



Case No.: 13-0071-EL-EEC

Mercantile Customer: Euclid Board of Education (See Attached Exhibit A)

Electric Utility: The Cleveland Electric Illuminating Company

Program Title or
Description: See Attached Exhibit A

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

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

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

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

Section 1: Mercantile Customer Information

Name: Euclid Board of Education (See attached Exhibit A)

Principal address: 651 East 222 Street Euclid, Ohio 44123

Address of facility for which this energy efficiency program applies: See Attached Exhibit A

Name and telephone number for responses to questions: Glenn Hummell

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: The Cleveland Electric Illuminating 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 equipment that needed to be replaced. 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):
8/31/2012, 10/31/2012, & 11/30/2012.
- ☐ Behavioral or operational improvement.

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

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

Annual savings: ____ kWh

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

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 less efficient new equipment) - (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: (See Attached Exhibit A) 2,178,223 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.

Section 4: Demand Reduction/Demand Response Programs

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

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

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

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 (Option 1) or Exemption from Rider (Option 2)

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

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

A) The customer is applying for:

☒ Option 1: A cash rebate reasonable arrangement.

OR

☐ Option 2: An exemption from the energy efficiency cost recovery mechanism implemented by the electric utility.

OR

☐ Commitment payment

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

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

☒ A cash rebate of \$47,859.00. (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.)

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

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

OR

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

OR

- ☐ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of 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 24 month period, the customer will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

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

- ☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____(Continue to Subsection 1, then skip Subsection 2)
- ☒ Utility Cost Test (UCT) . The calculated UCT value is: **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.: 13-0071 -EL-EEC

State of Ohio :

Glenn Hummell, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Euclid 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.

Glenn F. Hummell Jr.

Signature of Affiant & Title

Sworn and subscribed before me this 29 day of November, 2012 Month/Year

Lorrie L. Bitner

Signature of official administering oath

Lorrie L. Bitner

Print Name and Title

My commission expires on Oct 16, 2015



LORRIE L. BITNER
Notary Public, State of Ohio
My Commission Expires October 16, 2015
Recorded in Lake County
Recorded Vol 102, Page 429

[illegible]

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.

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		
1	High Efficiency Lighting	A high-efficiency lighting system was installed in the new Glenwood Elementary School. 2 lamp and 3 lamp T8 fluorescent fixtures with high efficiency electronic ballasts were installed throughout the facility. Occupancy sensors were installed the offices and classrooms to turn off the lights when the areas are not occupied. 4-pin Biac CFLS were used in the conference rooms. 4 lamp T5HO fixtures were installed in the gym instead of the traditional 400 watt HID fixtures. The space-by-space method was used to calculate the wattage density of each space. A wattage density of 1.2 watts/sq. ft. was used as the baseline for the energy calculations. This is a new facility and has only been in operation since August of 2012.	See the attached lighting calculator "Glenbrook_P1_NonStandard_Lighting_Calculator.xls".	N/A	Standard 3 and 4 lamp T8 fixtures with instant start electronic ballasts. Classrooms would have bi-level switching without occupancy sensor controls. The conference rooms would use 50 watt incandescent PAR30 lamps. The standard fixtures in the gym would be 320 pulse start metal halide. The fixtures that were chosen in this facility use less energy while meeting the requirements for proper light levels and even illumination.
2	AHU VFD Controls	VFDS were installed in the air handler units (AHUs) throughout the facility to reduce energy use. The 5 AHUs supply conditioned air to variable air volume units in the classrooms and offices. Temperature, humidity and CO2 sensors were installed to allow the AHUs to properly condition the school, using less energy than a traditional HVAC system. VFDS were installed on all of the supply and exhaust fan motors. The speed of the supply air fans are varied based on the demand for conditioned air from each of the VAV units. VFDS on the exhaust fans vary the speed of the motors to pull in and expel only the amount of fresh air needed to reduce CO2 levels to acceptable building standards. VFDS were also installed on the chilled water pumps in order to conserve energy during times when the demand for cooling is reduced. A building automation system provides the control signals to the VFDS based on indoor and outdoor conditions. This is a new facility and has only been in operation since August of 2012.	See the attached VFD energy savings calculations "Glenwood Elem_P2_VFD Energy Savings Calcs.pdf".	N/A	HVAC pumps and fans with simple on/off relay controls. VFD controls were placed on pump motors and HVAC fans throughout the school building to vary the speed based on the heating, cooling and CO2 load placed on the system. The VFDS reduce the speed of the pump and fan motors based on indoor and outdoor conditions, which greatly reduces the energy used to properly condition the facility.

Docket No. 13-0071

Site: 23500 Glenbrook Boulevard

Exhibit 2

Customer Legal Entity Name: Euclid Board of Education
 Site Address: Glenbrook Elementary School
 Principal Address: 23500 Glenbrook Boulevard

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (c) <i>Note 1</i>
2011	366,800	366,800	366,800
Average	366,800	366,800	366,800

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>
1	High Efficiency Lighting	11/30/2012	\$5,881,333	\$2,940,667	147,572	147,572	-	\$7,879	\$5,909
2	AHU VFD Controls	08/31/2012	\$2,341,064	\$1,170,532	367,488	367,488	-	\$6,975	\$5,231
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
Total			\$8,222,397		515,060	515,060	0	\$14,854	\$11,141

Docket No. 13-0071

Site: 23500 Glenbrook Boulevard

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.

