



Public Utilities Commission

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

Case No.: 14-1017-EL-EEC

Mercantile Customer: Akron Board of Education

Electric Utility: Ohio Edison Company

Program Title or Description: New Construction Seiberling CLC

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: 400 Brittain Rd, Akron, Oh 44305

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):

11/05/2013.
- ☐ 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: 501,881 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 \$26,919. (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.: 14-1017-EL-EEC

State of Ohio :

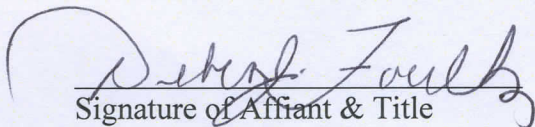
Debra Foulk, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Akron Board of Education

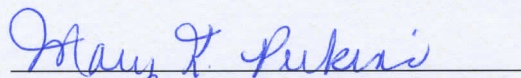
[insert customer or EDU company name and any applicable name(s) doing business as]

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



Customer Legal Entity Name: Akron Public Schools
Site Address: Seiberling CLC
Principal Address: 400 Brittain Rd

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	Seiberling New Construction Lighting	Newly constructed LEEDS Certified Learning Center	See Lighting Calculator	N/A	N/A
2	Seiberling 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. 14-1017
Site: 400 Brittain Rd

Exhibit 2

Customer Legal Entity Name: Akron Public Schools
Site Address: Seiberling CLC
Principal Address: 400 Brittain Rd

		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	Seiberling New Construction Lighting	11/15/2013	\$300,000	\$150,000	114,680	114,680	-	\$4,916	\$3,687	
2	Seiberling New Construction Electrical	11/15/2013	\$1,000,000	\$500,000	387,201	387,201	-	\$30,976	\$23,232	
					-	-	-	\$35,892		
					-	-	-			
					-	-	-			
					-	-	-			
Total			\$1,300,000		501,881	501,881	0	\$35,892	\$26,919	\$0

Docket No. 14-1017
Site: 400 Brittain Rd

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	115	\$ 308	\$ 35,354	\$ 2,025	\$3,687	\$1,147	\$ 6,859	5.2
2	387	\$ 308	\$ 119,366	\$ 2,025	\$23,232	\$3,872	\$ 29,129	4.10
Total	502	\$ 308	154,720	4,050	\$26,919	\$5,019	35,988	4.3

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 ~ Seiberling CLC
Docket No. 14-1017

Site: 400 Brittain Rd

	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



Ohio Edison • The Illuminating Company • Toledo Edison

Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	LEEDS BMS AHU Electrical
Site Name:	Seiberling CLC
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	387,201	30976.08
Total Project Energy Savings kWh		387,201
Total Custom Prescriptive Rebate Amount \$		\$ 30,976.08

Notes about this rebate calculation:
LEEDS Calculations

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	114,680
Total Change in Connected Load	13.49

Annual Estimated Cost Savings	\$11,468.00
Annual Operating Hours	3,905

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$2,916.90
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$374.20
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)	\$1,625.00

Total Calculated Incentive	\$4,916.10
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	1012
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	65
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)	16.13
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Lighting Form

Lighting Inventory Form

Applicant Name:	Alison Board of Education
Facility Name:	Schubert CLE
Date:	5/23/2014
Upload Your Incident report	Upload Now 3

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, 16-Lo for bi-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]



Mechanical Compliance Certificate

90.1 (2007) Standard

Section 1: Project Information

Project Type: **New Construction**

Project Title : Seiberling Community Learning Center

Construction Site:

400 Brittain Road
Akron, OH 44305

Owner/Agent:

Akron City Schools

Designer/Contractor:

GPD Group
520 S. Main St.
Suite 2531
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

- | | |
|----|--|
| 6 | HVAC System 1 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 8 kBtu/h,
Proposed Efficiency = 3.40 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 10 kBtu/h,
Proposed Efficiency = 16.70 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 4 | HVAC System 2 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 12 kBtu/h,
Proposed Efficiency = 3.70 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 15 kBtu/h,
Proposed Efficiency = 14.60 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 2 | HVAC System 3 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 15 kBtu/h,
Proposed Efficiency = 3.80 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 21 kBtu/h,
Proposed Efficiency = 20.20 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 2 | HVAC System 4 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 20 kBtu/h,
Proposed Efficiency = 3.70 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 29 kBtu/h,
Proposed Efficiency = 21.10 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 1 | HVAC System 5 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 27 kBtu/h,
Proposed Efficiency = 4.10 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 40 kBtu/h,
Proposed Efficiency = 19.80 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 11 | HVAC System 6 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 37 kBtu/h,
Proposed Efficiency = 4.00 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 50 kBtu/h, |

Proposed Efficiency = 18.00 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified

