



Public Utilities Commission

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

Case No.: 14-0764-EL-EEC

Mercantile Customer: Olmsted Falls Schools

Electric Utility: Ohio Edison Company (OE)

Program Title or Description VFD and Building Automation

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individual or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, or 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 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. Applications requesting the exemption from the EEDR rider for a period of up to 12 months will also qualify for the 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 application 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.

Section 1: Mercantile Customer Information

Name: Olmsted Falls Schools

Principal address:

26937 Bagley Rd
Olmsted Falls, OH 44138

Address of facility for which this energy efficiency program applies:

26937 Bagley Rd
Olmsted Falls, OH 44138

Name and telephone number for responses to questions:

Mark Hullman
4404276000

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 (OE)

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): _____.

____ 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: ^{107,530} _____ 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: _____ 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

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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? 1/1/2014

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

0 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 \$ 8075.92. (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)

X 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 install 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.: 14-0764-EL-EEC

State of Ohio:

Mark S. Hellman, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Olmsted Falls City School District

[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.

Mark S. Hellman

Signature of Affiant & Title

Treasurer / CFO

Sworn and subscribed before me this 11th day of Sept., 2014 Month/Year

Debra A Fallon

Signature of official administering oath

Debra Fallon

Print Name and Title

My commission expires on _____



DEBRA A. FALLON
Notary Public, State of Ohio
My Comm. Expires Dec. 21, 2018

Customer Legal Entity Name: Olmsted Falls Schools

Site Address: Olmsted Falls Schools

Principal Address: 26937 Bagley 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 | VFD Hot Water Pumps | New ABB variable frequency drives (VFD□s) installed and wired on each of the hot water pumps. The primary pumps at 15 HP. The secondary heating pumps are 7.5 HP. Both sets of pumps operate Lead/Lag. Install one water differential pressure transducer for each set of system pumps. DPT will be located 2/3 down the longest piping run. This will allow for the modulation of the variable frequency drives on the pumps. Thress way control valves were replaced with two way control valves in most areas of the building. Assumptions: -The existing motor and pump efficiencies are obtained from pump curves and other documentation supplied by the District. -Proposed motors are considered to be NEMA Premium motors. -Minor run time reductions are attributed to scheduling and control improvements | 0 | 2023, End of useful life | N/A |
| 2 | Building Automation | *Upgrade to the BAS will include the following: □ The sequence of operations will be up dated for each unit controlled by the system. Updating the sequences will ensure that all HVAC equipment under the control of the system is operating as efficiently as possible. □ New schedules will be integrated into the existing automation system. These schedules will shorten overall equipment run times and allow for the building to be operating in an unoccupied mode for longer periods of time. □ The building automation system will be remotely monitored and building energy consumption will be tracked by CCG Energy Solutions. Continually monitoring the system will allow for schedules and sequences to be fine-tuned to optimize building operation and efficiency. This will be accomplished through building scheduling and set point changes as well as sequence of operation upgrades. The following tables show a baseline and proposed energy use for each air | 0 | 2023, End of useful life | N/A |

Docket No. 14-0764

Site: 26937 Bagley Rd

Exhibit 2

Customer Legal Entity Name: Olmsted Falls Schools

Site: Olmsted Falls Schools

Principal Address: 26937 Bagley Rd

| | Unadjusted Usage, kwh (A) | Weather Adjusted Usage, kwh (B) | Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (C) | Note 1 |
|----------------|------------------------------|------------------------------------|--|--------|
| 2013 | 1198941 | 1,198,941 | 1,198,941 | |
| 2012 | 1222870 | 1,222,870 | 1,222,870 | |
| 2011 | 1244412 | 1,244,412 | 1,244,412 | |
| Average | 1,222,074 | 1,222,074 | 1,222,074 | |

| Project Number | Project Name | In-Service Date | Project Cost \$ | KWh Saved/Year Counting towards Utility compliance | KWh Saved/Year (D) eligible for incentive | Utility Peak Demand Reduction Contribution, KW |
|----------------|---------------------|-----------------|-----------------|--|--|--|
| 1 | VFD Hot Water Pumps | 10/31/2013 | \$131,481 | 80,745 | 80,745 | - |
| 2 | Building Automation | 10/31/2013 | \$55,489 | 20,204 | 20,204 | - |
| | | | | - | - | - |
| | | | | - | - | - |
| | | | | - | - | - |
| | | | | - | - | - |
| Total | | | | 100,949 | 100,949 | 0 |

| | | | | |
|-------------------|-----------------|--|-----------------|--------|
| Docket No. | 14-0764 | Savings as percent of usage | 8.3% | Note 2 |
| Site: | 26937 Bagley Rd | = Total (D) divided by Average (C) | | |
| | | Customer Eligible for Exemption Until | Jan-2019 | Note 3 |

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) Savings as a percent of usage is equal to the of total project savings (D) divided by the 3 year average Weather Adjusted Usage with Energy Efficiency Addbacks (C).

(3) Customer exemption determined by savings percentage in relation to energy efficiency schedule as set forth in O.R.C. 4928.66(A)(1)(a).

(4) The exemption period reflects the maximum potential exemption period. NOTE: The FirstEnergy Utilities cannot guarantee the length of the exemption period that will ultimately be approved by the Commission. Depending on the Commission's order, periods greater than 24 months may be capped at 24 months.

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 | 81 | \$ 308 | \$ 24,892 | \$ 2,025 | \$4,845 | \$807 | \$ 7,677 | 3.2 |
| 2 | 20 | \$ 308 | \$ 6,228 | \$ 2,025 | \$1,212 | \$202 | \$ 3,439 | 1.81 |
| Total | 101 | \$ 308 | 31,121 | 4,050 | \$6,057 | \$1,009 | 11,116 | 2.8 |

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)

Olmsted Falls Schools ~ Olmsted Falls Schools
Docket No. 14-0764

Site: 26937 Bagley Rd

Section 13 – Energy Savings Calculations

This section includes all energy savings calculations and assumptions that were used to develop the utility cost savings associated with each ECM listed in Section 10 and Section 11.

I. HS – 01 Boiler Room Upgrades

- Boiler Efficiency Upgrade
 - Boiler Sizing Calculation
- New Pumps, Control Valves, and VFD's
 - Valve Schedule and Minimum Flow Calculation
- Condensate Tank Removal

II. HS – 06 Building Automation Optimization

- Current Operation
- Proposed Operation
- BAS Savings Summary

III. HS – 07 Sewer Exemption

I. HS – 01 Boiler Room Upgrades

Boiler Efficiency Savings:

As outlined in Section 10 – Description of ECM(s) this project consists of replacing an oversized, out of date, steam boiler plant with a new hot water condensing boiler plant. The following calculation shows the savings associated with the efficiency improvement of replacing the boiler plant.

Assumptions:

- Utilizing a boiler de-rating curve, the efficiency of the existing steam boiler/heat exchanger system is 60%.
- 82% of the total building is served by the primary boiler plant. The rest is served by gas-fired roof top units and a secondary boiler plant that is not included in the scope of this project.
- The average efficiency of the new condensing boilers along with new pumps and VFD's and 2-way hot water valves will be 92%.

| Olmsted Falls City Schools - HB 264 HS - 01 Boiler Upgrades | | | |
|--|--|----------|--|
| Boiler Upgrade Savings Calculator with 2-Way Valves | | | |
| Total | | 11203 | |
| DHW Use | | 480 | |
| % of Building Area on Boiler | | 82 | |
| Boiler Efficiency Savings | | | |
| Building Total MCF | | 11203 | |
| Building MCF Baseline | | 480 | |
| Heating MCF | | 8792.86 | |
| Existing Boiler Efficiency | | 0.6 | |
| Building MCF Usage | | 5275.716 | |
| Efficiency of new Boilers | | 0.92 | |
| MCF Requirements | | 5734.47 | |
| Total MCF Saved | | 3058.39 | |

| Derating a boiler | |
|-------------------------|-------|
| Manufacturer Eff Rating | 78 |
| Type of Boiler: | Steam |
| Heat Exchanger: | Yes |
| Age: | 20+ |
| Your Boiler Efficiency | |
| 60 | |

Boiler Sizing Calculation:

To appropriately size the new boiler plant a heat load calculation was performed for the High School. The maximum required load for the building was found to be 2.84 mmBtu/hr. From this result the new boiler plant was designed with two 2.5 mmBtu/hr input condensing boilers. The new boiler plant will have a maximum input capacity of 5.0 mmBtu/hr.

Assumptions:

-82% of the building will be served by the boiler plant; the rest of the building is served by a secondary boiler room and various gas-fired roof top units.

-Each boiler is sized to meet 75% of the maximum heating load and rounded up to nearest nominal boiler size.