**Commitment
Payment
\$**

\$0

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	148	\$ 308	\$ 45,493	\$ 2,025	\$5,909	\$1,476	\$ 9,410	4.8
2	367	\$ 308	\$ 113,289	\$ 2,025	\$5,231	\$3,675	\$ 10,931	10.36
Total	515	\$ 308	158,783	4,050	\$11,141	\$5,151	20,341	7.8

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)

Euclid Board of Education ~ Glenbrook Elementary School
Docket No. 13-0071

Site: 23500 Glenbrook Boulevard

Lighting Inventory Form

Applicant Name:	Burld Schools
Facility Name:	Glenbrook Elementary
Date:	11/9/2012
Lighting Zone (exterior only):	Lighting Zone 3

[illegible]

[illegible]

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	147,572
Total Change in Connected Load	30.68

Annual Estimated Cost Savings	\$14,757.20
Annual Operating Hours	3,640

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$6,219.25
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
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	\$7,879.25
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	509
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)	17.27
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Project Name:	AHU VFD Controls
Site Name:	Glenwood Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
HVAC	Eaton	SVX015A1	P-1	139 Mech Rm.	TEFC	5520	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-2	139 Mech Rm.	TEFC	5520	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-4	139 Mech Rm.	TEFC	5520	0.8	T57033	15	92.40%	450
HVAC	Trane	TR1 6011	AHU-1A	114 Mech Rm.	TEFC	2790	0.8	EM2333T	15	92%	450
HVAC	Trane	TR1 6011	AHU-1B	114 Mech Rm.	TEFC	2790	0.8	EM2333T	15	92.40%	450
Incentive through 10/11/2011 @ \$30/hp											2,250

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



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Project Name:	AHU VFD Controls
Site Name:	Glenwood Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
HVAC	Trane	TR1 6022	AHU-2A	214 Mech Rm.	TEFC	5520	0.8	EM2334T	20	93.00%	600
HVAC	Trane	TR1 6022	AHU-2B	214 Mech Rm.	TEFC	5520	0.8	EM2334T	20	93.00%	600
HVAC	Trane	TR1 6008	AHU-2C	214 Mech Rm.	TEFC	5520	0.8	EM3710T	7.5	91.70%	225
HVAC	Trane	TR1 6016	AHU-3A	230 Mech Rm.	TEFC	5520	0.8	EM2333T	15	92.40%	450
HVAC	Trane	TR1 6016	AHU-3B	230 Mech Rm.	TEFC	5520	0.8	EM2333T	15	92%	450
HVAC	Trane	TR1 6006	AHU-3C	230 Mech Rm.	TEFC	5520	0.8	EM3218T	5	89.50%	150
Incentive through 10/11/2011 @ \$30/hp											2,475

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



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Project Name:	AHU VFD Controls
Site Name:	Glenwood Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
HVAC	Trane	TR1 6016	AHU-4A	230 Mech Rm.	TEFC	5520	0.8	EM2333T	15	92.40%	450
HVAC	Trane	TR1 6016	AHU-4B	230 Mech Rm.	TEFC	5520	0.8	EM2333T	15	92.40%	450
HVAC	Trane	TR1 6006	AHU-4C	214 Mech Rm.	TEFC	5520	0.8	EM3218T	5	89.50%	150
HVAC	Trane	TR1 6022	AHU-5A	214 Mech Rm.	TEFC	5520	0.8	EM2334T	20	93.00%	600
HVAC	Trane	TR1 6022	AHU-5B	214 Mech Rm.	TEFC	5520	0.8	EM2334T	20	93%	600
Incentive through 10/11/2011 @ \$30/hp											2,250

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.

Applicant Name:

Euclid City School District

Facility Name:

Glenwood Elementary School

Facility Type:

Education - K-12

Utility:

First Energy (Ohio)

Installation Date:

Project Name:

AHU VFD controls

Survey completed by (name):

Program Year 4

Pre-Installation Data (Equipment Survey of Existing Motors)

							Nameplate Data						Pre-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	10000	50	1,800	ODP	93.0%	No	1.000	1.000	30.1	22.3	1,610	48,430	44.5	96,860
1	P-1	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
2	P-2	CHWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
3	P-4	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
4	AHU-1	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,350	14.3	80,700
5	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,453	19.0	106,905
6	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	No	1.000	1.000	4.9	3.6	4,165	20,329	3.6	20,329
7	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,350	14.3	80,700
8	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
9	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,350	14.3	80,700
10	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
11	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,453	19.0	106,905
12																					
13																					
14																					
																				111.1	545,981

Post-Installation Data (Equipment Survey of Proposed Motors)

							Nameplate Data						Post-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	20000	50	1,800	ODP	94.5%	Yes	1.000	1.000	29.6	21.9	1,610	47,660	43.8	95,322
1	P-1	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	4,165	10,613	5.5	10,613
2	P-2	CHWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.300	0.770	9.7	5.5	4,165	12,106	5.5	12,106
3	P-4	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	4,165	10,613	5.5	10,613
4	AHU-1	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	11.9	23,243
5	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
6	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	Yes	0.288	0.832	4.9	3.0	4,165	5,855	3.0	5,855
7	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	11.9	23,243
8	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
9	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	11.9	23,243
10	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
11	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
12																					
13																					
14																					
																				91.1	178,493

Savings Data

Total Peak kW Reduction	20.0
Total Annual kWh Savings	367,488

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.

