Ohio Public Utilities Commission

Case No.: <u>13-1280-E</u>L-EEC

Mercantile Customer:	Valley Asphalt Corporation
Electric Utility:	Duke Energy
Program Title or Description:	Multiple VFD Projects

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: Mercantile Customer Information

Name: Valley Asphalt Corporation

Principal address: 11641 Mosteller Rd Cincinnati, Ohio 45241

Address of facility for which this energy efficiency program applies:

4850 Stubbs Mill Rd, Morrow OH 45152 7940 Main St, Newtown Ohio 45244 11641 Mosteller Rd, Cincinnati Ohio 45241 Name and telephone number for responses to questions:

Grady Reid Jr 513-287-1038

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. (**Refer to Appendix A for 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: **Duke Energy**
- 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)).
 The following new equipment was installed starting July 2012 and was finished April 2013.

1 VFD on 200HP Asphalt Dryer - 4850 Stubbs Mill Rd 1 VFD on 200HP Asphalt Dryer - 7940 Main St 1 VFD on 200HP Asphalt Dryer -11641 Mosteller Rd 1 VFD on 100HP Burner Blower -11641 Mosteller Rd

- □ 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):
- □ Behavioral or operational improvement.
- B) Energy savings achieved/to be achieved by the energy efficiency program:
 - 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: 186,591 kWh Refer to Appendix B for calculations and supporting document

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.

 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: _____kWh

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

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.)
- D 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?

The new equipment was installed starting July 2012 and was finished April 2013.

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

0 kW

Refer to Appendix B for calculations and supporting documentation.

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 \$3155.00. Refer to Appendix C for documentation. (Rebate shall not exceed 50% project cost.
 - 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 10.74 (Skip to Subsection 2.) Refer to Appendix D for calculations and supporting documents.

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 \$85,738

The utility's program costs were **\$4,827**

The utility's incentive costs/rebate costs were **\$3155**.

Refer to Appendix D for calculations and supporting documents.

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.

Refer to Offer Letter following this application

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.



DUKE ENERGY Mercantile Self Direct Program 139 East Fourth Street Cincinnali, OH 45202

513 629 5572 fax

May 14, 2013

Mr. Fred Brammer Valley Asphalt 11641 Mosteller Road Cincinnati, Oh 45241

Subject: Your Application for a Duke Energy Mercantile Self-Direct Rebate

Dear Brammer:

Thank you for your Duke Energy Mercantile Self Direct rebate application. As noted in the Energy Conservation Measure (ECM) chart on page two, a total rebate of \$3155.00 has been proposed for your VFD projects completed in the 2013 calendar year. All Self Direct Rebates are contingent upon approval by the Public Utilities Commission of Ohio (PUCO).

At your earliest convenience, please indicate if you accept this rebate by

- providing your signature on page two
- completing the PUCO-required affidavit on page three.

Please return the documents to my attention via fax at 513-629-5572 or e-mail to SelfDirect@Duke-Energy.com. Upon receipt, Duke Energy will submit the necessary documentation to PUCO. Following PUCO's approval, Duke Energy will remit payment.

At Duke Energy, we value your business and look forward to working with you on this and future energy efficiency projects. We hope you will consider our Smart \$aver® incentives, when applicable. Please contact me if you have any questions.

Sincerely,

Grady Reid, Jr Product Manager Mercantile Self Direct Rebates

cc: Deanna Bowden, Duke Energy Rob Jung, Ecova Doug Ison, F.D. Lawrence Electric Company Please indicate your response to this rebate offer within 30 days of receipt.

Rebate is accepted.

By accepting this rebate, Valley Asphalt affirms its intention to commit and integrate the energy efficiency projects listed on the following pages into Duke Energy's peak demand reduction, demand response and/or energy efficiency programs.

Additionally, Valley Asphalt also agrees to serve as joint applicant in any future filings necessary to secure approval of this arrangement as required by PUCO and to comply with any information and reporting requirements imposed by rule or as part of that approval.

Finally, Valley Asphalt affirms that all application information submitted to Duke Energy pursuant to this rebate offer is true and accurate. Information in question would include, but not be limited to, project scope, equipment specifications, equipment operational details, project costs, project completion dates, and the quantity of energy conservation measures installed.

If rebate is accepted, will you use the monies to fund future energy efficiency and/or demand reduction projects?



If rebate is declined, please indicate reason (optional):

Fred Brammer

FRED BRAMMER

Customer Signature

Printed Name

Date

5-21-13

Proposed Rebate Amounts

Measure ID	Energy Conservation Measure (ECM)	Proposed Rebate Amount
ECM-1	Plant 14 Asphalt Dryer Rotary Kiln VFD (Qty 1)	\$891.00
ECM-2	Plant 23 Burner Blower VFD (Qty 1)	\$411.00
ECM-3	Plant 23 Asphalt Dryer Rotary Kiln VFD (Qty 1)	\$1176.00
ECM-4	Plant 5 Asphalt Dryer Rotary Kiln VFD (Qty 1)	\$677.00
Total		\$3155.00

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Ohio Public Utilities Commission

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

Case No.: ____-EL-EEC

State of OhiO:

Fred. Brammer, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

[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.
- 3. I am aware of fines and penalties which may be imposed under Ohio Revised Code Sections 2921.11, 2921.31, 4903.02, 4903.03, and 4903.99 for submitting false information.

Arvel Bromman Supt. Signature of Affiant & Title

Sworn and subscribed before me this <u>st</u> day of <u>May</u>, <u>Aprila R. Carres</u> Signature of official administering oath My commission expires on <u>Anita R. Davis, Contnact</u> Print Name and Title <u>coordinator</u> **ANITA R. DAVIS** <u>Notary Public</u>, State of Ohlo <u>My Commission Expires</u> <u>December 2, 2016</u>

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08403616 01							
VALLEY ASPHALT CORP							
4850 STUBBS	MILL R	D					
MORROW, OI	4515	52					
Electric Meter	r: 1068	882309 Rate DS01					
Date	Days	Actual KWH					
4/3/2013	30	2,915					
3/4/2013	31	3,359					
2/1/2013	29	2,742					
1/3/2013	34	18,329					
11/30/2012	31	48,162					
10/30/2012	29	49,727					
10/1/2012	32	66,003					
8/30/2012	29	63,021					
8/1/2012	30	36,762					
7/2/2012	31	44,716					
6/1/2012	30	33,401					
5/2/2012	30	45,025					
Total		414,162					

24602675.04		
24600675 01		
VALLEY ASPHALT	CORP	
11641 MOSTELLE	ER RD	
CINCINNATI, OH 45241		
Bulked Metrs: 10	8000839 &	108004326 Rate DS01
Date	Days	Actual KWH
3/27/2013	29	54,560
2/26/2013	29	54,574
1/28/2013	32	57,655
12/27/2012	31	129,266
11/26/2012	33	150,101
10/24/2012	29	160,625
9/25/2012	32	138,441
8/24/2012	29	161,215
7/26/2012	30	136,767
6/26/2012	32	134,521
5/25/2012	29	116,557
4/26/2012	30	116,905
Total		1,411,187

