

Legal Department

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

March 19, 2013

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

Re: In the Matter of Guardian Lima, LLC and Ohio Power Company for Approval of a Special Arrangement Agreement with a Mercantile Customer

Case No. 13-0613-EL-EEC

Dear Chairman Snitchler,

Attached please find the Joint Application of Ohio Power Company (OPCo) and mercantile customer Guardian Lima, LLC for approval of a Special Arrangement of the commitment of energy efficiency/peak demand reduction (EE/PDR) resources toward compliance with the statutory benchmarks for 2013.

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

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

Cordially,

<u>/s/ Yazen Alami</u> Yazen Alami

Attachments

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



Case No.: 13-0613-**EL-EEC**

Mercantile Customer: GUARDIAN LIMA LLC

Electric Utility: Ohio Power

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

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

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 <u>ee-pdr@puc.state.oh.us</u>.

Section 1: Company Information

Name: GUARDIAN LIMA LLC

Principal address: 2485 Houx Parkway, Lima, Oh 45804

Address of facility for which this energy efficiency program applies: 1451 E Hanthorn Rd, Lima, Oh 45804-3935

Name and telephone number for responses to questions:

Dean Reder, Guardian Lima Llc, (507) 234-5028

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

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

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

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

Section 2: Application Information

- A) The customer is filing this application (choose which applies):
 - Individually, on our own.
 - Jointly with our electric utility.
- B) Our electric utility is: Ohio Power Company

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

- C) The customer is offering to commit (choose which applies):
 - Energy savings from our energy efficiency program. (Complete Sections 3, 5, 6, and 7.)
 - Capacity savings from the customer's response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)
 - Both the energy savings and the demand reduction from the customer's energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

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

Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)).

- Installation of new equipment to replace equipment that needed to be replaced. The customer installed new equipment on the following date(s):
- Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s): 12/31/2010
 - Behavioral or operational improvement.
- B) Energy savings achieved/to be achieved by your energy efficiency program:
 - If you checked the box indicating that your project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) – (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

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

Annual savings: kWh

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

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

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

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

Annual savings: 1,210,264 kWh

See <u>Confidential and Proprietary Attachment 5 – Self Direct Program</u> <u>Project Calculation</u> for annual energy savings calculations and <u>Attachment</u> <u>6 – Supporting Documentation for custom measures</u> work papers that provide all methodologies, protocols, and practices used in this application for custom measures, as needed.

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

The less efficient new equipment is the minimum required by Ohio State code or Federal Standard whichever is more stringent. For those measures where no code applies the baseline equipment is assumed to be the least efficient equipment available in the marketplace or standard practice, whichever results in the most conservative annual savings. Any information available describing the less efficient new equipment option is provided in <u>Attachment 6</u> for the methodologies, protocols, and practices used in this application for custom measures.

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):
 - Choose one or more of the following that applies:
 - The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.
 - The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.
- B) On what date did the customer initiate its demand reduction program?

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

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

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

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

163.5 kW

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

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

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

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

A) The customer is applying for:



OR

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

OR

Commitment payment

- B) The value of the option that the customer is seeking is:
 - Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):
 - A cash rebate of \$ 42,630.00. (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.)

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

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

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

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

OR

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

Section 6: Cost Effectiveness

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

- Total Resource Cost (TRC) Test. The calculated TRC value is: _____ (Continue to Subsection 1, then skip Subsection 2)
- Utility Cost Test (UCT) . The calculated UCT value is: 8.4 (Skip to Subsection 2.)

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

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

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The utility's incremental measure costs were _____.

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

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

Our avoided supply costs were \$ 417,613.37

The utility's program costs were \$7,261.59

The utility's incentive costs/rebate costs were \$ 42,630.00.

Section 7: Additional Information

Please attach the following supporting documentation to this application:

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

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

- A copy of the formal declaration or agreement that commits your program to the electric utility, including:
 - 1) any confidentiality requirements associated with the agreement;

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

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

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

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

None required because the resources committed are permanent installations that reduce demand through increased efficiency during the Company's peak summer demand period generally defined as May through September and do not require specific coordination and communication to provide demand reduction capabilities to the Company. 4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,

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

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

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

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

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

practices used in this application for custom measures, as needed.



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

Case No.: 13-0613-EL-EEC

State of Phio :

TWO CHING YONG, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

KEMA Services, Inc agent of Ohio Power

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

Signature of Affiant & Title

Sworn and subscribed before me this 13th day of MGM, 2013 Month/Year Signature of official administering oath Angie Down, Outveach Print Name and Title

My commission expires on 1-13-2010



Angie Doan Notary Public, State of Ohio My Commission Expires 01-13-2016

NO

YES



Attachment 1 Self Direct Project Overview & Commitment Page 1 of 1

Self Direct Project Overview & Commitment

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

Customer Name	GUARDIAN LIMA LLC AEP-12-07669 1451 E HANTHORN RD, LIMA, OH 45804-3935 2485 Houx Parkway, Lima, OH 45804 8/14/2012 12/31/2010				
Project Number	AEP-12-07669				
Customer Premise Address	1451 E HANTHORN RD, LIMA, OH 4580	4-3935			
Customer Mailing Address	2485 Houx Parkway, Lima, OH 45804				
Date Received	8/14/2012				
Project Installation Date	12/31/2010				
Annual kWh Reduction	1,210,264				
Total Project Cost	\$113,680.00				
Unadjusted Energy Efficiency Credit (EEC) Calculation	\$56,840.00				
Simple Payback (yrs)	1.2				
Utility Cost Test (UCT)	8.4				
	Please Choose	e One Option Below and Initial			
Option 1 - Self Direct EEC: 75%	\$42,630.00	Initial: DR			
Option 2 - EE/PDR Rider Exemption	N/A Months (After PUCO Approval)	Initial: _N/A			

Note: This is a one time selection. By selecting Option 1, the customer will receive payment in the amount stated above. Selection of Option 2: *EE/PDR* rider exemption, will result in the customer not being eligible to participate in any other energy efficiency programs offered by AEP Ohio during the period of exemption. In addition, the term of Option 2: *EE/PDR* rider exemption is subject to ongoing review for compliance and could be changed by the PUCO.

If Option 1 has been selected, will the Energy Efficiency Funds selected help you move forward with other energy efficiency projects?

Project Overview:

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

Install VFD on (2) 250-HP Cooling Towern Fan motors

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

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

Ohio	Power	Company

By:	Ja J. Will	
Title:	Manager	
Date:	2/11/2013	

GUARDIAN L	IMA LLC	\bigcirc
By:	and a	
Title: Chi	ef Financial	Officer
Date: 2/	10/13	

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 1 of 9

AEP OHIO A unit of American Electric Power Self-Direct Program **Project Application**

RETROFIT AND NEW CONSTRUCTION

Step 1: Check Project, Equipment, and Customer Eligibility

- Project must be a facility improvement that results in a permanent reduction in electrical energy usage (kWh).
- Measures applying for credits must have a minimum operating hours of 2,245 hours per year. Projects with annual energy (kWh) savings greater than the facility's annual energy (kWh) consumption will not be eligible.
- All installed equipment must meet or exceed the specifications given in the application and be installed in facilities served by AEP Ohio: Customer must have a valid AEP Ohio account number on an eligible AEP Ohio non-residential rate (see terms and conditions for list of eligible rates eligibility requirements).