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		
1	High Efficiency Lighting	A high-efficiency lighting system was installed in the new Roosevelt Elementary School. 2 lamp and 3 lamp T8 fluorescent fixtures with high efficiency electronic ballasts were installed throughout the facility. Occupancy sensors were installed the offices and classrooms to turn off the lights when the areas are not occupied. 4-pin Biax CFLS were used in the conference rooms. 4 lamp T5HO fixtures were installed in the gym instead of the traditional 400 watt HID fixtures. The space-by-space method was used to calculate the wattage density of each space. A wattage density of 1.2 watts/sq. ft. was used as the baseline for the energy calculations. This facility is new and has only been in operation since August of 2012.	See the attached lighting calculator "Roosevelt Elem_P1_NonStandard_Lighting_Calculator.xls".	N/A	Standard 3 and 4 lamp T8 fixtures with instant start electronic ballasts. Classrooms would have bi-level switching without occupancy sensor controls. The conference rooms would use 50 watt incandescent PAR30 lamps. The standard fixtures in the gym would be 320 pulse start metal halide. The fixtures that were chosen in this facility use less energy while meeting the requirements for proper light levels and even illumination.
2	AHU VFD Controls	VFDs were installed in the air handler units (AHUs) throughout the facility to reduce energy use. The 5 AHUs supply conditioned air to variable air volume units in the classrooms and offices. Temperature, humidity and CO2 sensors were installed to allow the AHUs to properly condition the school, using less energy than a traditional HVAC system. VFDs were installed on all of the supply and exhaust fan motors. The speed of the supply air fans are varied based on the demand for conditioned air from each of the VAV units. VFDs on the exhaust fans vary the speed of the motors to pull in and expel only the amount of fresh air needed to reduce CO2 levels to acceptable building standards. VFDs were also installed on the chilled water pumps in order to conserve energy during times when the demand for cooling is reduced. A building automation system provides the control signals to the VFDs based on indoor and outdoor conditions. This facility is new and has only been in operation since August of 2012.	See the attached VFD energy savings calculations "Roosevelt Elem_P2_VFD Energy Savings Calcs.pdf".	N/A	HVAC pumps and fans with simple on/off relay controls. VFD controls were placed on pump motors and HVAC fans throughout the school building to vary the speed based on the heating, cooling and CO2 load placed on the system. The VFDs reduce the speed of the pump and fan motors based on indoor and outdoor conditions, which greatly reduces the energy used to properly condition the facility.

Docket No. -----
Site: 551 East 220 Street

Exhibit 2

Customer Legal Entity Name: Euclid Board of Education
Site Address: Roosevelt Elementary School
Principal Address: 551 East 220 Street

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (C) <i>Note 1</i>
2011	285,760	285,760	285,760
Average	285,760	285,760	285,760

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>
1	High Efficiency Lighting	11/30/2012	\$6,498,018	\$3,249,009	217,632	217,632	-	\$11,687	\$8,765
2	AHU VFD Controls	08/31/2012	\$2,125,909	\$1,062,955	367,061	367,061	-	\$6,600	\$4,950
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
	Total		\$8,623,927		584,693	584,693	0	\$18,287	\$13,715

Docket No. 
Site: 551 East 220 Street

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.

**Commitment
Payment
\$**

\$0

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	218	\$ 308	\$ 67,092	\$ 2,025	\$8,765	\$2,176	\$ 12,967	5.2
2	367	\$ 308	\$ 113,158	\$ 2,025	\$4,950	\$3,671	\$ 10,646	10.63
Total	585	\$ 308	180,249	4,050	\$13,715	\$5,847	23,612	7.6

Notes

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

Euclid Board of Education ~ Roosevelt Elementary School

Docket No. 

Site: 551 East 220 Street

[illegible]

[illegible]

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	217,632
Total Change in Connected Load	48.63

Annual Estimated Cost Savings	\$21,763.20
Annual Operating Hours	3,640

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$9,833.10
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
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)	\$1,775.00

Total Calculated Incentive	\$11,687.35
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	533
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	71
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)

27.48



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Thomas Jefferson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6016	AHU-1	142 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-2A	142 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-2B	142 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6006	AHU-2C	142 Mech Rm.	TEFC	4165	0.8	EM3218T	5	89.50%	150
VAV	Trane	TR1 6011	AHU-3A	154 Mech Rm.	TEFC	4165	0.8	EM3313T	10	92%	300
VAV	Trane	TR1 6011	AHU-3B	154 Mech Rm.	TEFC	4165	0.8	EM3313T	10	91.70%	300
Incentive through 10/11/2011 @ \$30/hp											2,100