- 2 HVAC System 7 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 45 kBtu/h,
Proposed Efficiency = 3.80 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 68 kBtu/h,
Proposed Efficiency = 17.80 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 2 HVAC System 8 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 109 kBtu/h,
No minimum efficiency requirement applies
Cooling Mode: Capacity = 185 kBtu/h, , Air Economizer
No minimum efficiency requirement applies
Fan System: Unspecified
- 1 HVAC System 9 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 45 kBtu/h,
Proposed Efficiency = 3.80 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 68 kBtu/h,
Proposed Efficiency = 17.80 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 1 HVAC System 10 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 83 kBtu/h,
Proposed Efficiency = 3.60 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 122 kBtu/h,
Proposed Efficiency = 18.00 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 2 HVAC System 11 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 51 kBtu/h,
Proposed Efficiency = 3.50 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 76 kBtu/h,
Proposed Efficiency = 17.70 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 1 HVAC System 12 (Single Zone) :
Cooling: 1 each - Split System, Capacity = 36 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER
Fan System: Unspecified
- 8 HVAC System 13 (Single Zone w/ Perimeter System) :
Heating: 1 each - Radiant Heater, Electric, Capacity = 3 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 5 HVAC System 14 (Unknown) :
Heating: 1 each - Unit Heater, Electric, Capacity = 27 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 2 HVAC System 15 (Unknown) :
Heating: 1 each - Unit Heater, Electric, Capacity = 17 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 6 HVAC System 16 (Single Zone) :
Heating: 1 each - Radiant Heater, Electric, Capacity = 3 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 1 ERU-1 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 448 kBtu/h,
No minimum efficiency requirement applies
Cooling Mode: Capacity = 615 kBtu/h, , Air Economizer
No minimum efficiency requirement applies
Fan System: Unspecified
- 1 ERU-2 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 238 kBtu/h,
No minimum efficiency requirement applies
Cooling Mode: Capacity = 363 kBtu/h, , Air Economizer
No minimum efficiency requirement applies
Fan System: Unspecified

- 2 Water Heater 1:
Gas Storage Water Heater, Capacity: 100 gallons, Input Rating: 75 Btu/h w/ Circulation Pump
Proposed Efficiency: 0.96 EF, Required Efficiency: 0.43 EF

Section 5: Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2007) Standard requirements in COMcheck Version 3.9.2 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title

Signature

Date

Section 6: Post Construction Compliance Statement

- ☐ HVAC record drawings of the actual installation and performance data for each equipment provided to the owner within 90 days after system acceptance.
- ☐ HVAC O&M documents for all mechanical equipment and system provided to the owner within 90 days after system acceptance.
- ☐ Written HVAC balancing report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name

Signature

Date

Inspection Checklist

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Plan Review	Complies?	Comments/Assumptions
4.2.2, 6.4.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
4.2.2, 7.4.1 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.4 [PR5] ¹	Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 ft ² .	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

90.1 (2007) Standard	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.3.8 [FO9] ³	Freeze protection and snow/ice melting system sensors for future connection to controls.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

90.1 (2007) Standard	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
7.4.3 [PL1] ²	Service hot-water piping systems insulated. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
7.4.4.1 [PL2] ³	Temperature controls installed on service water heating systems (<=120°F to maximum temperature for intended use).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
7.4.4.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.

Additional Comments/Assumptions:

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.1.4, 6.4.1.5 [ME1] ²	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	Efficiency: _____	Efficiency: _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
6.4.3.4.1 [ME3] ³	Stair and elevator shaft vents have motorized dampers that automatically close.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.4.2, 6.4.3.4.3, 6.4.3.4.4 [ME4] ³	Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.4.5 [ME5] ³	Ventilation fans >0.75 hp have automatic controls to shut off fan when not required.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.9 [ME6] ¹	Demand control ventilation provided for spaces >500 ft ² and >40 people/1000 ft ² occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.1.1 [ME7] ³	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.1.2 [ME8] ²	HVAC ducts and plenums insulated.	R- _____	R- _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.1.3 [ME9] ²	HVAC piping insulation thickness.	_____ in.	_____ in.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.2.1 [ME10] ²	Ducts and plenums sealed based on static pressure and location.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 1.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 2.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 3.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 4.

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 5.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 6.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 7.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 9.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 10.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 11.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 12.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 13.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 14.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 15.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 16.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.1, 6.5.1.1.1, 6.5.1.1.2, 6.5.1.1.3, 6.5.1.3 [ME12] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.5.1, 6.5.1.1.1, 6.5.1.1.2, 6.5.1.1.3, 6.5.1.3 [ME12] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.
6.5.1, 6.5.1.1.1, 6.5.1.1.2, 6.5.1.1.3, 6.5.1.3 [ME12] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.
6.5.1.4 [ME16] ¹	Economizer operation will not increase heating energy use during normal operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.5.1.4 [ME16] ¹	Economizer operation will not increase heating energy use during normal operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.
6.5.1.4 [ME16] ¹	Economizer operation will not increase heating energy use during normal operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.
6.5.2.3 [ME19] ³	Dehumidification controls provided to prevent reheating, recooling, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.4.1 [ME25] ³	HVAC pumping systems >10 hp designed for variable fluid flow.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.6.1 [ME30] ¹	Exhaust air energy recovery on systems >=5,000 cfm and 70% of design supply air.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.7.1 [ME32] ²	Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.7.2 [ME33] ¹	Fume hoods exhaust systems >=15,000 cfm have VAV hood exhaust and supply systems, direct make-up air or heat recovery.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.8.1 [ME34] ³	Unenclosed spaces that are heated use only radiant heat.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1)