-Envelope and Ventilation loads are calculated from:

- TMY2 data

- ASHRAE provided R-values for Building Materials

-Internal loads are calculated from:

- Electric demand data

- Enrollment and attendance data

New Pump and VFD Savings:

To achieve the boiler plant efficiency presented in the previous calculation new pumps, 2-way heating coil control valves, and VFD's will be installed. Currently the hot water heating system has 2 hot water loops with 2 separate pumps. The VFD savings for each loop and pump were estimated using the following assumptions and calculations. Also provided is a valve schedule of all the valves that will be switched from 3-way to 2-way for each hot water loop. Included in the schedule is a minimum flow calculation which was used to estimate minimum VFD frequency.

Assumptions:

- The existing motor and pump efficiencies are obtained from pump curves and other documentation supplied by the District. In the event no documentation is available pump and motor efficiencies are assumed.
- Proposed motors are considered to be NEMA Premium motors.
- Minor run time reductions are attributed to scheduling and control improvements

Olmsted Falls City Schools - HB 264
HS - 01 Boiler Upgrades - New Pumps and VFD's

| Constant Pump to VFD | | |
|------------------------------------|------------------|--|
| Primary Loop Hot Water Pump | | |
| Current Runtime | Proposed Runtime | |
| 6584 | 6320 | |

| Current | | Proposed | |
|------------------|-------|------------------|-------|
| RPM | 1750 | RPM | 1750 |
| Rated HP | 15 | Rated HP | 15 |
| GPM | 600 | GPM | 500 |
| System Head | 60 | System Head | 60 |
| Constant | 3960 | Constant | 3960 |
| Motor Efficiency | 0.85 | Motor Efficiency | 0.93 |
| Wp | 14.85 | Wpb | 10.18 |

| Drive Frequency | Hours Before | Hours After | RPM Before | Existing Brake HP | New Brake HP | RPM with VFD | HP with VFD | kWh Original | kWh VFD |
|-----------------|--------------|-------------|------------|-------------------|--------------|--------------|-------------|--------------|----------|
| 10% | 32.92 | 31.6 | 1750 | 14.85 | 10.18 | 175 | 0.01 | 364.31 | 0.24 |
| 20% | 32.92 | 31.6 | 1750 | 14.85 | 10.18 | 350 | 0.08 | 364.31 | 1.92 |
| 30% | 526.72 | 505.6 | 1750 | 14.85 | 10.18 | 525 | 0.27 | 5828.97 | 103.56 |
| 40% | 757.16 | 726.8 | 1750 | 14.85 | 10.18 | 700 | 0.86 | 8379.15 | 464.50 |
| 50% | 1020.52 | 979.6 | 1750 | 14.85 | 10.18 | 875 | 1.80 | 11293.63 | 1306.11 |
| 60% | 1646.00 | 1580 | 1750 | 14.85 | 10.18 | 1050 | 2.84 | 18215.54 | 3185.27 |
| 70% | 1185.12 | 1137.6 | 1750 | 14.85 | 10.18 | 1225 | 4.17 | 13115.19 | 3537.89 |
| 80% | 658.40 | 632 | 1750 | 14.85 | 10.18 | 1400 | 5.83 | 7286.22 | 2744.43 |
| 90% | 65.84 | 63.2 | 1750 | 14.85 | 10.18 | 1575 | 7.82 | 728.62 | 368.41 |
| 100% | 658.40 | 632 | 1750 | 14.85 | 10.18 | 1750 | 10.18 | 7286.22 | 4794.31 |
| Totals: | | | | | | | | 72862.15 | 16506.63 |
| Savings: | | | | | | | | 56356 | |

| Secondary Hot Water Pump | | |
|--------------------------|----------------|--|
| Current hours | Proposed Hours | |
| 6584 | 6343 | |

| Current | | Proposed | |
|------------------|------|------------------|------|
| RPM | 1750 | RPM | - |
| Rated HP | 7.5 | Rated HP | 7.5 |
| GPM | 240 | GPM | 240 |
| System Head | 70 | System Head | 70 |
| Constant | 3960 | Constant | 3960 |
| Motor Efficiency | 0.86 | Motor Efficiency | 0.92 |
| Wp | 6.85 | Wp | 5.62 |

| Drive Frequency | Hours Before | Hours After | RPM Before | Existing Brake HP | New Brake HP | RPM with VFD | HP with VFD | kWh Original | kWh VFD |
|-----------------|--------------|-------------|------------|-------------------|--------------|--------------|-------------|--------------|---------|
| | | | | | | | | | |
| 10% | 32.92 | 31.715 | 1750 | 6.85 | 5.62 | 175 | 0.01 | - | - |
| 20% | 32.92 | 31.715 | 1750 | 6.85 | 5.62 | 350 | 0.04 | 168.03 | 1.06 |
| 30% | 526.72 | 507.44 | 1750 | 6.85 | 5.62 | 525 | 0.15 | 2688.56 | 57.40 |
| 40% | 757.16 | 729.445 | 1750 | 6.85 | 5.62 | 700 | 0.36 | 3864.80 | 195.59 |
| 50% | 1020.52 | 983.165 | 1750 | 6.85 | 5.62 | 875 | 0.98 | 5209.08 | 715.14 |
| 60% | 1646.00 | 1585.75 | 1750 | 6.85 | 5.62 | 1050 | 1.57 | 8401.74 | 1852.60 |
| 70% | 1185.12 | 1141.74 | 1750 | 6.85 | 5.62 | 1225 | 2.30 | 6049.25 | 1960.32 |
| 80% | 658.40 | 634.3 | 1750 | 6.85 | 5.62 | 1400 | 3.00 | 3360.70 | 1416.37 |
| 90% | 65.84 | 63.43 | 1750 | 6.85 | 5.62 | 1575 | 4.10 | 336.07 | 193.73 |
| 100% | 658.40 | 634.3 | 1750 | 6.85 | 5.62 | 1750 | 5.62 | 3360.70 | 2657.44 |
| Totals: | | | | | | | | 33438.93 | 9049.65 |
| Savings: | | | | | | | | 24389 | |

Note: No savings claimed on the secondary pump below a drive frequency of 20%, see attached valve schedule for flow rate calculation

| | |
|------------------|----------------------------|
| Project: | Olmsted Falls City Schools |
| Building: | Olmsted Falls High School |
| System: | Hot Water Valve Schedule |
| Date: | 6/21/2012 |

| Hot Water Loop Definitions | |
|----------------------------|---|
| Loop 1 | Air Handler Loop including classroom addition and offices |
| Loop 2 | Unit Vent Loop with VAV boxes and W6-W7 |

| Valve Summary | |
|-------------------------|-----------|
| Total New 2-Way Valves: | 65 |
| Total New 3-Way Valves | 6 |
| Total Valves: | 71 |

| | |
|-----------------------|----------|
| Not In Scope | |
| Actuator Replacement: | 2 |

| | |
|--------------|---|
| Description: | Air Handler Loop including classroom addition and offices |
|--------------|---|

| | |
|------------------|-----------|
| Rated Flow | 500 |
| Min. Flow | 47.27 |
| % Min. | 0.0945 |
| Two Way Valves | 46 |
| Three Way Valves | 4 |
| Actuators | 0 |

| Valve Size Summary | | | | | | | | |
|--------------------|------|------|----|--------|--------|--------|----|--------|
| Size | 1/2" | 3/4" | 1" | 1-1/4" | 1-1/2" | 1-3/4" | 2" | 2-1/2" |
| Number | 1 | 19 | 21 | 2 | 3 | 0 | 2 | 2 |

| Existing Valves | | | | | | | | | | | | Proposed Valves | | | | |
|-----------------|-----------|-------|-------------|--------------------------|--------------|--------------|------|------|---------------|------------|--|-----------------|---------------|------------|------|--|
| Area "A" | | | | | | | | | | | | | | | | |
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM | |
| | CUH | CUH-1 | M2 | Outside G28 | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 | |
| | AHU | AHU-2 | M2 | Classroom Wing Mech. Rm. | Hot Deck | 700 | 70 | 2.00 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 | |
| | AHU | AHU-1 | M2 | Classroom Wing Mech. Rm. | Hot Deck | 700 | 70 | 2.00 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 | |
| | CUH | CUH-2 | M2 | Outside G09 (Exit) | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 | |
| | RH | RH-1 | M2 | G8 | Radiant Heat | 20 | 2 | 3/4 | - | - | | No | - | Electronic | 2 | |
| | CUH | CUH-2 | M2 | Outside B3 | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 | |
| | CUH | CUH-2 | M2 | Outside B1 | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 3-Way | Electronic | 3.95 | |
| | CUH | CUH-2 | M2 | Outside G1 (Exit) | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 | |
| | CUH | CUH-2 | M2 | Outside G4 (Exit) | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 | |
| | CUH | CUH-2 | M2 | East Addition Door | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 | |
| | CUH | CUH-2 | M2 | West Addition Door | Htg. Coil | 39.5 | 3.95 | 1.00 | - | - | | Yes | 3-Way | Electronic | 3.95 | |
| | RH | RH-2 | M2 | G6 | Radiant Heat | 27.6 (3x9.2) | 0.92 | 1.00 | - | - | | No | - | Electronic | 0.92 | |
| | RH | RH-3 | M2 | B15 | Radiant Heat | 8 | 0.8 | 3/4 | - | - | | No | - | Electronic | 0.8 | |
| | RH | RH-3 | M2 | B15 | Radiant Heat | 8 | 0.8 | 3/4 | - | - | | No | - | Electronic | 0.8 | |
| | RH | RH-2 | M2 | Chemical Storage | Radiant Heat | 9.2 | 0.92 | 3/4 | - | - | | No | - | Electronic | 0.92 | |
| | RH | RH-4 | M2 | B19 | Radiant Heat | 6 | 0.92 | 3/4 | - | - | | No | - | Electronic | 0.92 | |
| | RH | RH-4 | M2 | B19 | | 6 | 0.92 | 3/4 | - | - | | No | - | Electronic | 0.92 | |