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Thomas Jefferson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6006	AHU-3C	154 Mech Rm.	TEFC	4165	0.8	EM3218T	5	89.50%	150
VAV	Trane	TR1 6016	AHU-4A	150 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-4B	150 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6006	AHU-4C	150 Mech Rm.	TEFC	4165	0.8	EM3218T	5	89.50%	150
VAV	Trane	TR1 6022	AHU-5A	137 Mech Rm.	TEFC	4165	0.8	EM2334T	20	93%	600
VAV	Trane	TR1 6022	AHU-5B	137 Mech Rm.	TEFC	4165	0.8	EM2334T	20	93.00%	600
Incentive through 10/11/2011 @ \$30/hp											2,400

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Thomas Jefferson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6011	AHU-6A	137 Mech Rm.	TEFC	4165	0.8	EM3313T	10	91.70%	300
VAV	Trane	TR1 6011	AHU-6B	137 Mech Rm.	TEFC	4165	0.8	EM3313T	10	91.70%	300
VAV	Trane	TR1 6006	AHU-6C	137 Mech Rm.	TEFC	4165	0.8	EM3218T	5	89.50%	150
HVAC	Eaton	SVX015A1	P-1	227 Mech Rm.	TEFC	1444	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-2	227 Mech Rm.	TEFC	1444	0.8	T57033	15	92%	450
HVAC	Eaton	SVX015A1	P-3	227 Mech Rm.	TEFC	1444	0.8	T57033	15	92.40%	450
Incentive through 10/11/2011 @ \$30/hp											2,100

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.

Applicant Name:	Euclid City School District
Facility Name:	Roosevelt Elementary School
Facility Type:	Education - K-12
Utility:	First Energy (Ohio)
Installation Date:	

Project Name:	AHU VFD controls
Survey completed by (name):	
	Program Year 4

Pre-Installation Data (Equipment Survey of Existing Motors)

							Nameplate Data						Pre-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	10000	50	1,800	ODP	93.0%	No	1.000	1.000	30.1	22.3	1,610	48,430	44.5	96,860
1	AHU-1	HVACF	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,352	7.2	40,352
2	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,350	14.3	80,700
3	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
4	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM3313T	10	1,800	TEFC	91.7%	No	1.000	1.000	6.5	4.8	4,165	27,105	9.6	54,211
5	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
6	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	93.0%	No	1.000	1.000	9.6	7.1	4,165	40,090	14.2	80,179
7	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
8	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,453	19.0	106,905
9	AHU-6	HVACF	2	0.80	Single	0.74	Baldor	EM3313T	10	1,800	TEFC	91.7%	No	1.000	1.000	6.5	4.8	4,165	27,105	9.6	54,211
10	AHU-6	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
11	P-1	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
12	P-2	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
13	P-3	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
14																					
																				105.4	514,070

Post-Installation Data (Equipment Survey of Proposed Motors)

							Nameplate Data						Post-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	20000	50	1,800	ODP	94.5%	Yes	1.000	1.000	29.6	21.9	1,610	47,660	43.8	95,322
1	AHU-1	HVACF	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	6.0	11,621
2	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	11.9	23,243
3	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
4	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM3313T	10	1,800	TEFC	91.7%	Yes	0.288	0.832	6.5	4.0	4,165	7,807	8.0	15,613
5	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
6	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	93.0%	Yes	0.288	0.832	9.6	5.9	4,165	11,546	11.9	23,093
7	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
8	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
9	AHU-6	HVACF	2	0.80	Single	0.74	Baldor	EM3313T	10	1,800	TEFC	91.7%	Yes	0.288	0.832	6.5	4.0	4,165	7,807	8.0	15,613
10	AHU-6	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
11	P-1	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
12	P-2	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
13	P-3	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
14																					
																				86.4	147,009

Savings Data

Total Peak kW Reduction	19.0
Total Annual kWh Savings	367,061

Customer Legal Entity Name: Euclid Board of Education

Site Address: Thomas Jefferson Elementary School
Principal Address: 1455 East 260th Street

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.