2 Medium Impact (Tier 2)

3 Low Impact (Tier 3)

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.9 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h – 50% >240 kBtu/h – 25%			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 12.
7.4.2 [ME36] ²	Service water heating equipment meets efficiency requirements.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
10.4.1 [EL9] ²	Electric motors meet requirements where applicable.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Final Inspection	Complies?	Comments/Assumptions
6.4.3.1.1 [FI2] ²	Heating and cooling to each zone is controlled by a thermostat control.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.1.2, 6.4.3.2, 6.4.3.3, 6.4.3.3.1, 6.4.3.3.2 [FI3] ²	Thermostatic controls have a 5 °F deadband.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 1.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 2.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 3.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 4.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 5.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 6.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 7.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 9.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 10.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 11.
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.

1 High Impact (Tier 1)

2 Medium Impact (Tier 2)

3 Low Impact (Tier 3)

90.1 (2007) Standard	Final Inspection	Complies?	Comments/Assumptions
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.
6.4.3.7 [FI6] ³	When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.1 [FI7] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.2 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.3 [FI9] ¹	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft ² of conditioned area.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.4 [FI10] ¹	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
7.4.4.3 [FI11] ³	Public lavatory faucet water temperature <=110°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
7.4.4.4 [FI12] ³	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
6.4.3.2 [FI20] ¹	Temperature controls have setpoint overlap restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.3.1 [FI21] ¹	HVAC systems equipped with at least one automatic shutdown control.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.3.2 [FI22] ¹	Setback controls allow automatic restart and temporary operation as required for maintenance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Mechanical Compliance Certificate

90.1 (2007) Standard

Section 1: Project Information

Project Type: **New Construction**

Project Title : Seiberling Community Learning Center

Construction Site:

400 Brittain Road
Akron, OH 44305

Owner/Agent:

Akron City Schools

Designer/Contractor:

GPD Group
520 S. Main St.
Suite 2531
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

- | | |
|----|--|
| 6 | HVAC System 1 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 8 kBtu/h,
Proposed Efficiency = 3.40 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 10 kBtu/h,
Proposed Efficiency = 16.70 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 4 | HVAC System 2 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 12 kBtu/h,
Proposed Efficiency = 3.70 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 15 kBtu/h,
Proposed Efficiency = 14.60 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 2 | HVAC System 3 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 15 kBtu/h,
Proposed Efficiency = 3.80 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 21 kBtu/h,
Proposed Efficiency = 20.20 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 2 | HVAC System 4 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 20 kBtu/h,
Proposed Efficiency = 3.70 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 29 kBtu/h,
Proposed Efficiency = 21.10 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 1 | HVAC System 5 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 27 kBtu/h,
Proposed Efficiency = 4.10 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 40 kBtu/h,
Proposed Efficiency = 19.80 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified |
| 11 | HVAC System 6 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 37 kBtu/h,
Proposed Efficiency = 4.00 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 50 kBtu/h, |

Proposed Efficiency = 18.00 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified

- 2 HVAC System 7 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 45 kBtu/h,
Proposed Efficiency = 3.80 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 68 kBtu/h,
Proposed Efficiency = 17.80 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 2 HVAC System 8 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 109 kBtu/h,
No minimum efficiency requirement applies
Cooling Mode: Capacity = 185 kBtu/h, , Air Economizer
No minimum efficiency requirement applies
Fan System: Unspecified
- 1 HVAC System 9 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 45 kBtu/h,
Proposed Efficiency = 3.80 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 68 kBtu/h,
Proposed Efficiency = 17.80 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 1 HVAC System 10 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 83 kBtu/h,
Proposed Efficiency = 3.60 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 122 kBtu/h,
Proposed Efficiency = 18.00 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 2 HVAC System 11 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 51 kBtu/h,
Proposed Efficiency = 3.50 COP, Required Efficiency = 3.10 COP
Cooling Mode: Capacity = 76 kBtu/h,
Proposed Efficiency = 17.70 EER, Required Efficiency = 13.40 EER
Fan System: Unspecified
- 1 HVAC System 12 (Single Zone) :
Cooling: 1 each - Split System, Capacity = 36 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER
Fan System: Unspecified
- 8 HVAC System 13 (Single Zone w/ Perimeter System) :
Heating: 1 each - Radiant Heater, Electric, Capacity = 3 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 5 HVAC System 14 (Unknown) :
Heating: 1 each - Unit Heater, Electric, Capacity = 27 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 2 HVAC System 15 (Unknown) :
Heating: 1 each - Unit Heater, Electric, Capacity = 17 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 6 HVAC System 16 (Single Zone) :
Heating: 1 each - Radiant Heater, Electric, Capacity = 3 kBtu/h
No minimum efficiency requirement applies
Fan System: Unspecified
- 1 ERU-1 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 448 kBtu/h,
No minimum efficiency requirement applies
Cooling Mode: Capacity = 615 kBtu/h, , Air Economizer
No minimum efficiency requirement applies
Fan System: Unspecified
- 1 ERU-2 (Single Zone) : Ground Source Heat Pump
Heating Mode: Capacity = 238 kBtu/h,
No minimum efficiency requirement applies
Cooling Mode: Capacity = 363 kBtu/h, , Air Economizer
No minimum efficiency requirement applies
Fan System: Unspecified