7940 MAIN		
CINCINNATI, OH	45244	
Bulked Electric N	leter: 94273	3581 & 106939983 Rate DS01
Date	Days	Actual KWH
3/19/2013	29	2,218
2/18/2013	31	2,525
1/18/2013	32	2,758
12/17/2012	33	43,441
11/14/2012	29	64,939
10/16/2012	29	61,647
9/17/2012	32	49,547
8/16/2012	29	57,523
7/18/2012	30	53,934
6/18/2012	32	59,419
5/17/2012	29	33,113
4/18/2012	30	14,971
Total		446,035

	Baseline Used	1		Post Project A	ctual			Sa	vings
	Description	Annual kWh	Summer Coincident kW	Description	Annual kWh	Summer Coincident kW	Hours of Operation	Annual kWh	Summer Coincident kW
ECM - 1	Valley Asphalt - Plant 14 Kiln No VFD	350,227	157	Installed new 200-hp VFD	301,380	134		48,847	23.0
ECM - 2	Valley Asphalt - Plant 23 Blower No VFD	176,684	79	Installed new 100-hp VFD	146,341	64		30,343	15.0
ECM - 3	Valley Asphalt - Plant 23 Kiln No VFD	321,173	157	Installed new 200-hp VFD	276,574	133		44,599	24.0
ECM - 4	Valley Asphalt - Plant 5 Kiln No VFD	332,952	157	Installed new 200-hp VFD	282,211	131		50,741	26.0
	TOTALS	1,181,036	550		1,006,506	462		174,530	88.0
Notes:	Energy consumption baseline, demand ba	seline and post	project energ	y consumption basis are outlined in the foll	owing pages.	[
	After consideration of line losses, total er	nergy savings a	re 186,591 kV	Wh and 0 summer coincident kW . These v	values may also ref	lect minor DS	More modelir	ng software	rounding

				DETAI	LED CALCULATIONS
Mar 2013 V1					
Salesforce Opportunity Name Project Name	Valley Asphalt Corporation	0 tion - Mercantile Self Direct	- Kiln and Blower Motor V	/FD	CM013- Application # 1392199 Valley A
Maagura Description					
Measure Description	lation of a naw VED on a	an ovicting 200 ha motor th	at drives a rotany kilo. The	e VFD allows the rotary kiln to revolve	factor or clower based on the tw
The measure involved the insta	allation of a new VFD on a	an existing 200-np motor th	at unives a rotary killi. The	e vFD allows the rotary kill to revolve	laster of slower based on the typ
Baseline					
The customer estimates that the	ne baseline equipment ha	ad a remaining useful life of	more than two years, and	d as such the customer average baseli	ne has been used. The baseline n
customer estimates that the ki	In operates for 2,045 hou	ırs/year.			
Savings Calculation Methodol	ogy				
The new VFD allows the 200-h	p motor to reduce electri	c output and kiln speed bas	ed on product requiremer	nts. The post-installation duty cycle, v	which was calculated by the custo
its 2,045 hour annual operating	g time running at a reduce	ed load relative to the base	line period.		
Incremental Measure Cost (IM	IC)				
Baseline choice was no action.	Incremental costs are fro	om invoices provided for th	e installed equipment		
			· · · · · · · · · · · · · · · · · · ·		
IMC Calculation	IMC (\$)	Baseline Cost (\$)	Measure Cost (\$)		
	\$8,300.00	\$0.00	\$8,300.00	Attached Files	
References to source docume <i>CMO13-1392199 - Valley Aspho</i>	• • • • •	•	cs- Plant 23 Kiln - ECM1	 Equipment Specs Calculations Cost Documentation 	CMO13-1392199 - Valley Asphalt Corporation - Part
Savings Calculations	(insert all appropriate c	alculations or simulation re	sults below)		

Overall, savings decreased slightly compared to the submitted value.

BASELINE

	Demand Calcula	ations						Mor	thly Opera	ting Profile					
bhp	Motor Load (kW)	Motor Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
200	149.20	95.00%	157.05	0	0	0	200	230	240	260	260	270	260	175	150
90%	134.28	95.00%	141.35												
80%	119.36	95.00%	125.64												
70%	104.44	95.00%	109.94												
60%	89.52	95.00%	94.23												
50%	74.60	95.00%	78.53												
40%	59.68	95.00%	62.82												
			Total Hours	2,045											
			nergy Consumption (kWh) hly Average Demand (kW)	0 0.00	0 0.00	0 0.00	31,411 157.05	36,122 157.05	37,693 157.05	40,834 157.05	40,834 157.05	42,404 157.05	40,834 157.05	27,484 157.05	23,558 157.05

	Monthly Energy Consumption (kWh)	0	0	0	31,411	36,122	37,69
	Monthly Average Demand (kW)	0.00	0.00	0.00	157.05	157.05	157.0
Annual kWh	321,172.6						
Average kW	157.05						

	Deman	d Calculations							Μ	lonthly Ope	erating Prof	ile				
bhp	Motor Load (kW)	Motor Eff.	VFD Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
200	149.20	95.00%	97.50%	161.08	0	0	0	60	60	60	60	60	60	60	60	50
90%	134.28	95.00%	97.50%	144.97	0	0	0	50	60	60	60	60	60	60	50	50
80%	119.36	95.00%	97.50%	128.86	0	0	0	40	60	60	60	60	60	60	40	20
70%	104.44	95.00%	97.50%	112.76	0	0	0	30	30	40	40	50	60	50	10	20
60%	89.52	95.00%	97.50%	96.65	0	0	0	20	20	20	40	30	30	30	15	10
50%	74.60	95.00%	97.50%	80.54												
40%	59.68	95.00%	97.50%	64.43												
				Total Hours	2,045											
			Monthly Energy Cons Monthly Averag	• • •	0 0.00	0 0.00	0 0.00	27,384 136.92	31,411 136.57	32,538 135.58	34,471 132.58	34,632 133.20	35,760 132.44	34,632 133.20	24,645 140.83	21,101 140.68

	thly Energy Consumption (kWh) Monthly Average Demand (kW)	0 0.00	0 0.00	0 0.00	27,384 136.92	31,411 136.57
Annual k	Wh 276,573.7					
Average	kW 135.78					
C C						

Annual Savings	44,599 kWh
Average kW Reduction	21.28 kW

		0
13- 199	v.	0
Sta	te	OH
type of asphalt mix being produced.	٦	
ne motor had only on/off type controls and ran at a constant load regardless of the product being produced. The		
	_	
stomer, seems reasonable. Energy savings are achieved because the new VSD allows the motor to spend a majority	of	
	1	
	٦	

				DETAILED	O CALCULATIONS
Mar 2013 V1					
Salesforce Opportunity Name Project Name	Valley Asphalt Corporati	0 on - Mercantile Self Direct	- Kiln and Blower Motor VFD		CM013- Application # 1392199 Valley A
Measure Description					
The measure involved the insta	llation of a new VFD on ar	n existing 100-hp motor th	at drives a burner blower. The	VFD allows the blower to reduce ou	Itput based on the type of asp
Baseline					
			more than two years, and as su	uch the customer average baseline	has been used. The baseline n
Savings Calculation Methodolo	ogy				
The new VFD allows the 100-hp majority of its 2,250 hour annu				s. The post-installation duty cycle, v	vhich was calculated by the cu
Incremental Measure Cost (IM	C)				
Baseline choice was no action.		m invoices provided for th	e installed equipment		
IMC Calculation	IMC (\$) \$4,869.00	Baseline Cost (\$) \$0.00	Measure Cost (\$) \$4,869.00	Attached Files	PDF
References to source documer <i>CMO13-1392199 - Valley Aspho</i>			cs- Plant 23 Blower - ECM2	Equipment Specs Calculations Cost Documentation	CMO13-1392199 - Valley Asphalt Corporation - Part
Savings Calculations	(insert all appropriate ca	lculations or simulation re	sults below)		

Overall, savings decreased slightly compared to the submitted value.

