-2977
Fax: 330-761-3225
Email: dfoulk@akron.k12.oh.us

or to such other person at such other address as a Party may designate by like notice to the other Party. Notice received after the close of the business day will be deemed received on the next business day; provided that notice by facsimile transmission will be deemed to have been received by the recipient if the recipient confirms receipt telephonically or in writing.

8. **Authority to Act.** The Parties represent and warrant that they are represented by counsel in connection with this Agreement, have been fully advised in connection with the execution thereof, have taken all legal and corporate steps necessary to enter into this Agreement, and that the undersigned has the authority to enter into this Agreement, to bind the Parties to all provisions herein and to take the actions required to be performed in fulfillment of the undertakings contained herein.
9. **Non-Waiver.** The delay or failure of either party to assert or enforce in any instance strict performance of any of the terms of this Agreement or to exercise any rights hereunder conferred, shall not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights at any later time or on any future occasion.
10. **Entire Agreement.** This Agreement, along with related exhibits, and the Company's Rider DSE, or its equivalent, as amended from time to time by the Commission, contains the Parties' entire understanding with respect to the matters addressed herein and there are no verbal or collateral representations, undertakings, or agreements not expressly set forth herein. No change in, addition to, or waiver of the terms of this Agreement shall be binding upon any of the Parties unless the same is set forth in writing and signed by an authorized representative of each of the Parties. In the event of any conflict between Rider DSE or its equivalent and this document, the latter shall prevail.
11. **Assignment.** Customer may not assign any of its rights or obligations under this Agreement without obtaining the prior written consent of the Company, which consent will not be unreasonably withheld. No assignment of this Agreement will relieve the assigning Party of any of its obligations under this Agreement until such obligations have been assumed by the assignee and all necessary consents have been obtained.
12. **Severability.** If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, and the Parties further agree to substitute for the invalid portion a valid provision that most closely approximates the economic effect and intent of the invalid provision.
13. **Governing Law.** This Agreement shall be governed by the laws and regulations of the State of Ohio, without regard to its conflict of law provisions.
14. **Execution and Counterparts.** This Agreement may be executed in multiple counterparts, which taken together shall constitute an original without the necessity of all parties signing the same page or the same documents, and may be executed by signatures to electronically or telephonically transmitted counterparts in lieu of original printed or photocopied documents. Signatures transmitted by facsimile shall be considered original signatures.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives as of the day and year set forth below.

Ohio Edison Company_
(Company)

By: *John P. Dargatzis*

Title: V.P. Of Energy Efficiency

Date: 8-21-14

Akron Board of Education_
(Customer)

By: *Debra Foulk*

Title: _____

Date: 6/5/2014

Debra Foulk
Executive Director
Business Affairs

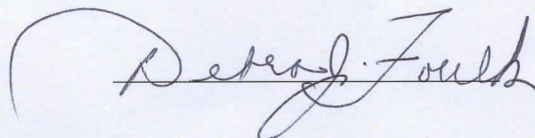
Affidavit of Akron Board of Education – Exhibit _A_

STATE OF OHIO)
) SS:
COUNTY OF Summit)

I, Debra Foulk ,being first duly sworn in accordance with law, deposes and states as follows:

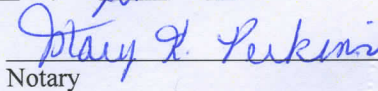
1. I am the Executive Director Business Affairs of Akron Board of Education (“Customer”) As part of my duties, I oversee energy related matters for the Customer.
2. The Customer has agreed to commit certain energy efficiency projects to Ohio Edison Company (“Company”), which are the subject of the agreement to which this affidavit is attached (“Project(s)”).
3. In exchange for making such a commitment, the Company has agreed to provide Customer with Cash (“Incentive”). This Incentive was a critical factor in the Customer’s decision to go forward with the Project(s) and to commit the Project(s) to the Company.
4. All information related to said Project(s) that has been submitted to the Company is true and accurate to the best of my knowledge.

FURTHER AFFIANT SAYETH NAUGHT.



Debra Foulk
Executive Director
Business Affairs

Sworn to before me and subscribed in my presence this 5th day of June, 20 14


Notary

MARY K. PERKINS
Notary Public, State of Ohio
My Commission Expires Dec 29-18



This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

9/18/2014 11:32:42 AM

in

Case No(s). 14-1015-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of Ohio Edison Company and Akron Board of Education electronically filed by Ms. Jennifer M. Sybyl on behalf of Ohio Edison Company and Akron Board of Education