- 2 Water Heater 1:
Gas Storage Water Heater, Capacity: 100 gallons, Input Rating: 75 Btu/h w/ Circulation Pump
Proposed Efficiency: 0.96 EF, Required Efficiency: 0.43 EF

Section 5: Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2007) Standard requirements in COMcheck Version 3.9.2 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title

Signature

Date

Section 6: Post Construction Compliance Statement

- ☐ HVAC record drawings of the actual installation and performance data for each equipment provided to the owner within 90 days after system acceptance.
- ☐ HVAC O&M documents for all mechanical equipment and system provided to the owner within 90 days after system acceptance.
- ☐ Written HVAC balancing report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name

Signature

Date



Inspection Checklist

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Plan Review	Complies?	Comments/Assumptions
4.2.2, 6.4.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
4.2.2, 7.4.1 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.4 [PR5] ¹	Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 ft ² .	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.3.8 [FO9] ³	Freeze protection and snow/ice melting system sensors for future connection to controls.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
7.4.3 [PL1] ²	Service hot-water piping systems insulated. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
7.4.4.1 [PL2] ³	Temperature controls installed on service water heating systems (<=120°F to maximum temperature for intended use).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
7.4.4.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.1.4, 6.4.1.5 [ME1] ²	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	Efficiency: _____	Efficiency: _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
6.4.3.4.1 [ME3] ³	Stair and elevator shaft vents have motorized dampers that automatically close.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.4.2, 6.4.3.4.3, 6.4.3.4.4 [ME4] ³	Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.4.5 [ME5] ³	Ventilation fans >0.75 hp have automatic controls to shut off fan when not required.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.9 [ME6] ¹	Demand control ventilation provided for spaces >500 ft ² and >40 people/1000 ft ² occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.1.1 [ME7] ³	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.1.2 [ME8] ²	HVAC ducts and plenums insulated.	R- _____	R- _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.1.3 [ME9] ²	HVAC piping insulation thickness.	_____ in.	_____ in.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.2.1 [ME10] ²	Ducts and plenums sealed based on static pressure and location.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 1.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 2.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 3.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 4.

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 5.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 6.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 7.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 9.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 10.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 11.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 12.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 13.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 14.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 15.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 16.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.1, 6.5.1.1.1, 6.5.1.1.2, 6.5.1.1.3, 6.5.1.3 [ME12] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.5.1, 6.5.1.1.1, 6.5.1.1.2, 6.5.1.1.3, 6.5.1.3 [ME12] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.
6.5.1, 6.5.1.1.1, 6.5.1.1.2, 6.5.1.1.3, 6.5.1.3 [ME12] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.
6.5.1.4 [ME16] ¹	Economizer operation will not increase heating energy use during normal operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.5.1.4 [ME16] ¹	Economizer operation will not increase heating energy use during normal operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.
6.5.1.4 [ME16] ¹	Economizer operation will not increase heating energy use during normal operation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.
6.5.2.3 [ME19] ³	Dehumidification controls provided to prevent reheating, recooling, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.4.1 [ME25] ³	HVAC pumping systems >10 hp designed for variable fluid flow.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.6.1 [ME30] ¹	Exhaust air energy recovery on systems >=5,000 cfm and 70% of design supply air.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.7.1 [ME32] ²	Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.7.2 [ME33] ¹	Fume hoods exhaust systems >=15,000 cfm have VAV hood exhaust and supply systems, direct make-up air or heat recovery.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.5.8.1 [ME34] ³	Unenclosed spaces that are heated use only radiant heat.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

90.1 (2007) Standard	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.9 [ME35] ¹	Hot gas bypass limited to: ≤ 240 kBtu/h – 50% > 240 kBtu/h – 25%			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 12.
7.4.2 [ME36] ²	Service water heating equipment meets efficiency requirements.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.

Additional Comments/Assumptions:

90.1 (2007) Standard	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
10.4.1 [EL9] ²	Electric motors meet requirements where applicable.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Final Inspection	Complies?	Comments/Assumptions
6.4.3.1.1 [F12] ²	Heating and cooling to each zone is controlled by a thermostat control.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.1.2, 6.4.3.2, 6.4.3.3, 6.4.3.3.1, 6.4.3.3.2 [F13] ²	Thermostatic controls have a 5 °F deadband.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 1.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 2.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 3.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 4.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 5.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 6.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 7.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 8.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 9.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 10.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for HVAC System 11.
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-1.