BASELINE

Motor Load (kW) 74.60	Motor Eff.	Line Side kW	lan	Demand Calculations Monthly Operating Profile													
74.60			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
	95.00%	78.53	0	0	0	200	290	300	300	300	300	300	175	85			
67.14	95.00%	70.67															
59.68	95.00%	62.82															
52.22	95.00%	54.97															
44.76	95.00%	47.12															
37.30	95.00%	39.26															
29.84	95.00%	31.41															
		Total Hours	2,250														
	Monthly Er	nergy Consumption (kWh)	0	0	0	15,705	22,773	23,558	23,558	23,558	23,558	23,558	13,742	6,675			
	Month	nly Average Demand (kW)	0.00	0.00	0.00	78.53	78.53	78.53	78.53	78.53	78.53	78.53	78.53	78.53			
	59.68 52.22 44.76 37.30	59.68 95.00% 52.22 95.00% 44.76 95.00% 37.30 95.00% 29.84 95.00%	59.6895.00%62.8252.2295.00%54.9744.7695.00%47.1237.3095.00%39.2629.8495.00%31.41	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours 2,250 Monthly Energy Consumption (kWh) 0	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours August 100 0 0	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours August 100 0 0 15,705	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 0 15,705 22,773	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours X250 Monthly Energy Consumption (kWh) 0 0 15,705 22,773 23,558	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 15,705 22,773 23,558 23,558	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 0 15,705 22,773 23,558 23,558 23,558	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 0 15,705 22,773 23,558 23,5	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 15,705 22,773 23,558 <td< td=""><td>59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 15,705 22,773 23,558 <td< td=""></td<></td></td<>	59.68 95.00% 62.82 52.22 95.00% 54.97 44.76 95.00% 47.12 37.30 95.00% 39.26 29.84 95.00% 31.41 Total Hours Monthly Energy Consumption (kWh) 0 0 15,705 22,773 23,558 <td< td=""></td<>			

	Monthly Energy Consumption (kWh)	0	0	0	15,705	22,773	23,55
	Monthly Average Demand (kW)	0.00	0.00	0.00	78.53	78.53	78.53
Annual kWh Average kW							

	Deman	d Calculations							Μ	lonthly Ope	erating Prof	file				
bhp	Motor Load (kW)	Motor Eff.	VFD Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
100	74.60	95.00%	97.50%	80.54	0	0	0	50	60	60	60	60	60	60	40	40
90%	67.14	95.00%	97.50%	72.49	0	0	0	50	60	60	60	60	60	60	40	10
80%	59.68	95.00%	97.50%	64.43	0	0	0	40	60	60	60	60	60	60	35	15
70%	52.22	95.00%	97.50%	56.38	0	0	0	30	60	60	60	60	60	60	30	10
60%	44.76	95.00%	97.50%	48.32	0	0	0	30	50	60	60	60	60	60	30	10
50%	37.30	95.00%	97.50%	40.27												
40%	29.84	95.00%	97.50%	32.22												
				Total Hours	2,250											
			Monthly Energy Consu	mption (kWh)	0	0	0	13,370	18,846	19,330	19,330	19,330	19,330	19,330	11,517	5,960
			Monthly Average	Demand (kW)	0.00	0.00	0.00	66.85	64.99	64.43	64.43	64.43	64.43	64.43	65.81	70.12

, ,,	Monthly Energy Consumption (kWh) Monthly Average Demand (kW)			0 0.00	13,370 66.85	18,846 64.99
Annual kWh	146,340.8					
Average kW	65.55					

Annual Savings	30,343 kWh	
Average kW Reduction	12.98 kW	

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y Asphalt - Plant 23 Kiln VFD	State	OH	1
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asphalt mix being produced.			
ne motor had only on/off type controls and ran at a constant load regardless of the product being produced. The			
e customer, seems reasonable. Energy savings are achieved because the new VSD allows the motor to spend a			
	.		

				DETAILE	D CALCULATIONS
Mar 2013 V1					
Salesforce Opportunity Name Project Name	Valley Asphalt Corpora	0 tion - Mercantile Self Direct	- Kiln and Blower Motor V	/FD	CM013- Application # 1392199 Valley A
Measure Description					
	allation of a new VFD on a	an existing 200-hp motor th	at drives a rotary kiln. The	vFD allows the rotary kiln to revolve fa	ister or slower based on the ty
Baseline					
	• •	•	more than two years, and	as such the customer average baseline	e has been used. The baseline r
Savings Calculation Methodol	ogy				
The new VFD allows the 200-hp its 2,230 hour annual operating		•	• •	nts. The post-installation duty cycle, wh	ich was calculated by the custo
Incremental Measure Cost (IM	IC)				
Baseline choice was no action.	Incremental costs are from	om invoices provided for th	e installed equipment		
		Deseline Cost (ć)			
IMC Calculation	IMC (\$) \$8,300.00	Baseline Cost (\$) \$0.00	Measure Cost (\$) \$8,300.00	Attached Files	
References to source documer <i>CMO13-1392199 - Valley Aspho</i>		•	cs- Plant 14 Kiln - ECM3	 Equipment Specs Calculations Cost Documentation 	CMO13-1392199 - Valley Asphalt Corporation - Part
Savings Calculations	(insert all appropriate c	alculations or simulation re	sults below)		

Overall, savings decreased slightly compared to the submitted value.

BASELINE

	Demand Ca	lculations						Mon	thly Opera	ting Profile					
bhp	Motor Load (kW)	Motor Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
200	149.20	95.00%	157.05	0	0	200	230	240	250	260	260	270	270	250	0
90%	134.28	95.00%	141.35												
80%	119.36	95.00%	125.64												
70%	104.44	95.00%	109.94												
60%	89.52	95.00%	94.23												
50%	74.60	95.00%	78.53												
40%	59.68	95.00%	62.82												
			Total Hours	2,230											
		Monthly	Energy Consumption (kWh)	0	0	31,411	36,122	37,693	39,263	40,834	40,834	42,404	42,404	39,263	0
		Monthly Average Demand (kW)		0.00	0.00	157.05	157.05	157.05	157.05	157.05	157.05	157.05	157.05	157.05	0.00
		Annual kWh	350,227.4												
		Average kW	157.05												

	Monthly Energy Consumption (kWh)	0	0	31,411	36,122	37,693	39,26
	Monthly Average Demand (kW)	0.00	0.00	157.05	157.05	157.05	157.0
Annual kWh Average kW	,						