| Area "B" | | | | | | | | | | | | | | | |
|----------|-----------|-------|-------------|--------------------|--------------|-----------|------|------|---------------|----------|--|------|---------------|------------|------|
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| | RH | RH-5 | M4 | South Wall of Café | Htg. Coil | 48 (4x12) | 4.8 | 1.00 | - | - | | No | - | Electronic | 4.8 |
| | CUH | CUH-1 | M4 | W1 | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 |
| | CUH | CUH-1 | M4 | W1 | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 |
| | RH | RH-6 | M4 | W1 Storage | Radiant Heat | 7.7 | 0.77 | 1.00 | - | - | | No | - | Electronic | 0.77 |

| Area "C" | | | | | | | | | | | | | | | |
|----------|-----------|-------|-------------|----------------------------|--------------|------|------|-------|---------------|-----------|--|------|---------------|------------|------|
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| | RH | RH-6 | M6 | Maintenance Office | Htg. Coil | 3.2 | 0.32 | 1/2 | - | - | | No | - | Electronic | 0.32 |
| | RH | RH-14 | M6 | Boiler Room Hallway Exit | Radiant Heat | 11.8 | 1.18 | 3/4 | - | - | | No | - | Electronic | 1.18 |
| | RH | RH-6 | M6 | Custodian Office | Radiant Heat | 3.2 | 0.32 | 1/2 | - | - | | No | - | Electronic | 0.32 |
| | RH | RH-6 | M6 | Girls RR | Radiant Heat | 3.2 | 0.32 | 1/2 | - | - | | No | - | Electronic | 0.32 |
| | RH | RH-6 | M6 | Boys RR | Radiant Heat | 3.2 | 0.32 | 1/2 | - | - | | No | - | Electronic | 0.32 |
| | CUH | CUH-1 | M6 | Auditorium Exit Vestibule | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 |
| | RH | RH-7 | M6 | Auditorium Exit Vestibule | Radiant Heat | 10.3 | 1.03 | 3/4 | - | - | | No | - | Electronic | 1.03 |
| | RH | RH-8 | M6 | Instrument Storage | Radiant Heat | 4.3 | 0.43 | 1/2 | - | - | | No | - | Electronic | 0.43 |
| | RH | RH-9 | M6 | Instrument Storage | Radiant Heat | 9.5 | 0.95 | 3/4 | - | - | | No | - | Electronic | 0.95 |
| | RH | RH-7 | M6 | Band Room | Radiant Heat | 10.3 | 1.03 | 3/4 | - | - | | No | - | Electronic | 1.03 |
| | RH | RH-10 | M6 | Auditorium Stage | Radiant Heat | 22.4 | 2.24 | 3/4 | - | - | | No | - | Electronic | 2.24 |
| | RH | RH-10 | M6 | Auditorium Stage | Radiant Heat | 22.4 | 2.24 | 3/4 | - | - | | No | - | Electronic | 2.24 |
| | RH | RH-11 | M6 | Auditorium Stage Vestibule | Radiant Heat | 4.9 | 0.49 | 1/2 | - | - | | No | - | Electronic | 0.49 |
| | RH | RH-7 | M6 | Exit to Modular Rooms | Radiant Heat | 10.3 | 1.03 | 3/4 | - | - | | No | - | Electronic | 1.03 |
| | CUH | CUH-1 | M6 | Exit to Modular Rooms | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 |
| | HV-7 | HV-7 | | Kitchen | Htg. Coil | 160 | 16 | 1.00 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-5 | M8 | Auditorium | Htg. Coil | 430 | 43 | 1-1/2 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-6 | M8 | Cafeteria | Htg. Coil | 300 | 30 | 1-1/2 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-7 | M8 | Band Rooms | Htg. Coil | 250 | 25 | 1-1/2 | 3-Way | Pnuematic | | Yes | 2-Way | Electronic | 0 |

| Area "D" | | | | | | | | | | | | | | | |
|----------|-----------|--------|-------------|----------------------------------|--------------|------|------|-------|---------------|-----------|--|------|---------------|------------|------|
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| | AHU | AHU-8 | M9 | HS Gym | Htg. Coil | 430 | 43 | 2-1/2 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-9 | M9 | HS Gym | Htg. Coil | 430 | 43 | 2-1/2 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-12 | M9 | Team Room | Preheat Coil | 100 | 10 | 3/4 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-12 | M9 | | Reheat Coil | 60 | 6 | 1/2 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | RH | RH-8 | M6 | First Aid | Radiant Heat | 4.3 | 0.43 | 3/4 | - | - | | No | | Electronic | 0 |
| | AHU | AHU-11 | M9 | Boys Lockerroom | Preheat Coil | 230 | 23 | 1-1/4 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-11 | M9 | | Reheat Coil | 170 | 17 | 1.00 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | RH | RH-8 | M6 | Boys Coach's Office | Radiant Heat | 4.3 | 0.43 | 3/4 | - | - | | No | | Electronic | 0 |
| | AHU | AHU-10 | M9 | Girls Lockerrom | Preheat Coil | 230 | 23 | 1-1/4 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | AHU | AHU-10 | M9 | | Reheat Coil | 170 | 17 | 1.00 | 3-Way | Pneumatic | | Yes | 2-Way | Electronic | 0 |
| | RH | RH-12 | M9 | Girls Coach's Office | Radiant Heat | 6.8 | 0.68 | 3/4 | - | - | | No | - | - | 0.68 |
| | RH | RH-13 | M9 | Girls Coach's Office | Radiant Heat | 3.2 | 0.32 | 3/4 | 3-Way | Pneumatic | | No | - | Electronic | 0.32 |
| | CUH | CUH-1 | M9 | East Gym Corridor | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 |
| | CUH | CUH-1 | M8 | East Gym Corridor | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 3-Way | Electronic | 2.81 |
| | CUH | CUH-1 | M9 | East Gym Corridor | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 3-Way | Electronic | 2.81 |
| | CUH | CUH-1 | M9 | West Hallway (Outside Team Room) | Htg. Coil | 28.1 | 2.81 | 1.00 | - | - | | Yes | 2-Way | Electronic | 0 |
| | UV | UV-1 | M9 | Rear Team Room | Unit Vent | 80 | 8 | 1-1/4 | - | - | | No | - | - | 8 |

| High School Office | | | | | | | | | | | | | | | |
|--------------------|-----------|---------|-------------|--------------------------|-----------|-----|-----|------|---------------|------------|--|------|---------------|------------|-----|
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| | VAV | TB-1E | 5.018 | Rm. E-113 | Htg. Coil | 60 | 6 | 1.00 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-2E | 5.018 | Rm. E-113 | Htg. Coil | 60 | 6 | 1.00 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-3E | 5.018 | Rm. E-108 | Htg. Coil | 10 | 1 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-4E | 5.018 | Rm. E-110 | Htg. Coil | 15 | 1.5 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-5E | 5.018 | Rm. E-111 | Htg. Coil | 8 | 0.8 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-6E | 5.018 | Rm. E-112 | Htg. Coil | 32 | 3.2 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-7E | 5.018 | Rm. E-114 | Htg. Coil | 29 | 2.9 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-8E | 5.018 | Rm. E-114 | Htg. Coil | 29 | 2.9 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-9E | 5.018 | Exterior Office | Htg. Coil | 20 | 2 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-10E | 5.018 | Exterior Office | Htg. Coil | 20 | 2 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-11E | 5.018 | Exterior Office | Htg. Coil | 16 | 1.6 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-12E | 5.018 | Exterior Office | Htg. Coil | 20 | 2 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-13E | 5.018 | Exterior Office | Htg. Coil | 17 | 1.7 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-14E | 5.018 | Exterior Office | Htg. Coil | 20 | 2 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-15E | 5.018 | Exterior Office | Htg. Coil | 17 | 1.7 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-16E | 5.018 | Exterior Office | Htg. Coil | 20 | 2 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-17E | 5.018 | Office E-102 | Htg. Coil | 28 | 2.8 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-18E | 5.018 | Office E-100 | Htg. Coil | 28 | 2.8 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-19E | 5.018 | Office E-101 | Htg. Coil | 28 | 2.8 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-20E | 5.018 | Existing Interior Office | Htg. Coil | 28 | 2.8 | 3/4 | 3-Way | Electronic | | Yes | 2-Way | Electronic | 0 |
| | VAV | TB-21E | 5.018 | Existing Interior Office | - | | | - | - | - | | No | - | - | 0 |
| | VAV | TB-22E | 5.018 | Existing Interior Office | - | | | - | - | - | | No | - | - | 0 |
| | VAV | TB-23E | 5.018 | Existing Interior Office | - | | | - | - | - | | No | - | - | 0 |
| | VAV | TB-24E | 5.018 | Existing Interior Office | - | | | - | - | - | | No | - | - | 0 |
| | VAV | TB-25E | 5.018 | Conference | - | 0 | 0 | - | - | - | | No | - | - | 0 |
| | VAV | TB-256E | 5.018 | Reception | - | | | - | - | - | | No | - | - | 0 |
| | VAV | TB-27E | 5.018 | Conference | - | | | - | - | - | | No | - | - | 0 |
| | VAV | TB-28E | 5.018 | Computer Lab | - | | | - | - | - | | No | - | - | 0 |