Step 2: Submit Application

Fill out the Customer Information form and the Worksheet for the measures that you installed. You may submit the application via mail, fax, or e-mail.

> Submit your application to: Email: gridsmartohio@kema.com

AEP Ohio Business Incentives for Energy Efficiency 2740 Airport Drive Suite 160 Columbus, OH 43219 Call: (877) 607-0739 Fax: (877) 607-0740

Visit our web site at aridsmartohio.com Submit a completed application prior to November 16, 2012 for any projects completed on or after January 1, 2009. Any applications received after the dealines may not be submitted to the PUCO by December 31st, 2012 and could jeopardize approval of any credit. Complete the checklist page and attach the documentation listed: customer information page, a signed Final Payment Agreement page, measure worksheet, scope of work (type, quantity, and wattage of old and new equipment), dated and itemized invoices for the purchase and installation of all equipment installed and specification sheets for all equipment installed showing that it meets the program specifications.

Step 3: Project Review

- The program team will review your Application. For some projects, an inspection will be part of the review, and you will be contacted to schedule it.
- After approval by AEP Ohio, the customer will be sent an Overview and Commitment form to sign for all selfdirect projects. After the Overview and Commitment form is returned the project will be submitted to the Public Utilities Commission of Ohio (PUCO) for consideration. The PUCO will assign case number and review the project details that were prepared by AEP Ohio. The PUCO may request additional information, approve or reject the energy efficiency credits.

Step 4: Receive Energy Efficiency Credits

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

If you are viewing this document in Microsoft Excel, please note that each section of the application is accessible through the tabs at the bottom of the Excel window. Highlighted cells are for inputting information.

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 2 of 9

AEP OHIO®

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Self-Direct Program Project Application

APPLICATION CHECKLIST

	APPLICATION
	Required Attachments Customer/Contractor Information (Completed and Signed)
	Completed Forms for Energy Efficiency Credits Requested AND Signed Final Payment Agreement Page
	Itemized Invoices Equipment Specifications Scope of Work W-9 (LLC, Individual, Partnership, Property Management Companies)
	Worksheets Lighting HVAC Refrigeration Motors and VFD Custom
	Application Date:
	Completion Date:
	Project Cost:
*Inco	mplete applications will delay processing and energy efficiency credits.
Please	e complete and submit forms for above checked boxes.

Please fill out if this is a revised submittal

ORIGINAL SUBMITTAL DATE:

APPLICATION NUMBER (IF KNOWN):

AEP Ohio Business Incentives Program for Energy Efficiency 2740 Airport Drive Suite 160 Columbus, OH 43219

Phone: (877) 607-0739 Fax: (877) 607-0740 gridsmartohio@kema.com www.gridsmartohio.com

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 3 of 9

AEP OHIO[®] A unit of American Electric Power Self-Direct Program Project Application

TERMS AND CONDITIONS

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

Please note that funds are limited and subject to availability.

All applications are subject to review and approval by AEP Ohio, its contractor(s)/agent(s), and the Public Utility Commission of Ohio (PUCO) prior to any EEC payments or exemptions from the EE/PDR rider in this program. Funds are limited and subject to availability.

Program Effective Dates

AEP Ohio Business Incentives for Energy Efficiency program EEC are offered until approved funds are exhausted or November 16th of each program year, whichever comes first. The effective dates of the current program year and application submittal requirements are as follows:

- Self-direct projects are projects completed since 1/1/2009. Self direct projects are eligible to apply for EEC with
 this application. Future projects that are not yet completed should apply on the Prescriptive/Custom
 application.
- All 2012 AEP Ohio Business Incentives for Energy Efficiency program Applications should be received no later than November 16, 2012. Any applications received after the deadlines may not be submitted to the PUCO by December 31st, 2012 and could jeopardize approval of any incentive. AEP Ohio reserves the right to extend or shorten this timeline.
- Subsequent program year budgets and plans will be made available towards the end of the existing program year. AEP Ohio currently has filed with the PUCO to offer this program through the 2014 program year.

Program and Project Eligibility

The Self-Direct Program applies to customer facilities served by AEP Ohio's retail electric rates who meet the minimum energy usage requirements of 700,000 kWh per year or who are part of a national account involving multiple facilities in one or more states.

The AEP Ohio Business Incentives for Energy Efficiency program offers both prescriptive credits for some of the more common energy efficiency measures and custom credits for those eligible improvements not included on the list of prescriptive measures. Program credits are available under the AEP Ohio Business Incentives for Energy Efficiency program to include non-residential accounts served on AEP Ohio's regulated retail rates. Qualifying projects must be installed in a facility in AEP Ohio's electric service territory in Ohio. These credits are available to all non-residential customers who pay into the Energy Efficiency and Peak Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires, regardless which retail electric supplier the customer has chosen to purchase power. A customer may neither apply for nor receive incentives for the same product, equipment or service from more than one utility.

Custom projects must involve measures, which result in a reduction in electric energy usage due to an improvement in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a custom credit. The project simple payback prior to the incentive payment generally should fall between 1 to 7 years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive. Incentives are calculated based on first-year energy savings and peak demand reduction. Peak demand reduction is defined as the reduction in average load over the Performance Hours by the replacement of existing electrical equipment with more efficient electrical equipment. Peak Performance Hours is defined as the time between June 1st and August 31st on weekday, non-holidays, between the hours 3:00 PM and 6:00 PM Eastern Time.

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

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 4 of 9

LEP OHIO[®] A unit of American Electric Power Self-Direct Program Project Application

TERMS AND CONDITIONS

Project requirements under the AEP Ohio Business Incentives for Energy Efficiency program include the following:

- Projects must involve a new facility improvement that results in a permanent reduction in electrical energy usage (kWh).
- Projects that are NOT eligible for a credit include the following:
 - Fuel switching (e.g. electric to gas or gas to electric)
 - Changes in operational and/or maintenance practices or simple control modifications not involving capital costs
 - Removal or termination of existing processes, facilities, and/or operations.
 - On-site electricity generation
 - Projects involving gas-driven equipment in place of or to replace electric equipment (such as a chiller)
 - Projects focused primarily on power factor improvement
 - Projects that involve peak-shifting (and not kWh savings)
 - Renewables (Please visit www.gridsmartohio.com for Renewables Program)
 - Are required by state or federal law, building or other codes, or are standard industry practice
 - Are easily reverted/removed or are installed entirely for reasons other than improving energy efficiency
 - Include other conditions to be determined by AEP Ohio
 - Renewables (Please visit www.gridsmartohio.com for Renewables Program)
- Any measures installed at a facility must produce verifiable and persistent energy reduction and must be sustainable and provide 100% of the energy benefits as stated in the Application for a period of at least five (5) years or for the life of the product, whichever is less. If the Customer ceases to be a delivery service customer of AEP Ohio or removes the equipment or systems at any time during the 5-year period or the life of the product, the Customer may be required to return a prorated amount of incentive funds to AEP Ohio.
- Customer cannot apply for incentives for future projects and elect after the fact to apply for credits under this
 program.
- Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission of Ohio for further review and approval.
- Used or rebuilt equipment is generally NOT eligible for an incentive.
- All installed equipment must meet state, federal, and local codes and requirements.
- Costs associated with internal labor are not eligible.
- Projects must be installed on the AEP Ohio electric account in Ohio served by an eligible electric rate type listed on the application.
- Equipment must be purchased, installed, and operating (or capable of operating in the case of seasonal uses) prior to submitting a final application for an incentive.
- AEP Ohio will issue incentive payments in the form of checks, not utility bill credits.
- The incentive is paid as a one-time, one-program offer and cannot be combined with incentive payments from other AEP Ohio programs. The customer may be eligible to participate in other programs offered by AEP Ohio, as long as no project receives more than one incentive.