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		
1	High Efficiency Lighting	A high-efficiency lighting system was installed in the new Thomas Jefferson Elementary School. 2 lamp and 3 lamp T8 fluorescent fixtures with high efficiency electronic ballasts were installed throughout the facility. Occupancy sensors were installed the offices and classrooms to turn off the lights when the areas are not occupied. 4-pin Biax CFLS were used in the conference rooms. 4 lamp T5HO fixtures were installed in the gym instead of the traditional 400 watt HID fixtures. The space-by-space method was used to calculate the wattage density of each space. A wattage density of 1.2 watts/sq. ft. was used as the baseline for the energy calculations.	See the attached lighting calculator "TJ Elem_P1_NonStandard_Lighting_Calculator.xls".	N/A	Standard 3 and 4 lamp T8 fixtures with instant start electronic ballasts. Classrooms would have bi-level switching without occupancy sensor controls. The conference rooms would use 50 watt incandescent PAR30 lamps. The standard fixtures in the gym would be 320 pulse start metal halide. The fixtures that were chosen in this facility use less energy while meeting the requirements for proper light levels and even illumination.
2	AHU VFD Controls	VFDs were installed in the air handler units (AHUs) throughout the facility to reduce energy use. The 5 AHUs supply conditioned air to variable air volume units in the classrooms and offices. Temperature, humidity and CO2 sensors were installed to allow the AHUs to properly condition the school, using less energy than a traditional HVAC system. VFDs were installed on all of the supply and exhaust fan motors. The speed of the supply air fans are varied based on the demand for conditioned air from each of the VAV units. VFDs on the exhaust fans vary the speed of the motors to expel only the amount of conditioned air needed to reduce CO2 levels to acceptable building standards. VFDs were also installed on the chilled water pumps in order to conserve energy during times when the demand for cooling is reduced. A building automation system provides the control signals to the VFDs based on indoor and outdoor conditions.	See the attached VFD energy savings calculations "TJ Elem_P2_VFD Energy Savings Calcs.pdf".	N/A	HVAC pumps and fans with simple on/off relay controls. VFD controls were placed on pump motors and HVAC fans throughout the school building to vary the speed based on the heating, cooling and CO2 load placed on the system. The VFDs reduce the speed of the pump and fan motors based on indoor and outdoor conditions, which greatly reduces the energy used to properly condition the facility.

Docket No. 
Site: 1455 East 260th Street

Exhibit 2

Customer Legal Entity Name: Euclid Board of Education

Site Address: Thomas Jefferson Elementary School

Principal Address: 1455 East 260th Street

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (C) <i>Note 1</i>
2011	1,416,960	1,416,960	1,416,960
Average	1,416,960	1,416,960	1,416,960

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>
1	High Efficiency Lighting	11/30/2012	\$1,450,822	\$725,411	155,108	155,108	-	\$8,660	\$6,495
2	AHU VFD Controls	10/31/2012	\$2,120,019	\$1,060,010	384,321	384,321	-	\$6,900	\$5,175
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
		Total	\$3,570,841		539,429	539,429	0	\$15,560	\$11,670

Docket No. 12-2017

Site: 1455 East 260th Street

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.

**Commitment
Payment
\$**

\$0

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	155	\$ 308	\$ 47,817	\$ 2,025	\$6,495	\$1,551	\$ 10,071	4.7
2	384	\$ 308	\$ 118,478	\$ 2,025	\$5,175	\$3,843	\$ 11,043	10.73
Total	539	\$ 308	166,295	4,050	\$11,670	\$5,394	21,114	7.9

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)

Euclid Board of Education ~ Thomas Jefferson Elementary School

Docket No. 

Site: 1455 East 260th Street

Lighting Inventory Form

Applicant Name:	Field School
Facility Name:	Thomas Jefferson Elementary
Date:	11/13/2012
Lighting Zone (see table only):	Lighting Zone 2

Instructions: Please use one line for each fixture type in a room or area.
For existing or proposed control, choose CCC for Occupancy Sensor, DAYLIG for photosensor, or NONE for none. Controls must save energy to 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]

2009				450	33,87	33,76		33,46	133,691	21,817
						33,75		33,46	133,691	21,817

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	155,108
Total Change in Connected Load	32.79

Annual Estimated Cost Savings	\$15,510.80
Annual Operating Hours	3,640

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$6,684.55
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
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)	\$1,975.00

Total Calculated Incentive	\$8,659.55
----------------------------	------------

Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	456
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	79
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)

18.46



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Thomas Jefferson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6016	AHU-1A	174 Mech Rm	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-2A	174 Mech Rm	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-2B	174 Mech Rm	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6006	AHU-2C	174 Mech Rm	TEFC	4165	0.8	EM3218T	5	89.50%	150
VAV	Trane	TR1 6022	AHU-3A	112 Mech Rm	TEFC	4165	0.8	EM2334T	20	93%	600
VAV	Trane	TR1 6022	AHU-3B	112 Mech Rm	TEFC	4165	0.8	EM2334T	20	93.00%	600
Incentive through 10/11/2011 @ \$30/hp											2,700

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Thomas Jefferson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6008	AHU-3C	174 Mech Rm	TEFC	4165	0.8	EM3710T	7.5	91.70%	225
VAV	Trane	TR1 6022	AHU-4A	174 Mech Rm	TEFC	4165	0.8	EM2334T	20	93.00%	600
VAV	Trane	TR1 6022	AHU-4B	174 Mech Rm	TEFC	4165	0.8	EM2334T	20	93.00%	600
VAV	Trane	TR1 6008	AHU-4C	174 Mech Rm	TEFC	4165	0.8	EM3710T	7.5	91.70%	225
VAV	Trane	TR1 6022	AHU-5A	212 Mech Rm	TEFC	4165	0.8	EM2334T	20	93%	600
VAV	Trane	TR1 6022	AHU-5B	212 Mech Rm	TEFC	4165	0.8	EM2334T	20	93.00%	600
Incentive through 10/11/2011 @ \$30/hp											2,850

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Thomas Jefferson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
HVAC	Eaton	SVX015A1	P-1	174 Mech Rm	TEFC	4165	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-2	174 Mech Rm	TEFC	4165	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-4	174 Mech Rm	TEFC	4165	0.8	T570333	15	92.40%	450
Incentive through 10/11/2011 @ \$30/hp											1,350

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.