90.1 (2007) Standard	Final Inspection	Complies?	Comments/Assumptions
6.4.3.5 [F15] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for ERU-2.
6.4.3.7 [F16] ³	When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.1 [F17] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.2 [F18] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.3 [F19] ¹	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft ² of conditioned area.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.7.2.4 [F110] ¹	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
7.4.4.3 [F111] ³	Public lavatory faucet water temperature <=110°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
7.4.4.4 [F112] ³	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values for Water Heater 1.
6.4.3.2 [F120] ¹	Temperature controls have setpoint overlap restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.3.1 [F121] ¹	HVAC systems equipped with at least one automatic shutdown control.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
6.4.3.3.2 [F122] ¹	Setback controls allow automatic restart and temporary operation as required for maintenance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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LEED 2009 EA Credit 1 Summary Report

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General Information

Simulation Program Name and Version **Hourly Analysis Program v4.60**
Simulation Weather File Name **Akron, Ohio (TM2)**

Building Designations

Proposed Building **Seiberling Geothermal**
Baseline - 0 degrees **[B000] ASHRAE 90.1 Baseline**
Baseline - 90 degrees **[B090] ASHRAE 90.1 Baseline**
Baseline - 180 degrees **[B180] ASHRAE 90.1 Baseline**
Baseline - 270 degrees **[B270] ASHRAE 90.1 Baseline**

Floor Areas and Window-to-Wall Ratios

	Proposed Design	Baseline
Total Conditioned Floor Area (ft²)	60,884	60,884
Total Floor Area (ft²)	60,884	60,884
Window to Wall Ratio	31 %	31 %
Gross Wall Area (ft²)	30,054	30,054
Vertical Window Area (ft²)	9,275	9,275

Advisory Messages

	Proposed Building	Baseline Building (0 deg. rotation)	Difference
Number of hours heating loads not met	58	19	+39
Number of hours cooling loads not met	4	0	+4

Energy Type Summary

Energy Type	Utility Rate Description	Units of Energy	Units of Demand
Electric	Electric Rate	kWh	kW
Natural Gas	Gas Rate	THM	MBH

Energy Units:

1 kBTU = 1,000 BTU
1 kWh = 3.412 kBTU
1 THM = 100,000 kBTU

Demand Units:

1 MBH = 1,000 BTU/h
1 kW = 3.412 MBH

Baseline Performance - Performance Rating Method Compliance

End Use	Process	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Baseline (0 deg rotation)	Baseline (90 deg rotation)	Baseline (180 deg rotation)	Baseline (270 deg rotation)	Baseline Design
Interior Lighting	No	Electric	Energy kWh	165,286	165,286	165,286	165,286	165,286
			Demand kW	69.8	69.8	69.8	69.8	69.8
Space Heating	No	Electric	Energy kWh	575,797	573,743	583,039	576,246	577,206
			Demand kW	643.1	642.8	643.3	642.9	643.0
Space Cooling	No	Electric	Energy kWh	31,118	28,928	31,017	31,381	30,611
			Demand kW	116.0	111.0	112.4	109.0	112.1
Pumps	No	Electric	Energy kWh	0	0	0	0	0
			Demand kW	0.0	0.0	0.0	0.0	0.0
Heat Rejection	No	Electric	Energy kWh	0	0	0	0	0
			Demand kW	0.0	0.0	0.0	0.0	0.0
Fans - Interior	No	Electric	Energy kWh	85,449	86,799	85,509	87,154	86,228
			Demand kW	33.9	32.6	33.7	32.4	33.1
Receptacle Equipment	Yes	Electric	Energy kWh	69,499	69,499	69,499	69,499	69,499

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			Demand kW	30.7	30.7	30.7	30.7	30.7
Process	Yes	Electric	Energy kWh	64,620	64,620	64,620	64,620	64,620
			Demand kW	28.5	28.5	28.5	28.5	28.5
Elevator	Yes	Electric	Energy kWh	20,358	20,358	20,358	20,358	20,358
			Demand kW	12.6	12.6	12.6	12.6	12.6
Service Water Heating	No	Natural Gas	Energy THM	7,042	7,042	7,042	7,042	7,042
			Demand MBH	392.6	392.6	392.6	392.6	392.6
Exhaust Fans	No	Electric	Energy kWh	6,338	6,338	6,338	6,338	6,338
			Demand kW	2.5	2.5	2.5	2.5	2.5
Exterior Lights (Tradable)	No	Electric	Energy kWh	56,940	56,940	56,940	56,940	56,940
			Demand kW	13.0	13.0	13.0	13.0	13.0
Refrigerators/Freezers	Yes	Electric	Energy kWh	89,790	89,790	89,790	89,790	89,790
			Demand kW	17.3	17.3	17.3	17.3	17.3
Servers	Yes	Electric	Energy kWh	88,705	88,705	88,705	88,705	88,705
			Demand kW	20.0	20.0	20.0	20.0	20.0
Baseline Energy Totals	Total Annual Energy Use kBTU			4,982,454	4,972,580	5,007,026	4,990,699	4,988,190
	Annual Process Energy kBTU							1,136,099
	Process Energy Modeling Compliance							Y

(1) This form determines compliance using cost calculations from Section 1.9. Process Energy Costs should be modeled to accurately reflect the proposed building. Process Energy must be the same in the baseline and proposed cases, unless an exceptional calculation is used. Process energy costs must be at least 25% of the total baseline energy costs. Any exceptions must be supported by a narrative and/or other supporting documentation.