	Deman	d Calculations							N	Ionthly Ope	erating Prof	ile				
bhp	Motor Load (kW)	Motor Eff.	VFD Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
200	149.20	95.00%	97.50%	161.08	0	0	60	60	60	60	60	60	60	60	60	0
90%	134.28	95.00%	97.50%	144.97	0	0	60	60	60	60	60	60	60	60	60	0
80%	119.36	95.00%	97.50%	128.86	0	0	50	60	60	60	60	60	60	60	60	0
70%	104.44	95.00%	97.50%	112.76	0	0	30	50	60	50	60	60	60	60	60	0
60%	89.52	95.00%	97.50%	96.65	0	0	0	0	0	20	20	20	30	30	10	0
50%	74.60	95.00%	97.50%	80.54												
40%	59.68	95.00%	97.50%	64.43												
				Total Hours	2,230											
			Monthly Energy Cons	umption (kWh)	0	0	28,189	31,733	32,860	33,666	34,793	34,793	35,760	35,760	33,827	0
			Monthly Average	e Demand (kW)	0.00	0.00	140.94	137.97	136.92	134.66	133.82	133.82	132.44	132.44	135.31	0.00

, ,,	Consumption (kWh) erage Demand (kW)	0 0.00	0 0.00	28,189 140.94	31,733 137.97	32,860 136.92
Annual kWh	301,380.0					
Average kW	135.37					

Annual Savings	48,847 kWh
Average kW Reduction	21.68 kW

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type of asphalt mix being produced.	٦	
ne motor had only on/off type controls and ran at a constant load regardless of the product being produced. The		
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stomer, seems reasonable. Energy savings are achieved because the new VSD allows the motor to spend a majority	of	
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					DETAILED	CALCULATIONS
Mar 2013 V1						
Salesforce Opportunity Name Project Name	Valley Asphalt Corporati	0 ion - Mercantile Self Direct	- Kiln and Blower Motor \	/FD		CM013- Application # 1392199 Valley A
Measure Description						
The measure involved the insta	llation of a new VFD on a	n existing 200-hp motor th	at drives a rotary kiln. The	VFD allows the rotary kill	n to revolve fast	er or slower based on the ty
Baseline						
The customer estimates that th customer estimates that the kil	• •	-	more than two years, and	as such the customer av	erage baseline h	as been used. The baseline r
Savings Calculation Methodolo	ogy					
The new VFD allows the 200-hp its 2,120 hour annual operating		• •	· · ·	nts. The post-installation of	Juty cycle, which	n was calculated by the custo
Incremental Measure Cost (IM	C)					
Baseline choice was no action.	•	m invoices provided for th	e installed equipment			
IMC Calculation	IMC (\$)	Baseline Cost (\$)	Measure Cost (\$)			
	\$8,300.00	\$0.00	\$8,300.00	Attached	l Files	
References to source documer <i>CMO13-1392199 - Valley Aspho</i>	• • • •	•	cs- Plant 5 Kiln - ECM4	 ✓ Equipm ✓ Calcula ✓ Cost De 		CMO13-1392199 - Valley Asphalt Corporation - Part
Savings Calculations	(insert all appropriate ca	lculations or simulation re	sults below)			

Overall, savings decreased slightly compared to the submitted value.

BASELINE

Demand Calculations								Mor	thly Opera	ting Profile					
bhp	Motor Load (kW)	Motor Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
200	149.20	95.00%	157.05	0	0	0	180	240	250	280	280	280	280	230	100
90%	134.28	95.00%	141.35												
80%	119.36	95.00%	125.64												
70%	104.44	95.00%	109.94												
60%	89.52	95.00%	94.23												
50%	74.60	95.00%	78.53												
40%	59.68	95.00%	62.82												
			Total Hours	2,120											
			nergy Consumption (kWh) hly Average Demand (kW)	0 0.00	0 0.00	0 0.00	28,269 157.05	37,693 157.05	39,263 157.05	43,975 157.05	43,975 157.05	43,975 157.05	43,975 157.05	36,122 157.05	15,705 157.05

	Monthly Energy Consumption (kWh)	0	0	0	28,269	37,693	39,26
	Monthly Average Demand (kW)	0.00	0.00	0.00	157.05	157.05	157.0
Annual kWh	332,951.6						
Average kW	157.05						

Demand Calculations					Monthly Operating Profile											
bhp	Motor Load (kW)	Motor Eff.	VFD Eff.	Line Side kW	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
200	149.20	95.00%	97.50%	161.08	0	0	0	50	60	60	60	60	60	60	60	60
90%	134.28	95.00%	97.50%	144.97	0	0	0	40	60	60	60	60	60	60	60	20
80%	119.36	95.00%	97.50%	128.86	0	0	0	30	50	50	60	60	60	60	40	20
70%	104.44	95.00%	97.50%	112.76	0	0	0	30	40	50	60	60	50	50	40	0
60%	89.52	95.00%	97.50%	96.65	0	0	0	30	30	30	40	40	50	50	30	0
50%	74.60	95.00%	97.50%	80.54												
40%	59.68	95.00%	97.50%	64.43												
				Total Hours	2,120											
			Monthly Energy Cons	• • •	0	0	0	24,001	32,216	33,343	36,726	36,726	36,565	36,565	30,927	15,141
			Monthly Average	e Demand (kW)	0.00	0.00	0.00	133.34	134.23	133.37	131.16	131.16	130.59	130.59	134.47	151.41

	Consumption (kWh) erage Demand (kW)	0 0.00	0 0.00	0 0.00	24,001 133.34	32,216 134.23
Annual kWh	282,211.5					
Average kW	134.48					

Annual Savings	50,740 kWh	
Average kW Reduction	22.57 kW	

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y Asphalt - Plant 23 Kiln VFD	State	OH
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type of asphalt mix being produced.		
ne motor had only on/off type controls and ran at a constant load regardless of the product being pro	duced. The	
stomer, seems reasonable. Energy savings are achieved because the new VSD allows the motor to sp	end a majority of	
	icita a majority of	

Appendix C -Cash Rebate Calculation

Valley Asphalt 3 Plants (No 5,14,23) 4 VFDs

Measure	Quantity	Cash Rebate Rate	Cash Rebate
		50% of incentive that would be offered by	
Valley Asphalt - Plant 14 Kiln VFD	1	the Smart \$aver Custom program	\$891
		50% of incentive that would be offered by	
Valley Asphalt - Plant 23 Blower VFD	1	the Smart \$aver Custom program	\$411
		50% of incentive that would be offered by	
/alley Asphalt - Plant 23 Kiln VFD	1	the Smart \$aver Custom program	\$1,176
		50% of incentive that would be offered by	
/alley Asphalt - Plant 5 Kiln VFD	1	the Smart \$aver Custom program	\$677
			\$3,155

Appendix D -UCT Value

Valley Asphalt 3 Plants (No 5,14,23) 4 VFDs

Measure	Total Avoided Cost	Program Cost	Incentive	Quantity	Measure UCT
Valley Asphalt - Plant 14 Kiln VFD	\$23,794	\$1,351	\$891	1	10.61
Valley Asphalt - Plant 23 Blower VFD	\$14,953	\$839	\$411	1	11.96
Valley Asphalt - Plant 23 Kiln VFD	\$22,124	\$1,233	\$1,176	1	9.18
Valley Asphalt - Plant 5 Kiln VFD	\$24,867	\$1,403	\$677	1	11.95
Totals	\$85,738	\$4,827	\$3,155	4	

Total Avoided Supply Costs	\$85,738
Total Program Costs	\$4,827
Total Incentive	\$3,155

Aggregate Application UCT

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Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit <u>www.duke-energy.com</u>.

Email this form along with <u>completed Mercantile Self Direct Prescriptive or Custom applications</u>, proof of payment, energy savings calculations and spec sheets to <u>SelfDirect@Duke-Energy.com</u>. You may also fax to 1-513-629-5572.