| Area Not Included In Scope | | | | | | | | | | | | | | |
|-------------------------------|-----|-------|-------|-----------------------|-----------|------|------|-----|-------|------------|----|---|------------|------|
| Classroom Addition ("C" Wing) | | | | | | | | | | | | | | |
| | VAV | TB-1 | 5.010 | Rm. A-100 | Htg. Coil | 32 | 3.2 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3.2 |
| | VAV | TB-2 | 5.010 | Rm. A-101,113,114,122 | Htg. Coil | 67 | 6.7 | 3/4 | 3-Way | Electronic | No | - | Electronic | 6.7 |
| | VAV | TB-3 | 5.010 | Rm. A-102 | Htg. Coil | 13 | 1.3 | 3/4 | 3-Way | Electronic | No | - | Electronic | 1.3 |
| | VAV | TB-4 | 5.010 | Rm. A-103 | Htg. Coil | 6.5 | 0.65 | 3/4 | 3-Way | Electronic | No | - | Electronic | 0.65 |
| | VAV | TB-5 | 5.010 | Rm. A-104 | Htg. Coil | 8.5 | 0.85 | 3/4 | 3-Way | Electronic | No | - | Electronic | 0.85 |
| | VAV | TB-6 | 5.010 | Rm. A-105 | Htg. Coil | 13 | 1.3 | 3/4 | 3-Way | Electronic | No | - | Electronic | 1.3 |
| | VAV | TB-7 | 5.010 | Rm. A-106 | Htg. Coil | 7.5 | 0.75 | 3/4 | 3-Way | Electronic | No | - | Electronic | 0.75 |
| | VAV | TB-8 | 5.010 | Rm. A-107 | Htg. Coil | 7.5 | 0.75 | 3/4 | 3-Way | Electronic | No | - | Electronic | 0.75 |
| | VAV | TB-9 | 5.010 | Rm. A-108,126 | Htg. Coil | 40 | 4 | 3/4 | 3-Way | Electronic | No | - | Electronic | 4 |
| | VAV | TB-10 | 5.010 | Rm. A-112 | Htg. Coil | 32 | 3.2 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3.2 |
| | VAV | TB-11 | 5.010 | Rm. A-120 | Htg. Coil | 33 | 3.3 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3.3 |
| | VAV | TB-12 | 5.010 | Rm. A-127 | Htg. Coil | 35 | 3.5 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3.5 |
| | VAV | TB-13 | 5.010 | Rm. A-119 | Htg. Coil | 18 | 1.8 | 3/4 | 3-Way | Electronic | No | - | Electronic | 1.8 |
| | VAV | TB-14 | 5.010 | Rm. A-125 | Htg. Coil | 30 | 3 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3 |
| | VAV | TB-15 | 5.010 | Rm. A-118 | Htg. Coil | 18.5 | 1.85 | 3/4 | 3-Way | Electronic | No | - | Electronic | 1.85 |
| | VAV | TB-16 | 5.010 | Rm. A-124 | Htg. Coil | 35 | 3.5 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3.5 |
| | VAV | TB-17 | 5.010 | Rm. A-117 | Htg. Coil | 18 | 1.8 | 3/4 | 3-Way | Electronic | No | - | Electronic | 1.8 |
| | VAV | TB-18 | 5.010 | Rm. A-123 | Htg. Coil | 30 | 3 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3 |
| | VAV | TB-19 | 5.010 | Rm. A-121 | Htg. Coil | 36 | 3.6 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3.6 |
| | VAV | TB-20 | 5.010 | Rm. A-116 | Htg. Coil | 30 | 3 | 3/4 | 3-Way | Electronic | No | - | Electronic | 3 |
| | CUH | CUH-3 | 5.010 | Southeast Exit | Htg. Coil | 29.8 | 3.05 | 3/4 | - | - | No | - | Electronic | 3.05 |
| | CUH | CUH-3 | 5.010 | Southwest Exit | Htg. Coil | 29.8 | 3.05 | 3/4 | - | - | No | - | Electronic | 3.05 |
| | CUH | CUH-3 | 5.010 | West Exit | Htg. Coil | 29.8 | 3.05 | 3/4 | - | - | No | - | Electronic | 3.05 |

| | |
|--------------|---|
| Description: | Unit Vent Loop with VAV boxes and W6-W7 |
|--------------|---|

| | |
|--------------------|-----------|
| Rated Flow | 250 |
| Min. Flow | 30.8 |
| % Min. | 0.1232 |
| Total 2-Way Valves | 19 |
| Total 3-Way Valves | 2 |
| Actuators | 2 |

| Valve Size Summary | | | | | | | | |
|--------------------|------|------|----|--------|--------|--------|----|--------|
| Size | 1/2" | 3/4" | 1" | 1-1/4" | 1-1/2" | 1-3/4" | 2" | 2-1/2" |
| Number | 0 | 5 | 1 | 15 | 0 | 0 | 0 | 0 |

| Existing Valves | | | | | | | | | | | | Proposed Valves | | | |
|-----------------|-----------|------|-------------|----------|-----------|-----|-----|--------|---------------|----------|--|-----------------|---------------|------------|-----|
| Area "A" | | | | | | | | | | | | | | | |
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| 1 | UV | UV-1 | M2 | G1 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 2 | UV | UV-1 | M2 | G2 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 3 | UV | UV-1 | M2 | G3 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 4 | UV | UV-1 | M2 | G4 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 3-Way | Electronic | 9.3 |
| 5 | UV | UV-2 | M2 | G5 | Htg. Coil | 31 | 3.1 | 1" | - | - | | Yes | 2-Way | Electronic | 0 |
| 6 | UV | UV-3 | M2 | G7 | Htg. Coil | 56 | 5.6 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 7 | UV | UV-1 | M2 | G9 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 8 | UV | UV-1 | M2 | G10 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 9 | UV | UV-1 | M2 | G11 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 10 | UV | UV-1 | M2 | G12 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | No | - | Electronic | 9.3 |
| 11 | UV | UV-1 | M2 | G25 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 29 | UV | UV-1 | M2 | G26 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 30 | UV | UV-1 | M2 | G27 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |
| 31 | UV | UV-1 | M2 | G28 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 3-Way | Electronic | 9.3 |

| Area "B" | | | | | | | | | | | | | | | |
|----------|-----------|------|-------------|----------|-----------|-----|-----|--------|---------------|----------|--|------|---------------|------------|-----|
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| 32 | UV | UV-1 | M2 | W1 | Htg. Coil | 93 | 9.3 | 1-1/4" | - | - | | Yes | 2-Way | Electronic | 0 |

| Area "C" | | | | | | | | | | | | | | | |
|----------|-----------|------|-------------|----------|-----|-----|-----|------|---------------|----------|--|------|---------------|----------|-----|
| Number | Equipment | Code | Drawing No. | Location | Use | MBH | GPM | Size | Configuration | Actuator | | New? | Configuration | Actuator | GPM |
| - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - |

Condensate Tank Removal:

Along with replacing the boilers and removing the heat exchangers there is a large, uninsulated, condensate tank located in the boiler room. After the boiler upgrade this tank will no longer be required and the energy that this tank previously transferred to the ambient will no longer be required. To find the energy that this tank transfers to its surroundings it was modeled as a large uninsulated pipe using the following calculation.