PROGRAM ENER	PROGRAM ENERGY EFFICIENCY CREDITS					
Energy efficiency cerdit levels for one-year	See tables for prescriptive credits. Custom credits					
energy savings	\$0.08/kWh X 75%					
Minimum/Maximum simple payback before	Must pass cost effectiveness test(s) (determined by					
energy efficiency credit applied	AEP Ohio). Generally between 1-7 years.					
Maximum payout	75% of 50% of the total cost (additional measure					
	caps may apply)					
Energy efficiency credit levels for projects	calculated amount on the Prescriptive or Custom					
completed since 1/1/2009	worksheets attached and subject to funding limits					
Credit Limit	See Incentive Limits and Tiering section					
Credit Calculation Order	Measure credit caps are applied first. Project cost					
	credit limits are applied second. Credit tiering is					
	applied third. And 75% factor applied to credit last.					

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 5 of 9

AEP OHIO[®] A unit of American Electric Power Self-Direct Program Project Application

TERMS AND CONDITIONS

Energy Efficiency Credit Limits

For both the Prescriptive and Custom measures in this application, the total energy efficiency credits shall be 75% the lesser of: 1) The calculated credit as approved by AEP Ohio, or 2) 50% of Total Project Cost (not including internal labor cost). In calculating the savings and energy efficiency credits for Custom measures, please contact AEP Ohio Business Incentives for Energy Efficiency Program office to determine appropriate baseline for savings.

Incentive Limits and Tiering

- The limit for each self-direct project is \$225,000.
- The limit for each business entity (corporation, LLC, partnership, etc) is based on their tariff, indicated below.

TARIFF	LIMIT PER BUSINESS ENTITY
General Service Tariffs 1, 2, 3 & 4	\$900,000 per year

- A business entity with facilities in both categories can qualify for both limits. All facilities served in one category for a business entity are combined to determine the limit.
- The total credit paid for any self direct application cannot exceed 50% of the total project cost (not including internal labor). In addition to the above project cost limit, credit payment rates vary when a customer's calculated credit exceeds the tiers listed below:
- Tier 1 \$0 \$100,000 = 100% of eligible calculated credit value
- Tier 2 \$100,001 \$300,000 = 50% of eligible calculated credit value
- Tier 3 \$300,001 \$500,000 = 25% of eligible calculated credit value
- Tier 4 \$500,001 Beyond = 10% of eligible calculated credit value

Application

Application should be submitted by November 16, 2012 for any projects completed or or after Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by November 16, 2012 and could jeopardize approval of any incentive. Project documentation, such as copies of dated invoices for the purchase and installation of the measure and/or product specification sheets, is required. AEP Ohio reserves the right to request additional backup information, supporting detail, calculations, manufacturer specification sheets or any other information to any credit payment.

The location or business name on the invoice must be consistent with the application information. Applications shall all required documentation should be received by November 16, 2012 to be applicable for the 2012 program year.

A signed application with documentation verifying installation of the project including, but not limited to, equipment, invoices, approvals, and other related information must be submitted to AEP Ohio prior to application approval.

The project invoice should provide sufficient detail to separate the project cost from the cost of other services such as repairs and building code compliance. AEP Ohio reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Confidential information contained in any documents associated with this application will be protected from public filings. However, this information could include: equipment purchase dates, installation dates, proof that the equipment is operational, manufacturer specifications, warranty information, and proof of customer co-payment.

The customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application, serves as a contract for the customer's commitment of energy resources to AEP Ohio, shall apply.

AEP OHIO[®] A unit of American Electric Power Self-Direct Program Project Application

TERMS AND CONDITIONS

Application Review Process

AEP Ohio will review Applications for eligibility and completeness. Completed applications will be reviewed in the order received. Funds are reserved for the project when AEP Ohio receives a complete application and determines that the project meets the program eligibility requirements. Applicants who submit incomplete applications will be notified of deficiencies upon review of the application, and may lose their place in line in the review process until all requested information is received. Applications must be completed and all information received by the deadlines defined above to begin processing. Applicants are encouraged to call the program hotline if they have any questions about documentation requirements.

Inspections

AEP Ohio reserves the right to inspect all projects to verify compliance with the program rules and verify the accuracy of project documentation. This may include installation inspections, verification of detailed lighting layout descriptions, metering, data collection, interviews, and utility bill or monitoring data analyses. The customers are required to allow access to project documents and the facility where the measures were installed for a period of five years after receipt of incentive payment by AEP Ohio. Customer understands and agrees that Program installations may also be subject to inspections by the PUCO or their designee, and photographs of installation may be required.

Tax Liability

Credits are taxable and, if more than \$600, will be reported to the IRS unless the customer is exempt. AEP Ohio is not responsible for any taxes that may be imposed on your business as a result of your receipt of payment. W-9 (for LLC, Individual, Partnership, Property Management Companies) must be provided along with all applications.

Requirements for Custom Project Electricity Savings Calculation

The annual electricity savings must be calculated for custom projects using industry-accepted engineering algorithms or simulation models. The applicant may estimate the annual electricity usage of both the existing and proposed equipment based on the current operation of the facility. A listing of the pre-existing information requirements is provided at the end of the custom application section. If the previous equipment was at the end of its useful life, the applicant must use, as the baseline, the equipment that would meet the applicable federal and local energy codes unless an "as found" baseline is being used by the applicant. If the applicant is using an "as found" baseline, additional specific information on the pre-existing information must be provided.

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

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

AEP Ohio may need to conduct inspections of projects to verify equipment and operating conditions. For custom and "as found" projects, the applicant is required to provide information in order to allow AEP Ohio ti verify the baseline usage of the pre-existing equipment. Customers are encouraged to submit projects that warrant special treatnebt (i.e., non-typical projects) to be considered on a case-by-case basis by AEP Ohio.

Disclaimer

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

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 7 of 9

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A unit of American Electric Power

Self-Direct Program Project Application

Important: Please read the terms and conditions before signing and submitting this application. You must complete all information and provide required additional documentation to avoid processing delays.