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Mercantile customers, defined as using at least 700,000 kWh annually are eligible for the Mercantile Self Direct program. Please indicate mercantile qualification:

a single Duke Energy Ohio account

multiple accounts in Ohio (energy usage with other utilities may be counted toward the total)

Please list Duke Energy account numbers below (attach listing of multiple accounts and/or billing history for other utilities as required):

Account Number	Annual Usage	Account Number	Annual Usage
08403616-01-0	416110		
27302143-01-9	447032		
24600675-01-6	1,396,076		

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart \$aver® Custom Incentive. Self Direct rebates are applicable to Prescriptive measures that were installed more than 90 days prior to submission to Duke Energy and have not previously received a Duke Energy Prescriptive rebate.

Self Direct Program requirements dictate that certain projects that may be Prescriptive in nature under the Smart \$aver program must be evaluated using the Custom process. Use the table on page two as a guide to determine which Self Direct program fits your project(s). Apply for Self Direct projects using the appropriate application forms in conjunction with this cover sheet. Where Mercantile Self Direct Prescriptive applications are listed, please refer to the measure list on that application. If your measure is not listed, you may be eligible for a Self Direct Custom rebate. Self Direct Custom applications, like Smart \$aver Custom applications, should include detailed analysis of pre-project and post-project energy usage and project costs. Please indicate which type of rebate applications are included in the table provided on page two.

Please check each box to indicate completion of the following program requirements:

All sections of appropriate application(s) are completed	Manufacturer's Spec sheets	Energy model/calculations and detailed inputs for Custom applications
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* If a single payment record is intended to demonstrate the costs of both Prescriptive & Custom projects, please include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy conservation measure.

Application Type	Replaced equipment at end of lifetime or because equipment failed**	Replaced fully operational equipment to improve efficiency***	New Construction	
		MSD Prescriptive Lighting	MSD Prescriptive Lighting	
Lighting	MSD Custom Part 1 Custom Lighting Worksheet	MSD Custom Part 1	MSD Custom Part 1	
· · · · · · · · · · · · ·			MSD Prescriptive Heating & Cooling	
Heating & Cooling	MSD Custom Part 1 MSD Custom General Worksheet	MSD Custom Part 1 MSD Custom General Worksheet	MSD Custom Part 1	
Window Films, Programmable Thermostats, & Guest Room Energy Management Systems	☐ MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s)	MSD Prescriptive Heating & Cooling	☐ MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s)	
Chillers & Thermal	MSD Custom Part 1	☐ MSD Custom Part 1	MSD Prescriptive Chillers & Thermal Storage	
Storage		MSD Custom General Worksheet	MSD Custom Part 1 MSD Custom General Worksheet	
	☐ MSD Custom Part 1 ☐ MSD Custom General Worksheet	☐ MSD Custom Part 1	MSD Prescriptive Motors, Pumps & Drives	
Motors & Pumps		MSD Custom General Worksheet	MSD Custom Part 1 MSD Custom General Worksheet	
<u> </u>	· · · ·	MSD Prescriptive Motors, Pumps & Drives	MSD Custom Part 1 MSD Custom VFD Worksheet	
VFDs	Not Applicable	MSD Custom Part 1		
			MSD Prescriptive Food Service	
Food Service	MSD Custom Part 1	MSD Custom Part 1 MSD Custom General Worksheet	MSD Custom Part 1 MSD Custom General Worksheet	
			MSD Prescriptive Process	
Air Compressors	MSD Custom Part 1 MSD Custom Compressed Air Worksheet	MSD Custom Part 1 MSD Custom Compressed Air Worksheet	MSD Custom Part 1 MSD Custom Compressed Air Worksheet	
		MSD Prescriptive Process		
Process	MSD Custom Part 1	MSD Custom Part 1 MSD Custom General Worksheet	MSD Custom Part 1	
Energy Management Systems	MSD Custom Part 1 MSD Custom EMS Worksheet	MSD Custom Part 1 MSD Custom EMS Worksheet	MSD Custom Part 1 MSD Custom EMS Worksheet	
Chiller Tune-ups		MSD Prescriptive Chiller Tune-ups		
Behaviorai*** & No/Low Cost		MSD Custom Part 1 MSD Custom General Worksheet		

** Under the Self Direct program, failed equipment and equipment at the end of its useful life are evaluated differently than early replacement of fully functioning equipment. All equipment replacements due to failure or old age will be evaluated via the Custom program.
*** Please ensure that you include the age of the replaced equipment for measures classified as "Early Replacement" in your application as well as the estimated date that you would have otherwise replaced the existing equipment if you had not chosen a more energy efficient option.
**** Behavioral energy efficiency and demand reduction projects must be both measurable and verifiable. Provide justification with your application.



Proposed energy efficiency measures may be eligible for Self-Direct Custom rebates if they clearly reduce electrical consumption and/or demand as compared to the appropriate baseline.

Before you complete this application, please note the following important criteria:

- Submitting this application does not guarantee a rebate will be approved.
- Rebates are based on electricity conservation only.
- Electric demand and/or energy reductions must be well documented with auditable calculations.
- Incomplete applications cannot be reviewed; all fields are required.

Refer to the complete list of Instructions and Disclaimers, beginning on page 6.

Notes on the Application Process

If you have any questions concerning how to complete any portion of the application or what supplementary information is required, please contact your Duke Energy Ohio, Inc account manager or the Duke Energy Smart \$aver® team at 1-866-380-9580.

Every application must include calculations of the baseline electrical usage and the electrical usage of the proposed high-efficiency equipment/system. These calculations are performed and submitted by the Duke Energy Ohio customer, or your designated equipment vendor / engineer. Application Part 2 worksheets and page 6 of this application contain additional guidance on acceptable calculations. *Complex or unique projects may require the use, at the applicant's expense, of modeling software.* Please contact the Duke Energy Smart \$aver® with questions about these requirements.

If you do not receive an acknowledgement email within 1 day of submitting an application via online, email, or fax, or within 1 week of sending an application via mail, please call 1-866-380-9580. The acknowledgement email will provide with an estimated response time based on an initial assessment of your application. The application review may include some communication to resolve any questions about the project or to request additional information. Applications that are received complete without missing information have a faster review time.

There are three ways to submit your completed application form and excel worksheets.