Assumptions:

- Due to large combustion air louvers that are left open year-round the average ambient temperature of the boiler room is 60° F.
- Temperature of the condensate system is 200° F.
- Only natural convection currents are present

Olmsted Falls City Schools - HB 264
HS - 01 Boiler Room Upgrade

| Uninsulated Condensate Tank Removal Savings | |
|---|---------------|
| System Parameters | |
| Ta (F) = Temp. Ambient | 60 |
| Tf (F) = Temp. Condensate | 200 |
| Tp (F) = temp of the tank | 190 |
| Dp (ft) = diameter of the tank | 3.5 |
| Lp (ft) = length of the pipe tank | 6 |
| ep = emissivity of the tank | 0.7 |
| Calculations for Uninsulated Tank | |
| Convection Coefficient for pipes (laminar or turbulent air flow)** | |
| $h_{lam} = .27 \cdot (DT/D)^{.25}$, $h_{turb} = .18(DT)^{.33}$ | 0.90 |
| Total Surface Area of the Tank (A,ft ²) | |
| $A = \pi \cdot D_p \cdot L_p$ | 126.42 |
| Convection Heat Loss | |
| $Q_{conv} = h \cdot A \cdot (T_s - T_a)$ | 14745.16 |
| Radiation Heat Loss | |
| $Q_{rad} = \sigma \cdot A \cdot e \cdot (T_s^4 - T_a^4)$ | 15986.04 |
| Total heat lost from uninsulated tank | |
| $Q_{tot,p} = hA(T_s - T_a) + \sigma A \cdot e \cdot (T_s^4 - T_a^4)$, (Btu/hr) | 30731.19 |
| Savings from Removing Tank (MCF) | 135.58 |

II. HS – 06 Building Automation Optimization

Description:

As described in Section 10 – Description of ECM(s) and Section 14 – Building Automation System Information, savings will be realized by optimizing the current control system. This will be accomplished through building scheduling and set point changes as well as sequence of operation upgrades. The following tables show a baseline and proposed energy use for each air side piece of HVAC equipment. A total energy savings summary is provided at the end of this section.

Assumptions:

- Outdoor air damper leak rate of 5% when closed
- MCF savings are based on 92% heating system efficiency (the calculations assume the boiler plant has already been replaced for both the baseline and proposed)

Olmsted Falls City Schools - HB 264
Olmsted Falls High School
Air Side Equipment Baseline

| Building Constants | | | | | | | |
|--------------------|-------------|-----------|------------|----------|----------|----------|----------|
| Balance Point | First month | First Day | Last Month | Last Day | Unocc FF | Unocc OA | Fan Eff. |
| 65 | 8 | 18 | 6 | 30 | 0.25 | 5.00% | 0.86 |

| Unit | Area Served | Supply | | | Exhaust | Heat Source | Heating Efficiency | Cooling Source | Cooling kW/Ton | School Days | | Weekends | | Summer Days | | Summer Weekends | | Setpoints | | | | Notes: |
|--------|---------------------|--------|--------|------|---------|-------------|--------------------|----------------|----------------|-------------|------|----------|------|-------------|------|-----------------|------|-----------|------------|----------|------------|-----------------------------------|
| | | CFM | OA (%) | HP | HP | | | | | Start | Stop | Start | Stop | Start | Stop | Start | Stop | Heating | | Cooling | | |
| | | | | | | | | | | | | | | | | | | Occupied | Unoccupied | Occupied | Unoccupied | |
| AHU-1 | Classrooms | 13900 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 0 | 0 | 6 | 17 | 0 | 0 | 72 | 60 | 72 | 85 | |
| AHU-2 | Classrooms | 15600 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 0 | 0 | 6 | 17 | 0 | 0 | 72 | 60 | 72 | 85 | |
| AHU-5 | Auditorium | 15000 | 20.0% | 7.5 | 5 | HW | 0.92 | None | 0.00 | 7 | 15 | 0 | 0 | 7 | 15 | 0 | 0 | 72 | 60 | 72 | 85 | |
| AHU-6 | Cafeteria | 10000 | 20.0% | 5 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 6 | 22 | 6 | 17 | 6 | 22 | 72 | 60 | 72 | 85 | |
| AHU-7 | Band Rooms | 6500 | 20.0% | 3 | 0 | HW | 0.92 | None | 0.00 | 7 | 21 | 0 | 0 | 7 | 21 | 0 | 0 | 72 | 60 | 72 | 85 | |
| AHU-8 | HS Gym | 15000 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 0 | 24 | 0 | 24 | 0 | 24 | 0 | 24 | 72 | 60 | 72 | 85 | |
| AHU-9 | HS Gym | 15000 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 0 | 24 | 0 | 24 | 0 | 24 | 0 | 24 | 72 | 60 | 72 | 85 | |
| AHU-10 | Girls Lockers | 4500 | 20.0% | 1.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 21 | 6 | 21 | 6 | 21 | 6 | 21 | 72 | 60 | 72 | 85 | |
| AHU-11 | Boys Lockers | 4500 | 20.0% | 1.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 21 | 6 | 24 | 6 | 21 | 6 | 24 | 72 | 60 | 72 | 85 | |
| AHU-12 | Team Room | 2000 | 20.0% | 1 | 0 | HW | 0.92 | None | 0.00 | 7 | 22 | 7 | 22 | 7 | 22 | 7 | 22 | 72 | 60 | 72 | 85 | |
| RTU-1 | Classroom Addition | 15872 | 20.0% | 20 | 5 | HW | 0.92 | DX | 1.15 | 6 | 17 | 0 | 0 | 6 | 17 | 0 | 0 | 72 | 60 | 72 | 85 | |
| RTU-2 | Library/Media | 8000 | 20.0% | 7.5 | 0 | HW | 0.92 | DX | 1.15 | 7 | 16 | 0 | 0 | 7 | 16 | 0 | 0 | 72 | 60 | 72 | 85 | |
| RTU-3 | Media Labs | 6000 | 20.0% | 5 | 0 | HW | 0.92 | DX | 1.15 | 7 | 16 | 0 | 0 | 7 | 16 | 0 | 0 | 72 | 60 | 72 | 85 | |
| RTU-4 | Internal Offices | 2400 | 20.0% | 2 | 0 | Gas | 0.80 | DX | 1.15 | 5 | 17 | 5 | 17 | 9 | 14 | 9 | 14 | 72 | 60 | 72 | 85 | |
| RTU-5 | Photo lab | 4000 | 20.0% | 3 | 0 | HW | 0.92 | DX | 1.15 | 5 | 17 | 5 | 17 | 9 | 14 | 9 | 14 | 72 | 60 | 72 | 85 | |
| RTU-6 | Teacher's Lounge | 0 | 20.0% | 0 | 0 | Gas | 0.80 | DX | 1.15 | 8 | 20 | 0 | 0 | 8 | 20 | 0 | 0 | 72 | 60 | 72 | 85 | No claimed savings - missing data |
| RTU-13 | External Offices | 0 | 20.0% | 0 | 0 | HW | 0.92 | DX | 1.15 | 6 | 16 | 0 | 0 | 6 | 14 | 0 | 0 | 72 | 60 | 72 | 85 | No claimed savings - missing data |
| HV-1 | Aux. Gym | 24000 | 20.0% | 15 | 10 | Gas | 0.80 | None | 0.00 | 5 | 17 | 5 | 17 | 9 | 14 | 9 | 14 | 72 | 60 | 72 | 85 | |
| HV-2 | Wrestling Room | 8000 | 20.0% | 7.5 | 5 | Gas | 0.80 | None | 0.00 | 14 | 20 | 0 | 0 | 14 | 20 | 0 | 0 | 72 | 60 | 72 | 85 | |
| HV-3 | Training Room | 2000 | 20.0% | 1 | 0 | Gas | 0.80 | None | 0.00 | 7 | 18 | 0 | 0 | 7 | 18 | 0 | 0 | 72 | 60 | 72 | 85 | |
| HV-4 | Lockerrooms/Hallway | 5000 | 20.0% | 3 | 1.5 | Gas | 0.80 | None | 0.00 | 7 | 18 | 0 | 0 | 7 | 18 | 0 | 0 | 72 | 60 | 72 | 85 | |
| HV-5 | Weight Room | 8000 | 20.0% | 7.5 | 5 | Gas | 0.80 | None | 0.00 | 7 | 18 | 0 | 0 | 7 | 18 | 0 | 0 | 72 | 60 | 72 | 85 | |
| HV-6 | Ind. Shop | 3000 | 20.0% | 2 | 0 | Gas | 0.80 | None | 0.00 | 7 | 15 | 0 | 0 | 7 | 15 | 0 | 0 | 72 | 60 | 72 | 85 | |
| HV-7 | Kitchen | 7000 | 20.0% | 3 | 0 | HW | 0.92 | None | 0.00 | 6 | 14 | 0 | 0 | 6 | 14 | 0 | 0 | 72 | 60 | 72 | 85 | |
| MAU-1 | Ind. Shop | 4200 | 100.0% | 2 | 0 | Gas | 0.80 | None | 0.00 | 7 | 15 | 0 | 0 | 7 | 15 | 0 | 0 | 72 | 60 | 72 | 85 | |
| UV-1 | Classroom UV's | 17750 | 20.00% | 3.75 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 0 | 0 | 6 | 17 | 0 | 0 | 72 | 60 | 72 | 85 | Sum of all UV's |