CUSTOMER INFORMATION

Business Type (select of LARGE OFFICE [SMALL OFFICE] SCHOOL [SMALL RETAIL/SERVICE] LARGE RETAIL/SERVICE] HOTEL/MOTEL] MEDICAL - NURSING HOME		Tax Status (from W9) ORPORATION (Inc., PC, Etc.) Government Agency Individual Partnership Exempt OTHER (may receive 1099) Operating Hours Low Hours (<8h /day) One shift (8h /day) Two shifts (16h/day) Building Operating Hours	How Did	You Hear? tative actor butor butor bother erating Days i/week i/week i/week i/week i/week are Footage bas S.F
OTHER/MISCELLANEOUS		Equipment Operating Hours		
NAME OF APPLICANT'S BUSINESS			PROJECT NAME (IF APPLIC)	\BLE)
NAME AS IT APPEARS ON UTILITY B	BILL	AEP OHIO ACCT #*	APPLICANT TAXPAYER ID #	(SSN/FEDERAL ID)
MAILING ADDRESS			CITY	STATE ZIP
INSTALLATION ADDRESS			CITY	STATE ZIP
	(CUSTOMER CO	NTACT	
Please provide all contacts we may ne	ed to proces	ss for this project. The business con	ntact should be the project decis	ion maker, the technical contact,
NAME OF CONTACT PERSON - Prefe	erred Contac	ct for Documentation	TITLE OF CONTACT	
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS	
SOLUTION P	ROVI	DER/CONTRA	CTOR INFOR	MATION**
NAME OF CONTRACTING COMPANY	Y			
NAME OF CONTACT PERSON			TITLE OF CONTACT PERSO	N
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS	
MAILING ADDRESS			CITY	STATE ZIP
If there are questions abou application who should we co	it the ontact?	Customer	Contracto	r 🔲
As an eligible customer, I ver program.	ify the inf	formation is correct and re	quest consideration for	participation under this
CUSTOMER SIGNATURE (AEP OHIO	CUSTOME	R)	PRINT NAME	
TOTAL INCENTIVE REQUESTED***			DATE	
ESTIMATED COMPLETION DATE			ESTIMATED PROJECT COST	

* AEP Ohio Account Number where measure is installed

** Solution Provider/Contractor - Party involved in the application submittal (i.e. specs, scope of work, etc.)

*** Credit cannot exceed 50 percent of the total project cost or other caps described in the Terms and Conditions.

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 8 of 9

Self-Direct Program Project Application

SELF-DIRECT APPLICATION AGREEMENT

I understand that the location or business name on the invoice must be consistent with the application information. Final Applications and all required supporting documentation should be received by **November 16, 2012 for projects completed on or after January 1, 2009.** Any applications received after the deadlines may not be submitted to the PUCO by December 31st, 2012 and could jeoparidize approval of any incentive by the PUCO.

I agree to verification by the utility or their representatives of both sales transactions and equipment installation.

I understand that these credits are available to all non-residential customers who pay into the Energy Efficiency and Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires regardless from which retail electric supplier the customer has chosen to purchase power.

I certify that the information on this application is true and correct, and that the Taxpayer ID Number, tax status, and W-9 are the applicant's.

I agree that if: I remove the related product(s) identified in my application before a period of 5 years or the end of the product life, whichever is less, I shall refund a prorated amount of energy efficiency credits to AEP Ohio based on the actual period of time in which the related product(s) were installed and operating. This is necessary to assure that the project's related energy benefits will be achieved.

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

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

Customer and customer's contractor shall be responsible to comply with any applicable codes or ordinances.

All submissions become the property of AEP Ohio. It is recommended for you to keep to a copy for your records.

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

I understand that the Application and all required documentation should be received by the AEP Ohio Business Incentives for Energy Efficiency program by November 16, 2012 for any projects completed on or after January 1, 2009. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2012 and could jeopardize approval of any credit by the PUCO. All equipment must be fully operational.

AEP Ohio will pay 75% of the lesser of: 1) The calculated credit as approved by AEP Ohio subject to funding limits or 2) 50% of the project cost (subject to application caps). I understand that AEP Ohio or their representatives have the right to ask for additional information at any time AEP Ohio's Business Incentives Program for Energy Efficiency will make the final determination of energy efficiency credit levels for this project.

The program has a limited budget. Applications will be processed within the budget limits. Applications and all supporting documentation required should be received by November 16, 2012 to be eligible for funding under the current program period.

Attachment 2-Self Direct Program Project Application Blank Including Rules and Requirements Page 9 of 9

Self-Direct Program Project Application

SELF-DIRECT APPLICATION AGREEMENT

Customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application which will serve as a contract for the Customer's Commitment of energy and demand resources to AEP Ohio shall apply.

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

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

Any and all energy savings generated by the project described in this application are hereby committed to AEP Ohio in oder to count against its respective companies' benchmark requirements in S.B.221.

ENERGY EFFICIENCY CREDITS REQUESTED

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

ALL EQUIPMENT MUST BE INSTALLED AND OPERATIONAL. A CUSTOMER SIGNATURE IS REQUIRED FOR PAYMENT. SIGNED APPLICATIONS RECEIVED BY FAX OR EMAIL WILL BE TREATED THE SAME AS ORIGINAL APPLICATIONS RECEIVED BY MAIL. All submissions become the property of AEP Ohio. Keep a copy for your records.

TOTAL PROJECT COST	TOTAL ENERGY EFFICIENCY CREDITS REQUESTED*
CUSTOMER SIGNATURE (AEP OHIO CUSTOMER)	