- Email: Complete, sign, scan and send this application form and attachments to: <u>SelfDirect@duke-energy.com</u> (Note attachment size limit is applicable)
- Fax: 513-629-5572

Mail: Duke Energy Mercantile Self Direct Custom Rebate PO Box 2445 Spokane, WA 99210-2445





1. Contact Information (Required)

Duke Energy Cu	stomer Contact I						
Company Name	Valley Asphalt Co	Valley Asphalt Corporation ATT. Fred Brammer					
Address	11641 Mosteller	Road					- <u> </u>
City	Cincinnati		State	Ohio		Zip Code	45241
Project Contact	FRED BRAM	mêr					
Title	Superintendant						
Office Phone	513-771-8400	Mobile Phone	513-5	35-6127	Fax	513-32	6-3665
E-mail Address	fred.brammer@jrjnet.com						
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Equipment Vend	or / Contractor / /	Architect / Engi	neer Co	ontact Inf	ormatio	n	
Company Name	F.D. Lawrence Ele	ectric Co.					
Address	3450 Beekman S	treet					
City	Cincinnati		State	Ohio	Zip Co	de	45223-2743
Project Contact	Doug Ison						
Title	Sales Representa	tive					
Office Phone	513-542-1100	Mobile Phone	513-8	307-9474	Fax	51	3-542-2422
E-mail Address							
Primary Contact f	or Technical Ques	tions D	ave Rog	jers	<u> </u>		

Payment Information						
Payee Legal Company Name Federal income tax return):			lley Aspha	alt Corpo	ration	
Mailing Address	11641 Mosteller Ro	ad				
City	Cincinnati		State	Ohio	Zip Code	45241
Type of organization (check one) [] Individual/Sole Proprietor 🔀 Corporation [] Partnership [] Unit of Government [] Non-Profit (non-corporation)						
Payee Federal Tax ID # of L Company Name Above:		95				
If the customer (Duke Energ	y account holder) is	not	the paym	ent recip	ient, indicate	who is:
If the vendor is to receive payment, customer must sign below. I hereby authorize payment of incentive directly to vendor or other:						
Customer Signature		<u>.</u>	Date	/	/ (mi	m/dd/yyyy)
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2. Project Information (Required)

- A. Please indicate project type:
 - New Construction
 - Expansion at an existing facility (existing Duke Energy account number)
 - Replacing equipment due to equipment failure
 - Replacing equipment that is estimated to have remaining useful life of 2 years or less
 - Replacing equipment that is estimated to have remaining useful life of more than 2 years
 - Behavioral, operational and/or procedural programs/projects
- B. Please describe your project, or attach a detailed project description that describes the

Installed VFD's on rotary Kilms to reduce Demand,Stress on Equipment and to be able to speed up or slow down revolutions on Rotary Kilms depending on the type of asphalt mix design we were running. Also installed 1ea. on burner blower to lower demand and to better control burner emissions.

- C. When did you start and complete implementation? End date 04 / 2013 (mm/yyyy) Start date 07 / 2012 (mm/yyyy)
- D. Are you also applying for Self-Direct Prescriptive rebates and, if so, which one(s)¹?
- E. Please indicate which worksheet(s) you are submitting for this application (check all that apply):
 - Lighting
 - Variable Frequency Drive (VFD)
 - Compressed Air
 - Energy Management System (EMS)

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- General (for projects not easily submitted using one of the above worksheets)
- F. List all assumptions about the baseline and proposed equipment energy use and operation schedule, or attach a document listing that information. Attach specification sheets for all proposed new equipment.
 - ok

¹ If your project involves some equipment that is eligible for prescriptive rebates and some equipment that is likely eligible for custom rebates, and if it is feasible to separate the equipment for the energy analysis, then the equipment will be evaluated separately. If it is not feasible to separate the equipment for analysis, then the equipment will be evaluated together in the custom application.



Required: Attach a supplier or contractor invoice or other equivalent information documenting the Implementation Cost for each project listed in your application. (Note: self-install costs cannot be included in the Implementation Cost)

3. Signature (Required – must be signed by Duke Energy customer)

Customer Consent to Release of Personal Information

_____, do hereby consent to Duke Energy I, (insert name) <u>Tim ST. Clair</u>, do hereby consent to Duke Energy disclosing my Duke Energy Ohio, Inc Account Number and Federal Tax ID Number to its subcontractors solely for the purpose of administering Duke Energy Ohio's Mercantile Self-Direct Program. I understand that such subcontractors are contractually bound to otherwise maintain my Duke Energy Ohio, Inc Account Number and Federal Tax ID Number in the strictest of confidence.

I realize that under the rules and regulations of the public utilities commission, I may refuse to allow Duke Energy Ohio, Inc to release the information set forth above. By my signature, I freely give Duke Energy Ohio, Inc permission to release the information designated above.

Application Signature

I certify that I meet the eligibility requirements of the Duke Energy Ohio, Inc Mercantile Self Direct Custom Rebates Program and that all information provided within this application is correct to the best of my knowledge. I agree to the terms and conditions set forth for this program. I certify that the numbers, energy savings, and responses shown on this form are correct. Further, I certify that the taxpayer identification number is current and correct. I am not subject to backup withholding because: (a) I am exempt from backup withholding; or (b) I have not been notified by the IRS that I am subject to backup withholding as a result of a failure to report all interest or dividends; or (c) the IRS has notified me that I am no longer subject to backup withholding. I am a U.S. citizen (includes a U.S. resident alien).

Duke Energy Oh/o, Inc Customer Signature

ana ber er De lak

Print Name Timothy Ust, Cham Date 4-4-2017



Checklist for completing the Application

INCOMPLETE APPLICATIONS WILL RESULT IN DELAYS IN DUKE ENERGY PROCESSING YOUR APPLICATION AND NOTIFYING YOU CONCERNING AY REBATES. Before submitting the application and the required supplementary information, use the following checklist to ensure that your application is complete and the information in the application is accurate. (Note: this checklist is for your use only - do not submit this checklist with your application)

Section No.	Illeus Valu
& Title	Have You: Completed the contact information for the Duke Energy customer?
1. Contact	Completed the contact information for the equipment vendor / project Completed the contact information for the technical aspects of the
Information	the set hat oan answer dilesuois about the total at
	project, if that is a different person than above? Answered the questions A-E, including providing a description of your
2. Project	Answered the questions A-E, including provide of
Information	project. Completed and attached the lighting, compressed air, VFD, EMS
	and/or General worksheet(s)?
3. Signature	Signed your name?
5. Signature	│ ⊠ Printed your name?
	Entered the date?
Supplementary	 Entered the date? Attached a supplier or contractor's invoice or other equivalent Attached a supplier or contractor's invoice or other equivalent Information documenting the Implementation Cost for projects listed in Information documenting the Implementation costs cannot be included in the
information	information documenting the implementation occurrence included in the your application? (Note: self-install costs cannot be included in the
(Required)	Implementation Cost)
	Implementation Cost) (If submitting the General Worksheet) attached calculations documenting the energy usage and energy savings for <u>each</u> project listed
	in your application?

If you have any questions concerning how to complete any portion of the application or what supplementary information is required, please contact:

- your Duke Energy account manager
- the Duke Energy Smart \$aver® team at 1-866-380-9580.

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Mercantile Self Direct Nonresidential Custom Rebate Application PART 1

Preferred Customized Calculation Tools

Please refer to the list below of the preferred software tools to use when calculating the baseline electrical usage and the electrical usage of the proposed high-efficiency equipment or system. Click on each software tool to learn more.