Applicant Name:

Euclid City School District

Facility Name:

Thomas Jefferson Elementary School

Facility Type:

Education - K-12

Utility:

First Energy (Ohio)

Installation Date:

Project Name:

AHU VFD controls

Survey completed by (name):

Program Year 4

Pre-Installation Data (Equipment Survey of Existing Motors)

							Nameplate Data						Pre-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	10000	50	1,800	ODP	93.0%	No	1.000	1.000	30.1	22.3	1,610	48,430	44.5	96,860
1	AHU-1	HVACF	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,352	7.2	40,352
2	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,352	14.3	80,704
3	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
4	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,455	19.0	106,911
5	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	No	1.000	1.000	4.9	3.6	4,165	20,330	3.6	20,330
6	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,455	19.0	106,911
7	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	No	1.000	1.000	4.9	3.6	4,165	20,330	3.6	20,330
8	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,455	19.0	106,911
9	P-1	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
10	P-2	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
11	P-4	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
12																					
																				109.7	538,303

Post-Installation Data (Equipment Survey of Proposed Motors)

							Nameplate Data						Post-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	20000	50	1,800	ODP	94.5%	Yes	1.000	1.000	29.6	21.9	1,610	47,660	43.8	95,322
1	AHU-1	HVACF	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	6.0	11,621
2	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	11.9	23,243
3	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
4	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
5	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	Yes	0.288	0.832	4.9	3.0	4,165	5,855	3.0	5,855
6	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
7	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	Yes	0.288	0.832	4.9	3.0	4,165	5,855	3.0	5,855
8	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
9	P-1	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
10	P-2	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
11	P-4	CWP	1	0.80	Single	0.74	Century	T57033	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
12																					
																				90.0	153,982

Savings Data	
Total Peak kW Reduction	19.7
Total Annual kWh Savings	384,321

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	High Efficiency Lighting	A high-efficiency lighting system was installed in the new Upson Elementary School. 2 lamp and 3 lamp T8 fluorescent fixtures with high efficiency electronic ballasts were installed throughout the facility. Occupancy sensors were installed the offices and classrooms to turn off the lights when the areas are not occupied. 4-pin Biax CFLS were used in the conference rooms. 4 lamp T5HO fixtures were installed in the gym instead of the traditional 400 watt HID fixtures. The space-by-space method was used to calculate the wattage density of each space. A wattage density of 1.2 watts/sq. ft. was used as the baseline for the energy calculations.	See the attached lighting calculator "Upson Elem_P1_NonStandard_Lighting_Calculator.xls".	N/A	Standard 3 and 4 lamp T8 fixtures with instant start electronic ballasts. Classrooms would have bi-level switching without occupancy sensor controls. The conference rooms would use 50 watt incandescent PAR30 lamps. The standard fixtures in the gym would be 320 pulse start metal halide. The fixtures that were chosen in this facility use less energy while meeting the requirements for proper light levels and even illumination.
2	AHU VFD Controls	VFDs were installed in the air handler units (AHUs) throughout the facility to reduce energy use. The 5 AHUs supply conditioned air to variable air volume units in the classrooms and offices. Temperature, humidity and CO2 sensors were installed to allow the AHUs to properly condition the school, using less energy than a traditional HVAC system. VFDs were installed on all of the supply and exhaust fan motors. The speed of the supply air fans are varied based on the demand for conditioned air from each of the VAV units. VFDs on the exhaust fans vary the speed of the motors to pull in and expel only the amount of fresh air needed to reduce CO2 levels to acceptable building standards. VFDs were also installed on the chilled water pumps in order to conserve energy during times when the demand for cooling is reduced. A building automation system provides the control signals to the VFDs based on indoor and outdoor conditions.	See the attached VFD energy savings calculations "Upson Elem_P2_VFD Energy Savings Calcs.pdf".	N/A	HVAC pumps and fans with simple on/off relay controls. VFD controls were placed on pump motors and HVAC fans throughout the school building to vary the speed based on the heating, cooling and CO2 load placed on the system. The VFDs reduce the speed of the pump and fan motors based on indoor and outdoor conditions, which greatly reduces the energy used to properly condition the facility.

Docket No. 
Site: 490 East 260th Street

Exhibit 2

Customer Legal Entity Name: Euclid Board of Education
 Site Address: Upson Elementary School
 Principal Address: 490 East 260th Street

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

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>
1	High Efficiency Lighting	11/30/2012	\$1,467,724	\$733,862	154,737	154,737	-	\$8,586	\$6,440
2	AHU VFD Controls	10/31/2012	\$2,052,691	\$1,026,346	384,304	384,304	-	\$6,525	\$4,894
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
					-	-	-		
Total			\$3,520,415		539,041	539,041	0	\$15,111	\$11,333

Docket No. 
 Site: 490 East 260th Street

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.