PRINT NAME	DATE	ACTUAL COMPLETION DATE

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

VARIABLE	FREQUE	NCY D	RIVE - CC	OLING	TOWER I	AN				
Customer:	Guardian Ene	rev								
Location:	Lima OH	- 67								
Dotation:	6/22/2012									
Date:	6/22/2012	A	n n t	Transfell or ser	and shall be shall be seen	and of the cooling	towar fame. Th	ie deivo ho	s the canability of	feaving
RECOMMENDAT	ION:	energy wh	en the fan can r	- Install a va un at less that	n full speed.	each of the cooling	tower fails. In	is unive na	s the capability (Asaving
Motor Size:	250.00	HP								
Number of Motors:	2								,	
Total Motor Size:	500.00	HP		Motor Efficiency	r,	96.2%		VFD Efficien	ncy:	98%
Motor Type:	3	New Premiu	m Eff.	Electric Demand	Rate:	s -	kW	Hours of Op	eration:	8,760
Existing Control:	2	Fan: Output	Damper	Electricity Rate:		\$ 0.0600	kWh	Existing Loa	d Factor:	75%
Load Profile:	2									
		Percent of	Full Input Power							
0	0	Percent of	Fun Inpin Fower	Eull Lood	Aug Existing	Proposed Motor	LW Power	Hours	kWb/Vr.	1/W
System	Operating	n	Deserved VED	Pun-Load	Avg Existing	Input Power	Savinas	Per Vear	Energy Savings	Saved
Rated Flow	Time	Existing	Proposed VFD	Power KW	Input Power	Input Fower	Savings	Tel Tem	Litergy Dittings	DATES
0%	0%	0%	0%	387.7	0.0	0.0	132.8	0	0	
20%	0%	47%	3%	387.7	157.1	4,3	152.8	0	0	
25%	0%	54%	4%	387.7	138.4	0.1	169.1	0	0	
30%	0%	61%	376	387.7	178.2	13.7	183.0	0	0	
33%	0%	0870	176	387.7	213.7	20.0	103.0	0	0	
40%	0%	7370	976	387.7	213.7	20.0	200.8	0	0	
4376	0%	8.4%	16%	387.7	243.6	39.5	204.1	0	0	
50%	0%	0970	20%	387.7	245.6	53.1	203.2	0	0	
5376	0%	0070	26%	387.7	267.8	69.8	198.0	0	0	
65%	0%	9276	32%	387.7	277.7	89.5	188.2	0	0	
70%	0%	98%	39%	387.7	286.3	112.5	173.8	0	0	
75%	15%	101%	46%	387.7	293.5	138.9	154.6	1,314	203,128	155
80%	20%	103%	55%	387.7	299.2	168.6	130.6	1,752	228,827	131
85%	20%	104%	65%	387.7	303.5	201.6	101.9	1,752	178,559	102
90%	15%	105%	76%	387.7	306.5	237.8	68.6	1,314	90,206	69
95%	15%	106%	88%	387.7	308.0	276.9	31.0	1,314	40,774	31
100%	15%	106%	101%	387.7	308.0	318.7	(10.6)	1,314	(13,960)	(11)
	100%									
							Existing Energy	Usage:	2,698,473	
ECONOMIC EVALUA	TION:						Proposed Energy	Usage:	1,970,940	
Estimated Installed Drive	Cost				\$ 200,000					
kWh Saved					727,533					
Proposed Rebate Rate					\$ 0.080	/kWh				
kW Saved							Rebate 1	Rate		
Savings \$					\$ 43,652		\$ 0.08	Per kWh		
Rebate					\$ 43,652		\$ 100.00	Per kW		
Proposed Payback Without	at Rebate				4.58					
Design of Design of With F	abata				3.6	Venre				

*This calculation is for VFD's. Other types of adjustable speed drives may have different prices and characteristics but will show the same trends. *VFD pricing courtesy of General Electric. Current as of 2006. *VFD efficiency accurate for Siemens SEB-2 as of 2007.

*Motor efficiencies courtesy of: Malinowski, J. "Energy Efficient Motors and Drives", ASHRAE Journal 1/2004 and "Toshiba Low Voltage Motor Price Guide 2004"

*Load profiles derived from EMS research and observation. *Power curves courtesy of: Malinowski, J. "Energy Efficient Motors and Drives", ASHRAE Journal 1/2004; Olson, M, "VFD's Save Energy, Cut Costs in Paint Spray Booths", ABB Motors 2003; Theisen, J. *Before implementation, existing system needs to be verified for compatibility with an adjustable speed drive.

AEP OH Analysis: 250HP Motor VFD Savings Calculation							
System Rated Flow	% BIN Time	Operating Hours	Existing % of Input Power	VFD % of Input Power	Avg. Existing Input Power (kW)	Avg. Proposed Input Power (kW)	kWh Savings
0		-	0.00	0	0.000	0.000	-
20		-	0.64	0.05	210.927	16.479	-
25		-	0.68	0.06	224.110	19.774	-
30		-	0.72	0.08	237.293	26.366	-
35		-	0.76	0.11	250.476	36.253	-
40		-	0.80	0.14	263.659	46.140	-
45	0.08	713	0.84	0.17	276.842	56.028	157,440.70
50	0.06	487	0.87	0.21	286.729	69.210	105,931.61
55	0.08	662	0.91	0.26	299.912	85.689	141,815.61
60	0.07	644	0.94	0.32	309.799	105.464	131,592.23
65	0.08	735	0.96	0.38	316.391	125.238	140,497.31
70	0.11	943	0.99	0.44	326.278	145.012	170,933.45
75	0.08	727	1.02	0.5	336.165	164.787	124,592.08
80	0.09	799	1.04	0.57	342.757	187.857	123,764.85
85	0.06	502	1.06	0.64	349.348	210.927	69,487.34
90	0.04	338	1.07	0.73	352.644	240.589	37,874.62
95	0.01	82	1.09	0.86	359.235	283.433	6,215.76
100	0.00	6	1.11	1.05	365.827	346.052	118.65
					283.800	120.294	1,210,264.22

DAYTON	7	
BIN RANGE	Annual hours	% Time
-10 to -5	1	0.00
-5 to 0	19	0.00
0 to 5	60	0.01
5 to 10	87	0.01
10 to 15	60	0.01
15 to 20	292	0.03
20 to 25	253	0.03
25 to 30	528	0.06
30 to 35	726	0.08
35 to 40	713	0.08
40 to 45	487	0.06
45 to 50	662	0.08
50 to 55	644	0.07
55 to 60	735	0.08
60 to 65	943	0.11
65 to 70	727	0.08
70 to 75	799	0.09
75 to 80	502	0.06
80 to 85	338	0.04
85 to 90	82	0.01
90 to 95	6	0.00
95 to 100	0	0.00

highlighted hours when cooling tower does not run due to freezing temperatures, not included'

Pumps	Throt	tle Valve (TV) C	ontrol	Bypass Valve (BV) Control			
Percentage	TV Energy	ASD	Power	BV	ASD	Power	
of Flow	CL	Replacement	Savings	Energy CL	Replacement	Savings	
	(%)	CL (%)	(%)	(%)	CL (%)	(%)	
40	71	14	57	100	41	59	
45	72	17	55	100	46	54	
50	74	21	53	100	51	49	
55	76	25	51	100	56	44	
60	79	30	49	100	61	39	
65	81	35	46	100	66	34	
70	83	41	42	100	71	29	
75	86	48	38	100	76	24	
80	89	57	32	100	82	18	
85	93	66	27	100	87	13	
90	94	78	16	100	93	7	
95	96	90	6	100	98	2	
100	100	105	-5	100	105	-5	

RELATIVE POWER CONSUMPTION OF DIFFERENT CONTROL STRATEGIES AND SAVINGS¹

¹ Electric Power Research Institute.	Adjustable Speed Drives	s Directory, Table 3.1, p1	8.1991

Blower	F	Power Consump	tion of Moto	or	Power Savin	gs of VFD C	Control vs.
Percentage	No	Inlet	Outlet	VFD	No	Inlet	Outlet
of Flow	Control	Control	Control	Control	Control	Control	Control
	CL	CL (%)	CL	CL	CL	CL	CL
	(%)		(%)	(%)	(%)	(%)	(%)
20	100	51	64	5	95	46	59
25	100	56	68	6	94	50	62
30	100	60	72	8	92	52	64
35	100	62	76	11	89	51	65
40	100	63	80	14	86	49	66
45	100	64	84	17	83	47	67
50	100	65	87	21	79	44	66
55	100	66	91	26	74	40	65
60	100	69	94	32	68	37	62
65	100	72	96	38	62	34	58
70	100	75	99	44	56	31	55
75	100	78	102	50	50	28	52
80	100	82	104	57	43	25	47
85	100	86	106	64	36	22	42
90	100	93	107	73	27	20	34
95	100	100	109	86	14	14	23
100	100	109	111	105	-5	4	6



PRODUCT PROFILE

PowerFlex[®] 700 AC Drive Powerful Performance. Flexible Control.