Software Tool	Category
eQuest	Nonresidential retrofits and new construction
EnergyPlus	Nonresidential retrofits and new construction; Whole building simulation
Carrier® HAP	HVAC
Trane® Trace TM	HVAC
DOE OIT Pumping System Assessment Tool (PSAT)	Pumps
MotorMaster+	Motors
AirMaster	Air compressor systems
Emerson TM Product Selection &	Refrigeration compressor retrofits using BIN analysis. ² For projects of approximately 250,000 kWh or less.
Energy Analysis DOE2.2R	Refrigeration measures
<u>SkyCalcTM</u>	Skylighting
BinMaker®	Weather data analysis tool
AFT Fathom	Fluid flow analysis for industrial systems



Instructions/Terms/Conditions

Note: Please keep for your records- do not submit with the application

- 1. Energy service companies or contractors may assist in preparing the application, but an authorized representative of the customer must sign this application to be eligible to participate in the Mercantile Self Direct Program. Completion of this application does not guarantee the approval of a Self Direct Custom Rebate.
- 2. Once all documentation requested in this application is received by Duke Energy Ohio, Inc, and any follow-up information requested by Duke Energy is received, the rebate amount for each Energy Conservation Measure (ECM) will be communicated to the customer. The rebate amount will be based on ECM energy savings and ECM incremental installation cost.
- 3. All rebates require approval by the Public Utilities Commission of Ohio. Duke Energy Ohio, Inc will submit an application for rebate on the customer's behalf upon customer attestation to program terms, conditions and requirements as outlined in the rebate offer letter and upon customer completion of attestation documents required by the Public Utilities Commission of Ohio.
- 4. Duke Energy Ohio, Inc will issue a Self Direct Custom Rebate check, based on the approved rebate amount for each ECM, upon receiving approval from the Public Utilities Commission of Ohio. Duke Energy Ohio, Inc does not guarantee PUCO approval.
- 5. With the application, the customer must provide a list of all sites where the ECMs were installed. Duke Energy Ohio, Inc requests that sites of similar size, hours of operation and energy consuming characteristics be grouped together in one application for the determination of the rebate amount. The application should identify the site where each unique ECM was installed.
- 6. Based on the information submitted with the application and the information gathered both before and after the initial installation of the ECM, Duke Energy Ohio, Inc will calculate the rebate amount for each ECM.
- 7. Duke Energy Ohio, Inc may conduct random site inspections of a sample of the locations where the ECMs are installed to verify installation and operability of the ECMs and to obtain information needed to calculate the Approved Rebate Amount.
- 8. Customers are encouraged to retain copies of all forms, invoices and supporting documentation for their records.

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9. Approved rebates are valid for 6 months from the date communicated to the customer by Duke Energy Ohio, Inc, subject to the expiration of measure eligibility based on project completion dates and application submission deadlines as defined by PUCO. Customers are encouraged to execute their rebate offer contracts and PUCO-required affidavits promptly to ensure eligibility is not forfeited.



- 10. Duke Energy Ohio, Inc reserves the right to recover all unrecoverable costs associated with the project approval if the customer decides not to execute the rebate contract, after the project is approved by Duke Energy Ohio, Inc.
- 11. Projects financially supported by other funding sources will be evaluated on a case-by-case basis for potential partial funding from Duke Energy Ohio, Inc.
- 12. Participants must be Duke Energy Ohio, Inc nonresidential, mercantile customers with the project sites in the Duke Energy Ohio, Inc service territory.
- 13. Customers or trade allies may not use any Duke Energy logo without prior written permission.
- 14. Only trade allies registered with Duke Energy are eligible to participate.
- 15. All equipment must be new. Used or rebuilt equipment is not eligible for rebates. All old existing equipment must be removed on retrofit projects.
- 16. Disclaimers: Duke Energy Ohio, Inc
 - a. does not endorse any particular manufacturer, product or system design within the program;
 - b. will not be responsible for any tax liability imposed on the customer as a result of the payment of rebates:
 - c. does not expressly or implicitly warrant the performance of installed equipment. (Contact your contractor for details regarding equipment warranties.);
 - d. is not responsible for the proper disposal/recycling of any waste generated or obsolete or old equipment as a result of this project;
 - e. is not liable for any damage caused by the installation of the equipment nor for any damage caused by the malfunction of the installed equipment; and
 - reserves the right to change or discontinue this program at any time. The acceptance f. of program applications is determined solely by Duke Energy Ohio, Inc.

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	Page 1 of 3	💼 Duke
Mercantile Self Direct		P Duke Energy®
Nonresidential Custom Rebate Application	Rev 7/11	
VFD WORKSHEET - CUSTOM VFD APPLICATION PART 2		

The VFD Worksheet is part 2 of the application. Do not submit this file without submitting a completed Part1 Custom Application document file, which can be found at www.duke-energy.com.

Before you complete this application, please note the following important criteria:

- Submitting this application does not guarantee an rebate will be approved.
- Rebates are based on electricity conservation only. .
- Electric demand and/or energy reductions must be well documented with auditable calculations.
- . Incomplete applications will not be reviewed; all fields are required.
- Refer to the complete list of Instructions and Disclaimers, found in the Mercantile Self Custom Application Part 1 document.

Please enter your information and data into the cells that are shaded.	
Cells in white are locked and cannot be written over.	

B. I., Energy Customer Contac	t Information (Match the informa	tion in Application Part 1):	
Name Company	Fred Brammer Valley Asphalt Corp.		
Equipment Vendor / Project E Name Company	ngineer Contact Information Doug Ison F.D.Lawrence Electric		
Location of Proposed VFD Pro Site Name Electric Account Number(s) Site Address	ject Valley Asphalt Plant#5 08403616-01-0 4850 Stubbs Mill Road Morrov	w,Ohio 45152	

Before proceeding with the custom application, please verify that your project is not on the Self-Direct Prescriptive application.

The prescriptive rebate applications can be found at:

http://www.duke-energy.com/ohio-large-business/smart-saver/mercantile-self-direct.asp

Prescriptive rebate amounts are pre-approved.

Mercantile Nonresider	د امانه.	Curtom Reha	te Application		ART	2									Rev	v 7/11	1 			rgy _⊗
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		plate HP																		
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		BHP of	Motor	Moto		Motor	Annual													
% of Fu	11	Driven	output HP	Efficier	··· [• • • • •												T	Yearly
Load BHP	of	Equipment	as % of	@ Mo		· ·	iours that		۱	Nonth	iy hou	irs tha	at each	n moto	r runs	i (see n	ote 3)	Nov	Dec	Total (hr)
Driven	ı	@ Actual	•	Output			(see note 2)	Jan		Mar			Jun	<u>Jul /</u>	Aug 3	sep		230	100	2,215
Equipme	int	Load (BHP)	HP	(%)		(kw) 157.05	(see note of			-	220	245	250	290 3	300 3	300	<u>280</u>	230	100	0
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Not Run	ning	0.0	0%	NA		Totals	8,760	744	672	744	720	744	720	744	744	720	744	120		
	Proposed Equipment Operation with VFD - Input values for ONE driven equipment and its motor.																			
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Entitlent	<u>, y 01</u>							7												
[TO THE	Motor	Mo		Motor		1												
% of F	็นไ	Driven	output HP	Effici	•	Electrical	Annual							_						Yearly
Load BH	iP of	Equipment		@ M		Power	hours that			Mon	thly ho	ours t	hat ea	ch mo	tor ru	ns (see	note 3) T Nov	Dec	Total (hr)
Drive	en	@ Actual	Motor	Outp		Draw (kw)	motor runs (see note 2)	Jan	Feb	Mar		May	Jun	Jul	Aug	Sep	Oct		+	0
Equipn	nent					157.05	(300 1010 -7				Γ		<u> </u>			60	50	40		380
100	%	200.0					<u> </u>	-			30	40	50	50	60	L	+			320
90	%				3 %				1÷		20	30		40	60	50		_		290
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Not Ru	unnir	ug <u>0</u> .	<u> </u>		<u>- </u>	Totals	8,76	0 744	4 672	2 744	650	63	9 555	594			<u> </u>			

Page 2 of 3

Detailed Project Description Attached?