**Commitment
Payment
\$**

\$0

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	155	\$ 308	\$ 47,702	\$ 2,025	\$6,440	\$1,547	\$ 10,012	4.8
2	384	\$ 308	\$ 118,473	\$ 2,025	\$4,894	\$3,843	\$ 10,762	11.01
Total	539	\$ 308	166,176	4,050	\$11,333	\$5,390	20,774	8.0

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)

Euclid Board of Education ~ Upson Elementary School

Docket No. 

Site: 490 East 260th Street

Lighting Inventory Form

Applicant Name:	Buckel School
Facility Name:	Upper Elementary School
Date:	11/12/2012
Lighting Zone (interior only):	Lighting Zone 3

Instructions: Please use one line for each fixture type in a room or area.

[illegible]

Version 1.0

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	154,737
Total Change in Connected Load	33.17

Annual Estimated Cost Savings	\$15,473.70
Annual Operating Hours	3,640

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$6,761.10
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
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)	\$1,825.00

Total Calculated Incentive	\$8,586.10
----------------------------	------------

Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	518
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	73
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)

18.67



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Upson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6016	AHU-1	169 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-2A	169 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-2B	169 Mech Rm.	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6006	AHU-2C	169 Mech Rm.	TEFC	4165	0.8	EM3218T	5	89.50%	150
VAV	Trane	TR1 6022	AHU-3A	133 Mech Rm.	TEFC	4165	0.8	EM2334T	20	93%	600
VAV	Trane	TR1 6022	AHU-3B	133 Mech Rm.	TEFC	4165	0.8	EM2334T	20	93.00%	600
Incentive through 10/11/2011 @ \$30/hp											2,700

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



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Project Name:	AHU VFD Controls
Site Name:	Upson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
VAV	Trane	TR1 6008	AHU-3C	133 Mech Rm	TEFC	4165	0.8	EM3710T	7.5	91.70%	225
VAV	Trane	TR1 6016	AHU-4A	206 Mech Rm	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6016	AHU-4B	206 Mech Rm	TEFC	4165	0.8	EM2333T	15	92.40%	450
VAV	Trane	TR1 6006	AHU-4C	206 Mech Rm	TEFC	4165	0.8	EM3218T	5	89.50%	150
VAV	Trane	TR1 6022	AHU-5A	206 Mech Rm	TEFC	4165	0.8	EM2334T	20	93%	600
VAV	Trane	TR1 6022	AHU-5B	206 Mech Rm	TEFC	4165	0.8	EM2334T	20	93.00%	600
Incentive through 10/11/2011 @ \$30/hp											2,475

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.



Ohio Edison • The Illuminating Company • Toledo Edison

Project Name:	AHU VFD Controls
Site Name:	Upson Elementary School
Completed by (Name):	
Date completed:	

Variable Frequency Drive Rebate Form

VFD and Controlled Motor Nameplate DATA											Total Motor Incentive ¹ \$
Motor Application	VFD Manufacturer	VFD Model Number	Unique Motor ID(s)	Motor Location	Enclosure type: TEFC or ODP	Annual Hours of Operation ²	Load Factor (LF) ³	Motor Model Number	Motor HP	Motor Nominal Efficiency	
HVAC	Eaton	SVX015A1	P-1	212 Mech Rm.	TEFC	4165	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-2	212 Mech Rm.	TEFC	4165	0.8	T57033	15	92.40%	450
HVAC	Eaton	SVX015A1	P-3	212 Mech Rm.	TEFC	4165	0.8	T57033	15	92.40%	450
Incentive through 10/11/2011 @ \$30/hp											1,350

(1) VFD incentives are calculated at a flat rate of \$30 per horsepower controlled, up to a maximum of 500 hp controlled per VFD.

When a single VFD is used to control two motors in a lead/lag (standby, redundant) configuration, use only the horsepower rating of one motor to figure controlled horsepower. For instance, if a single VFD controls two 30hp motors with only one operating at a time, the incentive calculation should be based on 30 hp: 30hp x \$30/hp = \$900.

(2) For VAV fan motors, enter 2790 annual hours of operation. For HVAC pump motors, enter 5520 annual hours of operation. For all other motor usage, please estimate your annual hours of operation and attach an explanation of how you determined this value.

(3) For all motor and VFD applications, use the Load Factor (LF) default value of 0.80, unless data is available to support the use of a motor-specific LF other than 0.80. Please attach an explanation, including your analysis and/or data used, to support motor-specific LF value.