(2) In this project Process Energy is 25% of total baseline energy cost.

Baseline Energy Costs

Energy Type	Baseline Cost (0 deg rotation) (\$)	Baseline Cost (90 deg rotation) (\$)	Baseline Cost (180 deg rotation) (\$)	Baseline Cost (270 deg rotation) (\$)	Baseline Building Performance (\$)
Electric	132,772	132,466	133,532	133,027	132,949
Natural Gas	5,367	5,367	5,367	5,367	5,367
Total Baseline Costs	138,138	137,833	138,899	138,393	138,316

Performance Rating Table - Performance Rating Method Compliance

End Use	Process ?	Baseline Building Units	Baseline Building Results	Proposed Design Energy Type	Proposed Design Units	Proposed Building Results	Percent Savings
Interior Lighting	No	Energy kWh	165,286	Electric	Energy kWh	129,598	22 %
		Demand kW	69.8		Demand kW	54.7	22 %
Space Heating	No	Energy kWh	577,206	Electric	Energy kWh	70,263	88 %
		Demand kW	643.0		Demand kW	66.2	90 %
Space Cooling	No	Energy kWh	30,611	Electric	Energy kWh	18,495	40 %
		Demand kW	112.1		Demand kW	96.0	14 %
Pumps	No	Energy kWh	0	Electric	Energy kWh	124,333	n/a
		Demand kW	0.0		Demand kW	19.7	n/a
Heat Rejection	No	Energy kWh	0	Electric	Energy kWh	0	n/a
		Demand kW	0.0		Demand kW	0.0	n/a
Fans - Interior	No	Energy kWh	86,228	Electric	Energy kWh	93,753	-9 %
		Demand kW	33.1		Demand kW	43.7	-32 %
Receptacle Equipment	Yes	Energy kWh	69,499	Electric	Energy kWh	69,499	0 %
		Demand kW	30.7		Demand kW	30.7	0 %
Process	Yes	Energy kWh	64,620	Electric	Energy kWh	64,620	0 %
		Demand kW	28.5		Demand kW	28.5	0 %
Elevator	Yes	Energy kWh	20,358	Electric	Energy kWh	20,358	0 %

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		Demand kW	12.6		Demand kW	12.6	0 %
Service Water Heating	No	Energy THM	7,042	Natural Gas	Energy THM	5,925	16 %
		Demand MBH	392.6		Demand MBH	330.3	16 %
Exhaust Fans	No	Energy kWh	6,338	Electric	Energy kWh	6,338	0 %
		Demand kW	2.5		Demand kW	2.5	0 %
Exterior Lights (Tradable)	No	Energy kWh	56,940	Electric	Energy kWh	33,288	42 %
		Demand kW	13.0		Demand kW	7.6	42 %
Refrigerators/Freezers	Yes	Energy kWh	89,790	Electric	Energy kWh	89,790	0 %
		Demand kW	17.3		Demand kW	17.3	0 %
Servers	Yes	Energy kWh	88,705	Electric	Energy kWh	88,705	0 %
		Demand kW	20.0		Demand kW	20.0	0 %
Energy Totals	Baseline Total Energy Use (kBtu)		4,988,190	Proposed Total Energy Use (kBtu)		3,352,938	33 %
	Baseline Annual Process Energy (kBtu)		1,136,099	Proposed Annual Process Energy (kBtu)		1,136,099	0 %

Energy Cost and Consumption by Energy Type - Performance Rating Method Compliance

	Proposed Design		Baseline Design	
Energy Type	Energy Use	Cost (\$)	Energy Use	Cost (\$)
Electric	809,039 kWh	85,794	1,255,580 kWh	132,949
Natural Gas	5,925 THM	4,573	7,042 THM	5,367
Subtotal (Model Outputs)	3,352,938 kBtu	90,367	4,988,190 kBtu	138,316
	Energy Generated	Renewable Energy Cost Savings (\$)		
Total On Site Renewable Energy				
	Energy Savings	Cost Savings (\$)		
Exceptional Calculation Totals				
	Energy Use	Cost (\$)		
Net Proposed Design Total	3,352,938 kBtu	90,367		
	Percent Savings		Energy Use Intensity	
	Energy	Cost	Proposed Design (kBtu/ft²)	Baseline Design (kBtu/ft²)
Summary Data	32.8 %	34.7 %	55.07	81.93