Olmsted Falls City Schools - HB 264
Olmsted Falls High School
Baseline Air Side Energy Summary

| | | | | | | | | | | Energy Use | |
|--------|------------------------|--------------------------|------------------------|--------------------------|---------------------|-----------------------|-----------------------------|-------------------------------|--------------|------------|----------|
| Unit | Occupied Heating Hours | Unoccupied Heating Hours | Occupied Cooling Hours | Unoccupied Cooling Hours | Occupied MCF/CFM/yr | Unoccupied MCF/CFM/yr | Occupied Cooling kWh/CFM/yr | Unoccupied Cooling kWh/CFM/yr | Mech. kWh/yr | MCF | kWh |
| AHU-1 | 1852 | 4444 | 717 | 684 | 0.0671 | 0.09720 | 0.0000 | 0.0000 | 24838.95 | 253.99 | 24838.95 |
| AHU-2 | 1852 | 4444 | 717 | 684 | 0.0671 | 0.09720 | 0.0000 | 0.0000 | 24838.95 | 285.06 | 24838.95 |
| AHU-5 | 1336 | 4960 | 543 | 858 | 0.0484 | 0.10868 | 0.0000 | 0.0000 | 23521 | 226.78 | 23521.00 |
| AHU-6 | 3033 | 3175 | 1035 | 360 | 0.1073 | 0.07131 | 0.0000 | 0.0000 | 21292.53 | 250.35 | 21292.53 |
| AHU-7 | 2356 | 3940 | 921 | 480 | 0.0846 | 0.08667 | 0.0000 | 0.0000 | 11305.56 | 138.13 | 11305.56 |
| AHU-8 | 6296 | 0 | 1401 | 0 | 0.2259 | 0.00000 | 0.0000 | 0.0000 | 49645.65 | 677.77 | 49645.65 |
| AHU-9 | 6296 | 0 | 1401 | 0 | 0.2259 | 0.00000 | 0.0000 | 0.0000 | 49645.65 | 677.77 | 49645.65 |
| AHU-10 | 3663 | 2545 | 1238 | 157 | 0.1298 | 0.05755 | 0.0000 | 0.0000 | 7193.685 | 129.81 | 7193.69 |
| AHU-11 | 3915 | 2293 | 1260 | 135 | 0.1387 | 0.05217 | 0.0000 | 0.0000 | 7458.78 | 136.59 | 7458.78 |
| AHU-12 | 3648 | 2563 | 1261 | 136 | 0.1287 | 0.05848 | 0.0000 | 0.0000 | 4802.025 | 57.34 | 4802.03 |
| RTU-1 | 1852 | 4444 | 717 | 684 | 0.0671 | 0.09720 | 0.8941 | 0.0081 | 68998.88 | 290.03 | 71862.89 |
| RTU-2 | 1487 | 4809 | 630 | 771 | 0.0537 | 0.10550 | 0.7720 | 0.0098 | 22652.4 | 128.12 | 23903.29 |
| RTU-3 | 1487 | 4809 | 630 | 771 | 0.0537 | 0.10550 | 0.7720 | 0.0098 | 15101.6 | 96.09 | 16039.77 |
| RTU-4 | 2947 | 3261 | 769 | 623 | 0.1211 | 0.08298 | 0.9616 | 0.0114 | 8061.64 | 68.10 | 8528.66 |
| RTU-5 | 2947 | 3261 | 769 | 623 | 0.1053 | 0.07216 | 0.9616 | 0.0114 | 12092.46 | 98.69 | 12870.83 |
| RTU-6 | 1970 | 4326 | 863 | 538 | 0.0811 | 0.10973 | 1.0618 | 0.0062 | 0 | 0.00 | 0.00 |
| RTU-13 | 1696 | 4600 | 576 | 825 | 0.0616 | 0.10053 | 0.6743 | 0.0142 | 0 | 0.00 | 0.00 |
| HV-1 | 2947 | 3261 | 769 | 623 | 0.1211 | 0.08298 | 0.0000 | 0.0000 | 68451.7 | 680.96 | 68451.70 |
| HV-2 | 979 | 5317 | 434 | 967 | 0.0399 | 0.13510 | 0.0000 | 0.0000 | 20765.78 | 117.84 | 20765.78 |
| HV-3 | 1811 | 4485 | 782 | 619 | 0.0748 | 0.11341 | 0.0000 | 0.0000 | 3327.34 | 41.28 | 3327.34 |
| HV-4 | 1811 | 4485 | 782 | 619 | 0.0748 | 0.11341 | 0.0000 | 0.0000 | 10818.26 | 103.20 | 10818.26 |
| HV-5 | 1811 | 4485 | 782 | 619 | 0.0748 | 0.11341 | 0.0000 | 0.0000 | 27742.53 | 165.11 | 27742.53 |
| HV-6 | 1336 | 4960 | 543 | 858 | 0.0557 | 0.12498 | 0.0000 | 0.0000 | 5733.62 | 52.16 | 5733.62 |
| HV-7 | 1396 | 4900 | 461 | 940 | 0.0510 | 0.10693 | 0.0000 | 0.0000 | 8557.86 | 108.83 | 8557.86 |
| MAU-1 | 1336 | 4960 | 543 | 858 | 0.0557 | 0.12498 | 0.0000 | 0.0000 | 5733.62 | 260.13 | 5733.62 |
| UV-1 | 1852 | 4444 | 717 | 684 | 0.067063314 | 0.097201894 | 0 | 0 | 12419.48 | 238.07 | 12419.48 |

Olmsted Falls City Schools - HB 264
Olmsted Falls High School
Air Side Equipment Proposed

| Building Constants | | | | | | | |
|--------------------|-------------|-----------|------------|----------|----------|----------|----------|
| Balance Point | First month | First Day | Last Month | Last Day | Unocc FF | Unocc OA | Fan Eff. |
| 65 | 8 | 18 | 6 | 30 | 0.25 | 5.00% | 0.86 |