Applicant Name:	Euclid City School District
Facility Name:	Thomas Jefferson Elementary School
Facility Type:	Education - K-12
Utility:	First Energy (Ohio)
Installation Date:	

Project Name:	AHU VFD Controls
Survey completed by (name):	
	Program Year 4

Pre-Installation Data (Equipment Survey of Existing Motors)

							Nameplate Data						Pre-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	10000	50	1,800	ODP	93.0%	No	1.000	1.000	30.1	22.3	1,610	48,430	44.5	96,860
1	AHU-1	HVACF	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,352	7.2	40,352
2	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	4,165	40,350	14.3	80,700
3	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	No	1.000	1.000	3.3	2.5	4,165	13,886	2.5	13,886
4	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,453	19.0	106,905
5	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	No	1.000	1.000	4.9	3.6	4,165	20,329	3.6	20,329
6	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,453	19.0	106,905
7	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	No	1.000	1.000	4.9	3.6	4,165	20,329	3.6	20,329
8	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	No	1.000	1.000	12.8	9.5	4,165	53,453	19.0	106,905
9	P-1	CWP	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
10	P-2	CWP	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
11	P-3	CWP	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	No	1.000	1.000	9.7	7.2	1,444	13,990	7.2	13,990
12																					
																				109.7	538,281

Post-Installation Data (Equipment Survey of Proposed Motors)

							Nameplate Data						Post-Installation Energy Consumption								
Line Item	Unique Motor I.D.(s)	Motor Function	Number of Identical Units	Load Factor (LF)	Motor Configuration	Coincidence Factor (CF)	Manufacturer	Model Number	Motor Horsepower	Synchronous Speed (RPM)	Enclosure Type	Nominal Efficiency	VFD			Total per Unit				Total all Units	
													VFD on Motor	ESF	DSF	Full Load kW	Peak kW	Operating Hours	Annual kWh	Peak kW	Annual kWh
ex.	CWP-1	CWP	2	0.75	Single	0.74	Acme	20000	50	1,800	ODP	94.5%	Yes	1.000	1.000	29.6	21.9	1,610	47,660	43.8	95,322
1	AHU-1	HVACF	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	6.0	11,621
2	AHU-2	HVACF	2	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.288	0.832	9.7	6.0	4,165	11,621	11.9	23,242
3	AHU-2	HVACF	1	0.80	Single	0.74	Baldor	EM3218T	5	1,800	TEFC	89.5%	Yes	0.288	0.832	3.3	2.1	4,165	3,999	2.1	3,999
4	AHU-3	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,395	15.8	30,790
5	AHU-3	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	Yes	0.288	0.832	4.9	3.0	4,165	5,855	3.0	5,855
6	AHU-4	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,394	15.8	30,789
7	AHU-4	HVACF	1	0.80	Single	0.74	Baldor	EM3710T	7.5	1,800	TEFC	91.7%	Yes	0.288	0.832	4.9	3.0	4,165	5,855	3.0	5,855
8	AHU-5	HVACF	2	0.80	Single	0.74	Baldor	EM2334T	20	1,800	TEFC	93.0%	Yes	0.288	0.832	12.8	7.9	4,165	15,394	15.8	30,789
9	P-1	CWP	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
10	P-2	CWP	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
11	P-3	CWP	1	0.80	Single	0.74	Baldor	EM2333T	15	1,800	TEFC	92.4%	Yes	0.263	0.771	9.7	5.5	1,444	3,679	5.5	3,679
12																					
																				90.0	153,978

Savings Data	
Total Peak kW Reduction	19.7
Total Annual kWh Savings	384,304

Mercantile Customer Project Commitment Agreement
Cash Rebate Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT ("Agreement") is made and entered into by and between The Cleveland Electric Illuminating Company, its successors and assigns (hereinafter called the "Company") and Euclid Board of Education, Taxpayer ID No. 34-6000963 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/or kW reductions resulting from said projects for purposes of complying with the Statute. By committing the Customer Energy Project(s), Customer further acknowledges and agrees that the Company shall take ownership of the energy efficiency capacity rights associated with said Project(s) and 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
 - 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:

Euclid Board of Education
651 East 222 Street
Euclid, Ohio 44123
Attn: Glenn Hummell
Telephone: 216-797-2913
Fax:
Email: ghummell@euclid.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.

The Cleveland Electric Illuminating Company__

(Company)

By: John C. Dargatzis

Title: N.P. Of Energy Efficiency

Date: 1-4-13

Euclid Board of Education__

(Customer)

By: John J. Dargatzis

Title: Superintendent of Schools

Date: 1/4/13

Affidavit of Euclid Board of Education – Exhibit _A_

STATE OF OHIO)
) SS:
COUNTY OF Cuyahoga)

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

1. I am the _____ of _____ (“Customer”) As part of my duties, I oversee energy related matters at the Company.
2. The Customer has agreed to commit certain energy efficiency projects to The Cleveland Electric Illuminating Company (“Utility”), which are the subject of the agreement to which this affidavit is attached (“Project(s)").
3. In exchange for making such a commitment, the Utility 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 Utility.
4. All information related to said Project(s) that has been submitted to the Utility is true and accurate to the best of my knowledge.

FURTHER AFFIANT SAYETH NAUGHT.

(Signature)

Sworn to before me and subscribed in my presence this _____ day of _____, 20____.

(Signature)
Notary



LORRIE L. BITNER
Notary Public, State of Ohio
My Commission Expires October 16, 2015
Recorded in Lake County
Recorded Vol 102, Page 429

This foregoing document was electronically filed with the Public Utilities

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in

Case No(s). 13-0071-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of The Cleveland Electric Illuminating Company and Euclid Board of Education electronically filed by Ms. Jennifer M. Sybyl on behalf of The Cleveland Electric Illuminating Company and Euclid Board of Education