Whether your application requires simple speed control, demanding torque control, or a variety of horse power ratings, the PowerFlex* 700 AC drive offers the most outstanding performance found in a general purpose drive.

The PowerFlex 700 AC drive is available from .37 to 500 kW/0.5 to 700 HP and is easier to use than any other drive in its class while offering the world-class performance that you have come to expect from the PowerFlex family.

Excellent Performance

- Three control modes in one drive: Vector Control with Force[™] Technology, Sensorless Vector and V/Hz control.
- Outstanding open or closed loop speed regulation for applications ranging from fans and pumps to precise control of winders.
- Excellent torque production and tight torque regulation for the most demanding applications like extruders and web processes.
- Fast update times of torque inputs are suitable for high performance applications.

Saves Space

- Innovative bookshelf design of frames 0-6 means drives that are up to 68% smaller than other global drives.
- Bookshelf design optimizes panel space by allowing Zero Stacking[™] or side-by-side mounting of the drives. In many cases, twice as many drives can be packaged in the same panel space as competitive products.
- Save panel space and wiring time with internal brake transistors, integral EMC filters, and integral common mode chokes (Frame 0-6), as well as communication and feedback options.



PowerFlex 700 AC Drive (0.37 to 500 kW; 0.5 to 700 HP)

Easy-to-Use Control

- Full-featured LCD Human Interface Module (HIM) with multi-line and multi-lingual display simplifies programming.
- S.M.A.R.T Start and Detailed Assisted Start-up routines in the LCD HIM allow for easy configuring and tuning of the drive.
- Pull-apart control terminal blocks allow for easy wiring and quick disconnect!
- Frames 0-6 control board and I/O are mounted in a cassette, that also houses the encoder option, mounted alongside the drive for easy access.
- Frames 7-10 have the same control board as frames 0-6 installed directly into drive.
- Optimized global voltage settings designed to worldwide standards allow quick set-up anywhere in the world.
- Excellent PC software tools, such as DriveExplorer[™], DriveTools[™] SP and RSLogix 5000[™] make configuring, programming, monitoring and troubleshooting even easier.

Premier Integration with PowerFlex Drives

For simplified drive start-up and reduced development time, the AC family of Allen-Bradley PowerFlex drives can be configured with RSLogix 5000 software. This single software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.





PowerFlex 700 Vector Control – Series B

The Vector Control Cassette includes three control modes (Vector Control with Force^T Technology, Sensorless Vector and V/Hz) which will easily meet most application needs.

Control Features:

- Accurate torque regulation
- Precise speed control (open or closed loop)
- Encoder feedback / pulse input (optional)
- DC Bus regulation
- Slip compensation or droop control
- Advanced flying start (instantaneous)
- Process PI loop
- Six digital & two high speed analog inputs
- Three digital and two analog outputs

- PTC Input
- Dedicated enable (selectable)
- Programming flexibility (parameter links)
- Inertia Ride-Through
- Fast Braking (fast stopping w/o brake resistors)
- Dynamic user sets
- Security options
- Assisted start-up and application specific set-up menus





- Encoder Interface This Vector Control option provides an interface for a 5/12-volt pulse encoder.
- Internal Common Mode Cores* No additional external cores are required to keep common mode noise from disrupting sensitive electronics. Eliminating external core installation saves labor costs and panel space.
- Wiring Clearly marked, conveniently placed terminal blocks provide direct access for power and control wiring. Control blocks are "pull apart" for added convenience.
- Integral Dynamic Brake* Standard chopper transistor and available drive-mounted (or separate mounting) braking resistor provide cost-effective dynamic brake options.
- Internal EMC Filter* Meets environmental standards without requiring additional panel space.
- Multi-Color LED's Status indications are visible with all covers installed to simplify diagnostics.
- Human Interface Module A flexible LCD Human Interface Module provides exceptional information display and programming ease in a multi-lingual format.
- Internal Communications Allows the user to integrate the drive into the manufacturing process. Status indicators for all internal communication options are visible on the cover for easy setup and monitoring of drive communications.
- * Applies to PowerFlex 700 frames 0-6.

Attachment 6 Supporting Documentation Page 6 of 9

Project # 12-07669 Docket # 13-0613



Flexible Packaging Options

- Along with IP20/UL Type 1 (NEMA 1) package options, the PowerFlex 700 drive is also available in IP54/UL Type 12 (NEMA 12) Flange mount and Stand-alone packages (75-200HP).
- IP00/NEMA Open 250-700HP can be mounted with heat-sink out the back and packaged to meet IP54/UL Type 12.
- IP20 drive package configuration for Frames 8-10 comes in MCC-style enclosures.
- The Configured Drives Program simplifies installation and start-up of the PowerFlex 700 AC drive by allowing users to order drive packages that combine operator interface, control, communications and power options in pre-configured assemblies. Offering a number of commonly requested pre-engineered options, as well as more complex packages, Standard Packaged Drives provide a wide range of motor control options.

Communications

The Allen-Bradley[®] PowerFlex family of drives utilizes Rockwell Automation's NetLinx Open Network Architecture. This provides the common set of features and services for DeviceNet[™], ControlNet[™] and EtherNet/IP[™] networks resulting in lower total cost of ownership. Users can easily manage information from shop floor to top floor and seamlessly integrate their complete system as they control, configure and collect data.

- PowerFlex drives offer internal communication options helping the user to cost-effectively assemble highly integrated applications. Options include: DeviceNet, ControlNet, Universal Remote I/O, and other open communications including Profibus[™] and Interbus-S.
- Status indicators for all internal communications options are visible on the cover for easy set-up and monitoring of drive communications.

Human Interface Modules

The LCD Human Interface Module (HIM) supports full multi-lingual text for grouping, parameter descriptions, programming, troubleshooting and start-up in a 7-line by 21-character display. It also offers keypad options in a variety of combinations that can include digital speed control, programming keys, control keys and a full numeric keypad.







PowerFlex 700 Frame 7



Outstanding Vector Control

Do you have a demanding application? Many applications that previously required encoder feedback can be run open loop with performance results exceeding your application's requirements. Allen-Bradley's patented Force Technology delivers accurate and reliable torque regulation and speed control regardless of whether the motor is hot or cold.

Low Noise

You no longer have to worry about noise or standards compliance. The world-class PowerFlex 700 AC drive (frames 0-6) is designed to meet CE certification and stringent EMC standards without added filtering. Not only does this save you valuable panel space, but it also eliminates any of your concerns regarding compliance.

Additionally, PowerFlex 700 drives have internal common mode cores on the output leads. This helps reduce common mode noise that can be problematic to other components in your system.

Motor Friendly

Are voltage spikes caused by transistors switching into long motor cables damaging your motor? The PowerFlex 700 drive is the industry leader in protecting your motor from damage due to reflected wave phenomenon. Over the past decade, Rockwell Automation has pioneered the investigation and resolution of this reflected wave phenomenon. This has resulted in proprietary and patented reflected wave reduction algorithms and hardware solutions - both internal to the drive as well as external. No other manufacturer has done more to protect your induction motors from premature failures.