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LEED 2009 EA Credit 1 Points Reference Table

New Construction % Cost Savings	Existing Building Renovations % Cost Savings	LEED 2009 Points Awarded
12%	8%	1 pt
14%	10%	2 pt
16%	12%	3 pts
18%	14%	4 pts
20%	16%	5 pts
22%	18%	6 pts
24%	20%	7 pts
26%	22%	8 pts
28%	24%	9 pts
30%	26%	10 pts
32%	28%	11 pts
34%	30%	12 pts
36%	32%	13 pts
38%	34%	14 pts
40%	36%	15 pts
42%	38%	16 pts
44%	40%	17 pts
46%	42%	18 pts
48%	44%	19 pts

MECHANICAL DESIGN NARRATIVE

HVAC SYSTEMS

CODES AND STANDARDS

The building is provided with systems in accordance with the 2009 Ohio Schools Facilities Commission Design Guide, 2007 Ohio Building Code, 2009 Ohio Mechanical and Plumbing Codes ASHRAE 62.1-2007 Standard "Ventilation for Acceptable Indoor Air Quality" and ASHRAE 90.1-2007 Energy Standard for Buildings.

Outside air design shall be 5°F in the winter and 83 °F DB/70 ° WB in the summer. Indoor occupied air design temperatures shall be 70 °F ± 2 ° in the winter and 76 °F ± 2 ° DB and coincidental relative humidity in the summer. The indoor air temperatures shall be reduced during the School's unoccupied time periods to 60 °F in the winter and increased to OSDM 80 °F in the summer.

OCCUPANCY

The geothermal well field shall be sized based on the peak block heating or cooling load. The greatest load will determine the size of the well field. This is based on the peak cooling load for the entire school building and assuming that class will be in full session during the summer (year-round school). The peak heating load shall be sized based on the greater of either the peak heating load or the peak warm-up load. The peak warm-up load shall account for recovery time from unoccupied set back temperature to occupied space temperature. The HVAC load calculation shall assume that community activities never occur while class is in session and shall be based on actual occupancy for purposes of sizing the well field.

The air handling systems shall be sized for the peak occupancy of the space that it serves. The ventilation rate for the gymnasium, Student Dining, and other high occupancy spaces shall be per ASHRAE 62.1, 2007. High occupancy events include community activities, student lunch, student assemblies, etc. The gymnasium and student dining shall utilize demand controlled ventilation strategies to reduce energy consumption during low occupancy.

The mechanical systems shall be designed for seismic category II occupancy. This assumes that the school will not be used as an emergency shelter.

GEOTHERMALWELL FIELD

The Building will be conditioned with several Water-Source Heat Pumps and Energy Recovery Units connected to a Geothermal Well Field with condenser water distribution system. The overall Geothermal Well Field's capacity shall be selected for 100% of the overall peak block load and assumes summer operation. The condenser water distribution system will be a variable-primary configuration. Three (3) variable speed, base mounted, primary condenser water pumps will serve the Geothermal Well Field with two (2) pumps as the lead and the third pump acting as a standby. The condenser water pumps will circulate water to the Energy Recovery Units and the Water-Source Heat Pump units. The Energy Recovery Units and Water-Source Heat Pumps will utilize two-way, ON/OFF control valves. The nominal capacity for the Geothermal Well Field shall be 140 tons. A conductivity test will be performed on the soil in the area to determine how many wells will be needed for the system.

The vertical well field water piping shall be run underground into a service vault with isolation valves for each of the circuits. Design of the system water temperature shall be above 40 F, so 20% propylene glycol solution will not be needed to protect the equipment per the OSFC Design Manual. Distribution piping to the Energy Recovery Units and Water-Source Heat Pumps will be run overhead thru the ceiling plenum in the corridors.

AIR DISTRIBUTION

All the large Energy Recovery Units and Water-Source Heat Pumps will be located on the floor in the Mechanical Equipment Rooms. The smaller Water-Source Heat Pumps will be located above the corridor ceilings. All Water-Source Heat Pumps shall utilize an HFC refrigerant such as HFC-410a or HFC-134a. **HCFC-22 is not acceptable.** The Energy Recovery Units serving the Gym/Media Center and Classroom Wings will be variable volume air handling type units with enthalpy wheels, Dual mode DX coil, 30-35% efficient pre-filter, 65% efficient final filter and double wall cabinet construction. The Energy Recovery Units will precondition the outside air being supplied to the Water-Source Heat Pumps for specific areas. Demand control ventilation strategies shall be used to reduce energy consumption during low occupancies. Duct mounted smoke detectors shall be provided in the return air duct for all Water-Source Heat Pump Units greater than 2000 cfm capacity. Multiple classrooms are to be group on a single heat pump with VVT dampers for zone control with a bypass damper.

The Water Source Heat Pump serving the Administration office areas will be a VVT system and shall incorporate 30-35% efficient pre-filter and a bypass damper.