| | | | | | | | | | | | | | | | | | | Setpoints | | | | Notes: |
|--------|---------------------|--------|--------|------|---------|-------------|--------------------|----------------|----------------|-------------|-------|----------|-------|-------------|-------|-----------------|-------|-----------|----------|------------|----------|-----------------------------------|
| Unit | Area Served | Supply | | | Exhaust | Heat Source | Heating Efficiency | Cooling Source | Cooling kW/Ton | School Days | | Weekends | | Summer Days | | Summer Weekends | | Heating | | Cooling | | |
| | | CFM | OA (%) | HP | | | | | | HP | Start | Stop | Start | Stop | Start | Stop | Start | Stop | Occupied | Unoccupied | Occupied | |
| AHU-1 | Classrooms | 13900 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 0 | 0 | 8 | 14 | 0 | 0 | 70 | 60 | 74 | 85 | |
| AHU-2 | Classrooms | 15600 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 0 | 0 | 8 | 14 | 0 | 0 | 70 | 60 | 74 | 85 | |
| AHU-5 | Auditorium | 15000 | 20.0% | 7.5 | 5 | HW | 0.92 | None | 0.00 | 7 | 15 | 0 | 0 | 8 | 14 | 0 | 0 | 70 | 60 | 74 | 85 | |
| AHU-6 | Cafeteria | 10000 | 20.0% | 5 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 6 | 22 | 6 | 17 | 6 | 20 | 70 | 60 | 74 | 85 | |
| AHU-7 | Band Rooms | 6500 | 20.0% | 3 | 0 | HW | 0.92 | None | 0.00 | 7 | 21 | 0 | 0 | 8 | 21 | 0 | 0 | 70 | 60 | 74 | 85 | |
| AHU-8 | HS Gym | 15000 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 5 | 24 | 5 | 24 | 6 | 24 | 5 | 22 | 70 | 60 | 74 | 85 | |
| AHU-9 | HS Gym | 15000 | 20.0% | 7.5 | 0 | HW | 0.92 | None | 0.00 | 5 | 24 | 5 | 24 | 6 | 24 | 5 | 22 | 70 | 60 | 74 | 85 | |
| AHU-10 | Girls Lockers | 4500 | 20.0% | 1.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 21 | 6 | 21 | 6 | 21 | 6 | 22 | 70 | 60 | 74 | 85 | |
| AHU-11 | Boys Lockers | 4500 | 20.0% | 1.5 | 0 | HW | 0.92 | None | 0.00 | 6 | 21 | 6 | 24 | 6 | 21 | 6 | 22 | 70 | 60 | 74 | 85 | |
| AHU-12 | Team Room | 2000 | 20.0% | 1 | 0 | HW | 0.92 | None | 0.00 | 7 | 22 | 7 | 22 | 8 | 22 | 7 | 22 | 70 | 60 | 74 | 85 | |
| RTU-1 | Classroom Addition | 15872 | 20.0% | 20 | 5 | HW | 0.92 | DX | 1.15 | 6 | 17 | 0 | 0 | 8 | 14 | 0 | 0 | 70 | 60 | 74 | 85 | |
| RTU-2 | Library/Media | 8000 | 20.0% | 7.5 | 0 | HW | 0.92 | DX | 1.15 | 7 | 4 | 0 | 0 | 7 | 16 | 0 | 0 | 70 | 60 | 74 | 85 | |
| RTU-3 | Media Labs | 6000 | 20.0% | 5 | 0 | HW | 0.92 | DX | 1.15 | 7 | 16 | 0 | 0 | 7 | 16 | 0 | 0 | 70 | 60 | 74 | 85 | |
| RTU-4 | Internal Offices | 2400 | 20.0% | 2 | 0 | Gas | 0.80 | DX | 1.15 | 5 | 17 | 5 | 17 | 9 | 14 | 9 | 14 | 70 | 60 | 74 | 85 | |
| RTU-5 | Photo lab | 4000 | 20.0% | 3 | 0 | HW | 0.92 | DX | 1.15 | 5 | 17 | 5 | 17 | 9 | 14 | 9 | 14 | 70 | 60 | 74 | 85 | |
| RTU-6 | Teacher's Lounge | 0 | 20.0% | 0 | 0 | Gas | 0.80 | DX | 1.15 | 8 | 20 | 0 | 0 | 8 | 20 | 0 | 0 | 70 | 60 | 74 | 85 | No claimed savings - missing data |
| RTU-13 | External Offices | 0 | 20.0% | 0 | 0 | HW | 0.92 | DX | 1.15 | 6 | 16 | 0 | 0 | 6 | 14 | 0 | 0 | 70 | 60 | 74 | 85 | No claimed savings - missing data |
| HV-1 | Aux. Gym | 24000 | 20.0% | 15 | 10 | Gas | 0.80 | None | 0.00 | 5 | 17 | 5 | 17 | 9 | 14 | 9 | 14 | 70 | 60 | 74 | 85 | |
| HV-2 | Wrestling Room | 8000 | 20.0% | 7.5 | 5 | Gas | 0.80 | None | 0.00 | 14 | 20 | 0 | 0 | 14 | 20 | 0 | 0 | 70 | 60 | 74 | 85 | |
| HV-3 | Training Room | 2000 | 20.0% | 1 | 0 | Gas | 0.80 | None | 0.00 | 7 | 18 | 0 | 0 | 7 | 18 | 0 | 0 | 70 | 60 | 74 | 85 | |
| HV-4 | Lockerrooms/Hallway | 5000 | 20.0% | 3 | 1.5 | Gas | 0.80 | None | 0.00 | 7 | 18 | 0 | 0 | 7 | 18 | 0 | 0 | 70 | 60 | 74 | 85 | |
| HV-5 | Weight Room | 8000 | 20.0% | 7.5 | 5 | Gas | 0.80 | None | 0.00 | 7 | 18 | 0 | 0 | 7 | 18 | 0 | 0 | 70 | 60 | 74 | 85 | |
| HV-6 | Ind. Shop | 3000 | 20.0% | 2 | 0 | Gas | 0.80 | None | 0.00 | 7 | 15 | 0 | 0 | 7 | 15 | 0 | 0 | 70 | 60 | 74 | 85 | |
| HV-7 | Kitchen | 7000 | 20.0% | 3 | 0 | HW | 0.92 | None | 0.00 | 6 | 14 | 0 | 0 | 6 | 14 | 0 | 0 | 70 | 60 | 74 | 85 | |
| MAU-1 | Ind. Shop | 4200 | 100.0% | 2 | 0 | Gas | 0.80 | None | 0.00 | 7 | 15 | 0 | 0 | 7 | 15 | 0 | 0 | 70 | 60 | 74 | 85 | |
| UV-1 | Classroom UV's | 17750 | 20.00% | 3.75 | 0 | HW | 0.92 | None | 0.00 | 6 | 17 | 0 | 0 | 6 | 17 | 0 | 0 | 70 | 60 | 74 | 85 | Sum of all UV's |

Olmsted Falls City Schools - HB 264
Olmsted Falls High School
Proposed Air Side Energy Summary

| Unit | Occupied Heating Hours | Unoccupied Heating Hours | Occupied Cooling Hours | Unoccupied Cooling Hours | Occupied MCF/CFM/yr | Unoccupied MCF/CFM/yr | Occupied Cooling kWh/CFM/yr | Unoccupied Cooling kWh/CFM/yr | Mech. kWh/yr | Energy Use | |
|--------|------------------------|--------------------------|------------------------|--------------------------|---------------------|-----------------------|-----------------------------|-------------------------------|--------------|------------|----------|
| | | | | | | | | | | MCF | kWh |
| AHU-1 | 1852 | 4444 | 607 | 794 | 0.0628 | 0.09720 | 0.0000 | 0.0000 | 24306.83 | 242.0856 | 24306.83 |
| AHU-2 | 1852 | 4444 | 607 | 794 | 0.0628 | 0.09720 | 0.0000 | 0.0000 | 24306.83 | 271.6931 | 24306.83 |
| AHU-5 | 1336 | 4960 | 498 | 903 | 0.0453 | 0.10868 | 0.0000 | 0.0000 | 23254.94 | 217.514 | 23254.94 |
| AHU-6 | 3033 | 3175 | 1024 | 371 | 0.1003 | 0.07131 | 0.0000 | 0.0000 | 21257.05 | 236.3251 | 21257.05 |
| AHU-7 | 2356 | 3940 | 907 | 494 | 0.0791 | 0.08667 | 0.0000 | 0.0000 | 11278.47 | 131.0472 | 11278.47 |
| AHU-8 | 4814 | 1394 | 1321 | 74 | 0.1603 | 0.03198 | 0.0000 | 0.0000 | 41937.9 | 505.8138 | 46937.9 |
| AHU-9 | 4814 | 1394 | 1321 | 74 | 0.1603 | 0.03198 | 0.0000 | 0.0000 | 41937.9 | 505.8138 | 46937.9 |
| AHU-10 | 3663 | 2545 | 1243 | 152 | 0.1214 | 0.05755 | 0.0000 | 0.0000 | 7198.523 | 122.1886 | 7198.523 |
| AHU-11 | 3915 | 2293 | 1250 | 145 | 0.1297 | 0.05217 | 0.0000 | 0.0000 | 7449.105 | 128.4426 | 7449.105 |
| AHU-12 | 3648 | 2563 | 1247 | 150 | 0.1203 | 0.05848 | 0.0000 | 0.0000 | 4792.995 | 53.96709 | 4792.995 |
| RTU-1 | 1852 | 4444 | 607 | 794 | 0.0628 | 0.09720 | 0.5011 | 0.0142 | 67461.63 | 276.4304 | 69097.56 |
| RTU-2 | 0 | 6296 | 253 | 1148 | 0.0000 | 0.13857 | 0.2104 | 0.0102 | 13635.3 | 55.42772 | 13988.25 |
| RTU-3 | 1487 | 4809 | 630 | 771 | 0.0503 | 0.10550 | 0.5267 | 0.0098 | 15101.6 | 91.96611 | 15745.38 |
| RTU-4 | 2947 | 3261 | 769 | 623 | 0.1133 | 0.08298 | 0.6432 | 0.0114 | 8061.64 | 64.33436 | 8375.858 |
| RTU-5 | 2947 | 3261 | 769 | 623 | 0.0985 | 0.07216 | 0.6432 | 0.0114 | 12092.46 | 93.2382 | 12616.16 |
| RTU-6 | 1970 | 4326 | 863 | 538 | 0.0758 | 0.10973 | 0.7226 | 0.0062 | 0 | 0 | 0 |
| RTU-13 | 1696 | 4600 | 576 | 825 | 0.0576 | 0.10053 | 0.4477 | 0.0142 | 0 | 0 | 0 |
| HV-1 | 2947 | 3261 | 769 | 623 | 0.1133 | 0.08298 | 0.0000 | 0.0000 | 68451.7 | 643.3436 | 68451.7 |
| HV-2 | 979 | 5317 | 434 | 967 | 0.0373 | 0.13510 | 0.0000 | 0.0000 | 20765.78 | 113.6782 | 20765.78 |
| HV-3 | 1811 | 4485 | 782 | 619 | 0.0700 | 0.11341 | 0.0000 | 0.0000 | 3327.34 | 39.35189 | 3327.34 |
| HV-4 | 1811 | 4485 | 782 | 619 | 0.0700 | 0.11341 | 0.0000 | 0.0000 | 10818.26 | 98.37972 | 10818.26 |
| HV-5 | 1811 | 4485 | 782 | 619 | 0.0700 | 0.11341 | 0.0000 | 0.0000 | 27742.53 | 157.4075 | 27742.53 |
| HV-6 | 1336 | 4960 | 543 | 858 | 0.0521 | 0.12498 | 0.0000 | 0.0000 | 5733.62 | 50.02823 | 5733.62 |
| HV-7 | 1396 | 4900 | 461 | 940 | 0.0478 | 0.10693 | 0.0000 | 0.0000 | 8557.86 | 104.3135 | 8557.86 |
| MAU-1 | 1336 | 4960 | 543 | 858 | 0.0521 | 0.12498 | 0.0000 | 0.0000 | 5733.62 | 245.2104 | 5733.62 |
| UV-1 | 1852 | 4444 | 717 | 684 | 0.062780662 | 0.097201894 | 0 | 0 | 12419.48 | 222.8714 | 12419.48 |

| | |
|-----------|--|
| Project: | Olmsted Falls HB 264 |
| Building: | Olmsted Falls High School |
| System: | Building Automation Optimization - Summary |

| Utility Rates | |
|---------------|------|
| Gas | 9.16 |
| Electric | 0.09 |

| Baseline Use | | Proposed Use | | Savings | | Savings (\$) | | Total (\$) |
|--------------|----------|--------------|----------|---------|----------|--------------|----------|------------|
| Gas | Electric | Gas | Electric | Gas | Electric | Gas | Electric | |
| 5,282 | 521,298 | 4,671 | 501,094 | 611 | 20,204 | \$5,596 | \$1,902 | \$7,498 |