Integrated Software

For simplified AC drive start-up and reduced development time, we've integrated Allen-Bradley PowerFlex drive configuration with RSLogix5000^{*} software. This single-software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.

DriveTools[™] SP Software Suite

A powerful PC based software suite, for programming, configuring, and troubleshooting.

- DriveExecutive[™] for online/offline configuration and management of drives and drive peripherals.
 - DriveObserver[™] for real-time trending of drive information.

PowerFlex 700 Drive with Vector Control and Encoder



PowerFlex 700 Drive with Vector Control - Encoderless



DriveExplorer[™] Software

Allen-Bradley DriveExplorer software is an easy-to-use, cost effective online programming tool designed for Microsoft[®] Windows[™] 95/98, Windows NT[™] (4.0 or greater) and Windows CE (2.0 or 2.11) operating systems. It provides the user with the means to monitor and configure PowerFlex drive and communication adapter parameters.

Assured Network Connectivity

PowerFlex 700 drives and options are put through an extensive suite of tests to assure compatibility with other Allen-Bradley products from PLCs to PanelViews[™]. Rockwell Automation offers a wide breadth of communication options along with outstanding network reliability unmatched in the industry.

Attachment 6 Supporting Documentation Page 8 of 9







Application Features

The PowerFlex 700 drives include several features to solve the toughest applications. These include Position Indexing/Speed Profiling, TorqProve[™], Oil Pump and Adjustable Voltage Control.

TorqProve[™] for Lifting Application:

- Torque Proving (includes Flux Up and Last Torque measurement)
- Brake Proving (includes mode to slowly lower load if brake slips or fails)*
- Float Capability*
- Micro Positioning
- Load-based speed limits (allows fast unloaded speeds)
- End and Deceleration Limit Switch inputs
- Fast Stop
- Encoder and Encoderless operation
- Speed Deviation Fault, Output Phase Loss Fault, Encoder Loss Fault
- Assisted Start-up for easy commissioning
- Designed to comply with CMAA Specification #70

 Available with encoder only see manual for encoderless restrictions.

Position Indexing / Speed Profiling:

Uses a 16 step array to provide:

- Point-to-point positioning either absolute or incremental moves (referenced to home position)
- Velocity profiling based on encoder counts, digital inputs, time or parameter levels
- Homing capability

Applications:

The advanced features of the PowerFlex 700 drive, make it ideal for the following applications:

- Fans & pumps
- Mixers
- Conveyors & palletizers
- Demanding extruders
- Web handling / Tension control
- Lifts / Hoists
- Centrifuges
- Vibration welding
- Induction heating
- Power supplies
- Linear motors
- Pump jacks and PC pumps
- Stamping presses
- Bottling lines
- Test stands

• Blend moves

200V/240V

Output Power		200 Volt Class			240 Volt Class				
			Out	put Current, Am	ips	Output Current, Amps			Frame
	kW	HP	Cont.	l min.	3 sec.	Cont.	l min.	3 sec.	Size
	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	
	0.37 (0.25)	0.5 (0.33)	2.5	2.8	3.8	2.2	2.4	3.3	0
	0.75 (0.55)	1 (0.75)	4.8	5.6	7.0	4.2	4.8	6.4	0
	1.5 (.75)	2 (1.5)	7.8	10.4	13.8	6.8	9.0	12.0	1
	2.2 (1.5)	3 (2)	11	12.1	17.0	9.6	10.6	14.4	1
	4 (2.2)	5 (3)	17.5	19.3	26.3	15.3	16.8	23.0	1
	5.5 (4)	7.5 (5)	25.3	27.8	38.0	22.0	24.2	33.0	1
	7.5 (5.5)	10 (7.5)	32.2	38.0	50.6	28.0	33.0	44.0	2
	11 (7.5)	15 (10)	48.3	53.1	72.5	42.0	46.2	63.0	3
	15 (11)	20 (15)	56.0	64.0	86.0	52.0	63.0	80.0	3
	18.5 (15)	25 (20)	78.2	86.0	117.3	70.0	78.0	105.0	4
	22 (18.5)	30 (25)	92.0	117.3	156.4	80.0	105.0	136.0	4
	30 (22)	40 (30)	120 (92)	132 (138)	175 (175)	104 (80)	115 (120)	175 (160)	5
	37 (30)	50 (40)	130 (104)	143 (156)	175 (175)	104 (130)	143 (156)	175 (175)	5
	45 (37)	60 (50)	177 (150)	195 (225)	266 (300)	154 (130)	169 (195)	231 (260)	6
	55 (45)	75 (60)	221 (177)	243 (266)	308 (308)	192 (154)	211 (231)	288 (308)	6
	75 (55)	100 (75)	260 (205)	286 (305)	390 (410)	260 (205)	286 (305)	390 (410)	6

400V/480V

Output Power			400 Volt Class		480 Volt Class			
		Ou	Output Current, Amps			Output Current, Amps		
kW	HP	Cont.	1 min.	3 sec.	Cont.	1 min.	3 sec.	Size
ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	
0.37 (0.25)	0.5 (0.33)	1.3	1.4	1.9	1.1	1.2	1.6	0
0.75 (0.55)	1 (0.75)	2.1	2.4	3.2	2.1	2.4	3.2	0
1.5 (.75)	2 (1.5)	3.5	4.5	6.0	3.4	4.5	6.0	0
2.2 (1.5)	3 (2)	5.0	5.5	7.5	5.0	5.5	7.5	0
4 (2.2)	5 (3)	8.7	9.9	13.2	8.0	8.8	12.0	0
5.5 (4)	7.5 (5)	11.5	13.0	17.4	11.0	12.1	16.5	0
7.5 (5.5)	10 (7.5)	15.4	17.2	23.1	14.0	16.5	22.0	1
11 (7.5)	15 (10)	22.0	24.2	33.0	22.0	24.2	33.0	1
15 (11)	20 (15)	30.0	33.0	45.0	27.0	33.0	44.0	2
18.5 (15)	25 (20)	37.0	45.0	60.0	34.0	40.5	54.0	2
22 (18.5)	30 (25)	43.0	55.5	74.0	40.0	51.0	68.0	3
30 (22)	40 (30)	56.0	64.5	86.0	52.0	60.0	80.0	3
37 (30)	50 (40)	72.0	84.0	112.0	65.0	78.0	104.0	3
45 (37)	60 (50)	85 (72)	94 (108)	128 (144)	77 (65)	85 (98)	116 (130)	4
55 (45)	75 (60)	105 (85)	116 (128)	154 (170)	96 (77)	106 (116)	144 (154)	5
55 (45)	100 (75)	125 (96)	138 (144)	163 (168)	125 (96)	138 (144)	163 (168)	5
75 (55)	-	140 (105)	154 (157)	190 (190)	-	-	-	
90 (75)	125 (100)	170 (140)	187 (210)	255 (280)	156 (125)	172 (188)	233 (250)	6
110 (90)	150 (125)	205 (170)	220 (255)	300 (340)	180 (156)	198 (234)	270 (312)	6
132 (110)	200 (150)	260 (205)	286 (308)	390 (410)	248 (180)	273 (270)	372 (360)	6
160 (150)	250 (200)	292 (263)	322 (395)	438 (526)	292 (263)	322 (395)	438 (526)	7
180 (180)	250 (250)	325 (325)	358 (488)	488 (650)	325 (325)	358 (488)	488 (650)	7
200 (180)	300 (250)	365 (325)	402 (488)	548 (650)	365 (325)	402 (488)	548 (650)	8
240 (200)	350 (300)	415 (365)	457 (548)	623 (730)	415 (365)	457 (548)	623 (730)	8
280 (240)	400 (350)	481 (415)	530 (623)	722 (830)	481 (415)	530 (623)	722 (830)	8
300 (280)	450 (400)	535 (481)	589 (722)	803 (962)	535 (481)	589 (722)	803 (962)	8
350 (300)	500 (450)	600 (535)	666 (803)	908 (1070)	600 (535)	666 (803)	908 (1070)	8
400 (350)	600 (500)	730 (600)	803 (900)	1095 (1200)	730 (600)	803 (900)	1095 (1200)	9
500 (400)	700 (600)	875 (700)	963 (1050)	1313 (1400)	875 (700)	963 (1050)	1313 (1400)	10