Supply, return and exhaust air ductwork from the Energy Recover Units and Water-Source Heat Pump Units to the diffusers, grilles and Exhaust Fans shall be low-pressure construction (note, the exhaust air will be taken from the return air plenum). The return air from the rooms will be drawn through the return air grilles to the ceiling plenum to the open ended return duct penetrating each room. Fire dampers shall be provided at all penetrations of fire rated assemblies by the air distribution ductwork.

The Gymnasium and the Student Dining/Stage Energy Recovery Units and Water- Source Heat Pumps shall be designed for the peak occupancy of the space. Demand control ventilation strategies shall be used to reduce energy consumption during low occupancies.

Exhaust systems will be provided for the Art Rooms, Toilet Rooms, Storage Rooms with odorous or hazardous materials, Electrical Closets, etc... (ceiling exhaust fans or roof mounted units). A liquid tight exhaust system shall be provided for the Type II Kitchen hoods for heat/moisture removal requirements.

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. *Air quantities expressed on the drawings are estimates based on square footage.*

CONTROLS

The BAS will be based on LonWorks technology, utilizing the EIA 709.1 LonTalk protocol, LonMark devices shall be based on the LNS platform. The BAS shall be a distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on a

true peer-to-peer Local Operating Network (LON). All controls shall be DDC with electric actuation and PID loop control logic.

A natural gas flow meter along with a LonMark certified electric energy meters shall be to monitor overall building consumption and demand.

The LNS database will be provided to the School District for integration into the District Wide Control System (DWCS). The web server, programming, graphics and integration into the DWCS shall be performed under a separate contract.

ENERGY CONSERVATION MEASURES

Energy saving features includes:

- Geothermal Well Field for providing building heating and cooling loads.
- Enthalpy heat recovery wheels on units for Gym/Cafeteria and Classroom Wings with large outside air requirements.
- Unoccupied night setback and setup mode through BAS.
- Variable speed drive on primary condenser water pumps with two-way condenser water control valves.
- Occupancy control of ventilation, supply air and space temperature set points.
 - Demand Control Ventilation (Entire building)
 - Occupied/Unoccupied (All zones)

PLUMBING SYSTEMS

Domestic water service shall be provided to the building from the city main into the building Mechanical Equipment Room by underground piping. A domestic water booster pump shall be provided for this system due to the inadequate water pressure. Backflow prevention shall be provided per code requirements.

Plumbing fixtures are reduced flow energy conservation as required by OBC and ASHRE-90.1 – 2007 and LEED standards.

Domestic hot water shall be provided by two natural-gas fired hot water heater. The domestic hot water distribution system will utilize a re-circulating line and will provide 140°F to the Kitchen and 120°F water to lavatories, sinks and showers via a three way compensating mixing valve. The mixing valve will blend domestic cold water as required to maintain hot water set point. A chemical rinse in the 3-comp sink will provide the sterilization required by the health department.

Sanitary / Storm: connections shall be made as required to existing city mains. Sewage ejection pumps shall be provided as required. Scuppers and overflow drains shall be provided for the secondary roof drainage system.

All large group restrooms, locker rooms, mechanical rooms, and kitchen area shall have floor drains installed.

Cold water hose bibb shall be installed in each large group restroom, locker room, and mechanical room.

Natural gas shall be utilized for domestic water heaters, kitchen equipment and the generator.

FIRE PROTECTION SYSTEMS

A wet sprinkler system shall be provided throughout the building to meet the requirements of 2007 Ohio Building Code and its referenced standards, OSFC Ohio School Design Manual, 2007 Ohio Fire Code, and NFPA 13 (2007). Computer, telecom, and electrical rooms will be protected by the building's fire sprinkler systems and will not utilize specialized suppression systems.

The sprinkler system will be served by a dedicated private fire service main unless a combined fire/domestic service is allowed by the water department entering the building in the mechanical room. Water flow, tamper switches, test stations, and drains will be provided for each zone. Due to the inadequate water pressure, a fire pump will be required.

Fire extinguishers will be installed in accordance with the 2007 Ohio Fire Code and NFPA 10.

Refer to the Electrical/Technology narrative for information regarding the fire alarm system.

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

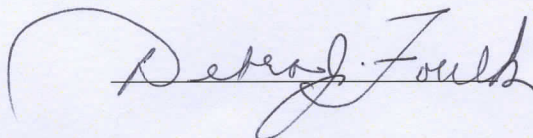
Affidavit of Akron Board of Education – Exhibit A

STATE OF OHIO)
) SS:
COUNTY OF Summit)

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

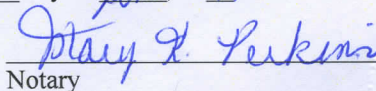
1. I am the Executive Director Business Affairs of Akron Board of Education (“Customer”) As part of my duties, I oversee energy related matters for the Customer.
2. The Customer has agreed to commit certain energy efficiency projects to Ohio Edison Company (“Company”), which are the subject of the agreement 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 June 29-18



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Case No(s). 14-1017-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