III. HS – 07 Sewer Exemption

Sewer Exemption Savings:

As detailed in Section 10 – Description of ECM(s), savings will be realized by applying for a sewer exemption on practice field irrigation water.

Assumptions:

-Per the District maintenance staff, the irrigation carts operate, on average, between 3 and 4 hours a day all summer and a portion of the school year. The District's current sewer rate is \$52.55 per MCF which translates to an annual savings of \$1,359.57.

Mercantile Customer Project Commitment Agreement
Exemption Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT ("Agreement") is made and entered into by and between Ohio Edison Company (OE), its successors and assigns (hereinafter called the "Company") and Olmsted Falls Schools, 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 annual 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 and consistent with the Statute, desires to pursue exemption from paying charges included in the Company's then current cost recovery mechanism (hereinafter, "Rider DSE") as approved by the Public Utilities Commission of Ohio ("Commission") for recovery of the DSE2 costs associated with the Company Plan; and is committing the Customer Energy Project(s) as a result of such exemption.

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 an exemption; and

WHEREAS, in consideration of, and upon receipt of, said exemption, Customer has consented to committing the Customer Energy Project(s) to the Company and complying with all other terms and conditions set forth herein, including without limitation, the submission of an annual report on the energy savings and/or peak-demand reductions achieved by the Customer Energy Project(s).

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:

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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 applicable, "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 exemption benefits discussed in Article 3 below; and (ii) will not affect any of Customer's other requirements or obligations, including without limitation any reporting requirements, as set forth herein.

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 a 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" 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 exemption from paying the DSE2 charge of the Company's Rider DSE.

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 Exemption and Annual Report. Upon Commission approval of the request for exemption, the Company will exempt Customer from paying any Rider DSE charges consistent with any Commission directives as set forth in the Commission's Finding and Order approving the Joint Application. Such exempt status shall apply to those accounts

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identified by Customer that pertain to those Customer sites with one or more Customer Energy Project(s) approved for integration into the Company Plan by the Commission in the Joint Application.

a. For purposes of this Agreement, a "site" shall be a single location with one or more facilities. As examples only, a site includes an industrial plant, a hospital complex or a university located on one or more parcels of land, provided that said parcels are contiguous.

b. For purposes of this Agreement, an "account" shall be as defined by the Company through its normal business practices. Any account identified by Customer shall be eligible for exemption, provided that said account pertains to a specific site with at least one Customer Energy Project that qualifies Customer for exemption from paying Rider DSE charges.

c. Any new accounts created at a site on which there is already an approved Customer Energy Project shall, at the option of the Customer, be included within

the exemption granted under said project, and shall be included for purposes of calculating future eligibility for exemption under the project. Any such election shall become effective in the first billing cycle after March 15th following identification of said account in the annual report required under Section 3(d)(iii) below.

d. Customer acknowledges and agrees that if it desires to pursue such exempt status, as evidenced in the Joint Application, Customer is obligated to provide to the Company an annual report on the energy savings and peak-demand reductions achieved by the Customer Energy Project(s) on a calendar year basis. Company shall provide Customer with such information as it may require, that is in Company's possession, for the purposes of preparing such report. Company shall provide a template for Customer to use in preparing the annual report and shall make available a designated Company representative to answer questions.

i. Said report shall be submitted annually on or before January 31 of each year after Commission approval of the Joint Application.

ii. Said report shall provide all information required under the Rules, and where the requirements of the Rules conflict with a requirement under this Agreement or the Joint Application, the requirements of the Rules shall control.

iii. Said report shall, at a minimum, include the following information for each Customer Energy Project that has been approved by the Commission:

1. A demonstration that the energy savings and peak-demand reductions associated with the Customer Energy Project(s) meet the total resource cost test or that the Company's avoided cost exceeds the cost to the Company for the Customer's program;
2. A statement distinguishing programs implemented before and after January 1 of the current year;
3. A quantification of the energy savings or peak-demand reductions for programs initiated prior to 2009 in the baseline period;
4. A recognition that the Company's baselines have been increased by the amount of mercantile customer energy savings and demand reductions;
5. A listing and description of the Customer Energy Projects that have been implemented, which provides the detail required by the Rules;
6. An accounting of expenditures made by the mercantile customer for each program and its component energy savings and peak-demand reduction attributes; and
7. A timeline showing when each Customer Energy Project went into effect and when the energy savings and peak-demand reductions occurred.

8. Any other information reasonably necessary for the Company to (i) verify Customer's continued eligibility for exemption from paying Rider charges; and (ii) report in the Company's annual status report to the Commission the EE&PDR results related to each Customer Energy Project.

e. Customer's exemption shall automatically terminate:

- i. At the end of the exemption period as determined by the Commission
- ii. Upon order of the Commission or pursuant to any Commission rule;
- iii. If Customer fails to comply with the terms and conditions set forth in the Company's then current Rider DSE, or its equivalent, as amended from time to time by the Commission, within a reasonable period of time after receipt of written notice of such non-compliance;
- iv. If it is discovered that Customer knowingly falsified any documents provided to the Company or the Commission in connection with this Agreement or the Joint Application. In such an instance, Company reserves the right to recover any exempted rider charges from the date of approval of the Joint Application through the date said exemption is terminated; or
- v. If Customer fails to submit the annual report required in (d) above. In such an instance, Company reserves the right to recover any exempted rider charges from the date of approval of the Joint Application through the date said exemption is terminated. It is expressly agreed that this provision shall not apply should said report contain errors, provided that the submission of said report is made in good faith. It is further agreed that the Company will provide written notice of the date on which said report is due at least thirty (30) days prior thereto.

f. Company reserves the right to recover from Customer any Rider DSE charges incurred by Customer after the date Customer's exemption terminates.

3. Termination of Agreement. This Agreement shall automatically terminate:

- a. If the Commission fails to approve this Agreement through the Joint Application;
- 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 exemption, 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.

Customer acknowledges that if a Customer Project is withdrawn pursuant to Paragraph 1(b) of this Agreement, the exemption or a portion of such exemption may be affected. Should Customer elect to withdraw a project pursuant to Paragraph 1(b), Customer shall provide Company with reasonable assistance in preparing any documentation that may be required by the Commission and, upon reasonable request, shall provide documentation supporting the necessity to withdraw such project.

4. 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

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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.

5. **Taxes.** Customer shall be responsible for all tax consequences (if any) arising from the application of the exemption.

6. **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:

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If to the Company:

FirstEnergy Service Company
76 South Main Street
Akron, OH 44308
Attn: Brian Mollenshott
Telephone: 330-761-2399
Fax: 330-761-4281
Email: bmollenshott@firstenergycorp.com

If to the Customer:

Olmsted Falls Schools
26937 Bagley Rd
Olmsted Falls, OH 44138
Attn: Mark Hullman
Telephone: 4404276000
Fax: NONE ENTERED
Email: mhullman@ofcs.net

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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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 (OE)
(Company)

By: John C. Lounsbury

Title: VP of Energy Efficiency

Date: 9-23-14

Mark Hullman
(Customer)

By: Mark Hullman

Title: Thompson / CEO

Date: 9/11/2014

Affidavit of Olmsted Falls Schools - Exhibit A

STATE OF OHIO)

SS:

COUNTY OF Cuyahoga)

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

1. I am the Treasurer / CEO of Olmsted Falls Schools ("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 %%OPERATING_COMPAN_LONG%% ("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 a Rider Exemption ("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.

Mark Hullman

Sworn to before me and subscribed in my presence this 11th day of Sept, 2014.

Notary



DEBRA A. FALLON
Notary Public, State of Ohio
My Comm. Expires Dec. 21, 2018

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/3/2014 1:47:24 PM

in

Case No(s). 14-0764-EL-EEC

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