600V/690V

Output Power		600 Volt Class			690 Volt Class			
		Ou	tput Current, Ai	mps	Ou	Output Current, Amps		
kW	HP	Cont.	1 min.	3 sec.	Cont.	1 min.	3 sec.	Size
ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	ND (HD)	
0.75 (0.55)	1 (0.75)	1.7	2.0	2.6	N/A	-	-	0
1.5 (.75)	2 (1.5)	2.7	3.6	4.8	N/A	-	-	0
2.2 (1.5)	3 (2)	3.9	4.3	5.9	N/A	-	-	0
4 (2.2)	5 (3)	6.1	6.7	9.2	N/A	-	-	0
5.5 (4)	7.5 (5)	9.0	9.9	13.5	N /A	-	-	0
7.5 (5.5)	10 (7.5)	11	13.5	18	N/A	-	-	1
11 (7.5)	15 (10)	17	18.7	25.5	N /A	-	-	1
15 (11)	20 (15)	22	25.5	34	N /A	-	-	2
18.5 (15)	25 (20)	27	33	44	N/A	-	-	2
22 (18.5)	30 (25)	32	40.5	54	N/A	-	-	3
30 (22)	40 (30)	41	48	64	N/A	-	-	3
37 (30)	50 (40)	52	61.5	82	N /A	-	-	3
45 (37)	60 (50)	62	78	104	N/A	-	-	4
45 (37)	-	-	-	-	52 (46)	57 (69)	78 (92)	5
55 (45)	-	-	-	-	60 (52)	66 (78)	90 (104)	5
75 (55)	75 (60)	77 (63)	85 (94)	116 (126)	82 (60)	90 (90)	120 (123)	5
90 (75)	100 (75)	99 (77)	109 (116)	126 (138)	98 (82)	108 (123)	127 (140)	5
110 (90)	125 (100)	125 (99)	138 (149)	188 (198)	119 (98)	131 (147)	179 (196)	6
132 (110)	150 (125)	144 (125)	158 (188)	216 (250)	142 (119)	156 (179)	213 (238)	6

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NEMA 1 Dimensions mm (in)

Dimensions							
Frame		Height	Width	Depth			
Size		mm (in.)	mm (in.)	mm (in.)			
0		336 (13.23)	110 (4.33)	200 (7.87)			
1		336 (13.23)	135 (5.31)	200 (7.87)			
2		342.5 (13.48)	222 (8.74)	200 (7.87)			
3		517.5 (20.37)	222 (8.74)	200 (7.87)			
4		758.9 (29.88)	219.8 (8.65)	201.6 (7.94)			
5		644.5 (25.37) ¹	308.9 (12.16)	275.4 (10.84)			
6		850 (33.46) ²	403.9 (15.90)	275.5 (10.85)			
7		1498.6 (59.00)	514.4 (20.25)	406.9 (16.02)			
8	300-400 HP	2374 (93.5)	75.7 (29.83)	889 (35)			
8	450-500 HP	2374 (93.5)	75.7 (29.83)	1016 (40)			
9		2374 (93.5)	75.7 (29.83)	1016 (40)			
10		2374 (93.5)	1267.7 (49.91)	889 (35)			

Notes:

1 When using the supplied junction box (100 HP drives Only), add an additional 45.1 mm (1.78 in.) to this dimension.

2 When using the supplied junction box, add an additional 126.3 mm (4.97 in.) to this dimension

NEMA Type Open/IP00/Flange Mount and Stand alone NEMA 12/IP54

Frame Size		Height mm (in.)	Width mm (in.)	Depth mm (in.)
5	Standalone	1574.8 (62.0)	609.6 (24.0)	450.7 (17.75)
5	Flange Mount	1061.0 (41.77)	500.0 (19.69)	400.6 (15.77)
6	Standalone	1828.8 (72.0)	711.3 (28.0)	487.8 (19.20)
6	Flange Mount	1100.0 (43.3)	584.0 (23.0)	426.3 (16.8)
7	IP00*	1498.6 (59.00)	514.4 (20.25)	406.9 (16.02)
8	IP00* (300-400 HP)	2275.8 (89.60)	757.7 (29.83)	599.2 (23.59)
8	IP00* (450-500 HP)	2275.8 (89.60)	757.7 (29.83)	726.2 (28.59)
9	IP00*	2275.8 (89.60)	757.7 (29.83)	781.8 (30.78)
10	IP00*	2275.8 (89.6)	1267.7 (49.91)	889 (35)

* "Heatsink-out-the back", heatsink is rated IP54/NEMA 12

Standards

CSA/cUL	• IEC 146
• UL *	SEMIF47
 C-Tick, IEC 61800-3 	RINA
ATEX	 CE (Frame 0–6)
• NFPA 70 *	EMC: EN61800-3
NEMA ICS 3.1	Low Voltage: EN50178
CMAA Specifications #70	• ABS
* Apply to frames 7-10	

Input Specifications	
3-Phase Voltage:	200-240V ± 10%,
	$380-480V \pm 10\%$,
-	500-690V + 10%/-5%
Frequency:	47 to 63 Hz

A/ to 63 HZ 0.5 seconds Output Specifications

Voltage:	Adjustable from OV
Frequency Range: Instantaneous Over Current Trip:	to rated motor voltage 0–420Hz 220–300% based on drive rating

Enclosure and Ambient Operating Temperatures

Frame 0-6	
IP20/Open Type:	0° - 50° C (32° - 122° F)
IP20/UL Type 1:	0° - 40° C (32° - 104° F)
IP54/UL Type 12:	0° - 40° C (32° - 122° F)

Frame 7-10 IP20/NEMA 1, IP00/NEMA Open:

0° – 40° C (32° – 104° F) (heatsink) 0° – 65° C (drive) This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

3/19/2013 11:39:27 AM

in

Case No(s). 13-0613-EL-EEC

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