(Required) Yes

The "full load" operating condition is the condition at which the driven equipment operates for the base condition (i.e., without the VFD)

If the % operating loads do not vary between months, then enter the total annual hours that the motor will run at full load, partial load and hours not operating.

If the % operating loads vary between months (due to weather conditions or seasonal load), fill in the expected hours that the motor will run each month

at full load, partial load and hours not operating.

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Nonresidential Custom Rebate Application VFD WORKSHEET - CUSTOM VFD APPLICATION PART 2	Rev 7/11	[

App No.	0
Rev.	0

Operating Hours (see note 4) Weeks of Total Annual Use in Year Sunday Saturday Weekday Hours of Use End Hour End Hour (see note 5) Start Hour Start Hour End Hour 24 x 7 Start Hour 2,350 30 n/a 4:00PM n/a 5:00AM 5:00PM 5:00AM

Energy Savings

Ellergy Savings	Existing (no VFD)	Proposed (VFD)	Savings	
	Existing (no traj			Describe how energy numbers were calculated
Annual Electric Energy	416,110 kWh	385,000 kWh	31,110 kWh	
Electric Demand (kilowatts)	460 kW	415 kW	45 kW	
Calculations attached	Yes	Yes	<u>., ., .</u> ,	Duke Energy Electric Bill

Simple Payhack

Simple Payback	\$0.10	
Average electric rate (\$/kWh) on the applicable accounts (see note 6)	\$3,111	
Estimated annual electric savings	\$2,000.00	
Other annual savings in addition to electric savings, such as operations, maintenance, other fuels	\$8,300.00	
Incremental cost to implement the project (equipment & installation) (see note 7)	Yes	
Copy of vendor proposal is attached (see note 8) Total Payback in years		1.623948347
Simple Electric Payback in years (see note 9) 2.667952427 Total Payback in years		

4 Operating Hours

Describe when the equipment is typically used. If the project is proposed for more than one site, provide any variations in operating hours between the sites on a separate sheet.

5 Weeks of Use in Year

If the equipment is not in use 52 weeks during the year (for example, during holiday or summer break), provide an explanation of when Asphalt Production is Seasonal because of Temperature. usage is not expected and why:

6 Average electric rate (\$/kWh)

If you do not know your average electric rate, use \$0.10/kWh.

7 Incremental cost to implement the project

Costs exclude self installation costs.

Retrofit projects, incremental cost is the total cost of the proposed project. New construction or where the existing equipment must be replaced anyway, then incremental cost is the premium of the proposed high efficiency project over baseline.

s Copy of vendor invoice is attached

Vendor invoices detailing costs of the project are always required. New construction projects or where the existing equipment must be replaced anyway, vendor proposal of baseline must also be attached.

9 Simple Electric Payback

If the simple payback on the project is less than 1 year, the rebate structure is affected. Please check that the electric rate is accurate based on history.

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ATTH: FRED BRAMER

Altivar® 61 Drives Electrical Specifications

Input Voltage	200 -15% to 240 +10%, 380 -15% to 480 +10%
Displacement Power Factor	98% through speed range
input Frequency	50 Hz -5% to 60 Hz +5%
Drive Input Section	Six pulse bridge rectifier
Drive Output Section	Three Phase, IGBT Inverter with Pulse Width Modulated (PWM) output Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Conve	rter 0.6 to 500 Hz
Torque/overtorque	110% of nominal motor torque for 60 s, minimum
Current (transient)	110% of controller rated current for 60 87 minimum
Switching Frequency	Selectable from 1 to 16 kHz, 12 kHz nominal rating for 1-60 hp @ 200/240 V, 1-100 hp @ Selectable: 2.5 to 8 kHz, 2.5 kHz nominal rating for 75-125 hp @ 200/240 V125-900 hp
Speed Reference inpute	Al: 0 to +10 V Impedance = 30 KOlvins Used for Speed potentiometer, 1-10 kOhme Al2: Factory setting -4 to 20mA, software configurable for current, (0-20mA, X, Y) or vol
Analog Reference Resolution	0.1 for 100 Hz (11 bits)
I/O Samoling Time	2 ma +/- 0.5 ms on analog inpute & outputs; & logic inputs, 7 ms +/- 0.5 ms on relay out
Power Removal/Run Permissive In	
Efficiency	98% at full load typical
Acceleration and Deceleration Rar	nps 0.1 to 999.9 seconds (definition in 0.1 s increments)
Skip Frequencies	Three configurable skip frequency/ump frequency bands
n ni felio il fini della segna della esta della segna della segna della segna della segna della segna della se In 1999 il fini della segna della segna della esta della segna della segna della segna della segna della segna d	Energy economizer (flux optimization) motor algorithm to maximize energy savings.
Motor Control Profiles	(Automatically optimizes voltage based on load.) or select from 2 point or 5 point voltarily
	or SLFV (sensorless llux vector)
Speed Range	the top, open loop
Motor Protection	Class 10 electronic overload protection or PTC probe
	Simply Start menu: PID'set-up menu, network set-up menu, Logic I/O & Analog VO mep
Graphic Display Terminal	status, Monitoring and self-diagnostics with fault messages and status such as Power
	elapsed time, motor, tun time, line voltage, motor, current, ready to run, running, motor st
Compliance	RoHS and WEEE (Waste Electrical & Electronic Equipment compliant
Codes and Standards	UL, CSA, NOM 117, DNV, CE, C-TICK, GOST, UL 1995 Planum rated, SEMEF47 certified for voltage dip ride-through

Altivar® 61 Drives Environmental Specifications

Temparature	Operation:+14 to + 122' F (-10 to +50° C) Storage: 13 to +159' F (-25 to +70° C)
Humidity	95% with no condensation or dripping water. conforming to IEC 600068-2-3.
Altinuda	3,300 ft. (1,000 m) without derating; 3,300-9950 ft (1,000-3,000 m) derate output current each additional 330 tt; (100 m); 6560 ft (2000m) maximum for corner grounded distributio
	1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V:
	IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit.
Enclosure Rating	75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V:
	IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom
	61-20 hp @ 200/240 V, 1-25 hp @ 380/480 V: Pollution degree 2 per JEC/EN 61800-5-1,
	Control S337 provides protection par IEC 60721-3-3 Class 3C2
	25-60 hp @ 200/240 V, 90-100 hp @ 380/480 V. Pollution degree 3 per IEC/EN 61800-5
Pollution Degree:	Option S337 provides protection per IEC 60721-3-3 Class 3C2
	60-125hp @ 200/240 V 125 900 hp @ 360/480V Pollution degree 3 per IEC/EN 61600-1

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문는 속한 김 사람이.

Variable speed drives for asynchronous motors

Altivar 61: Reduction of current harmonics Option: DC chokes

The main solutions for reducing current harmonics are as follows:

- # DC chokes, see below
- 🖬 Line chokes, see page 2/228
- Line chance, 500 page 5/20
 16% and 10% passive fillers, see page 2/231
 Use of passive fillers with a DC choke, see pages 2/231 to 2/235

These 4 solutions can be used on the same installation. It is always easier and less expensive to handle current harmonics at Installation level as a whole rather than at the level of each individual unit, particularly when using passive lilters and active compensators.

DC chokes are used to reduce current harmonics in order to comply with standard IEC 61000-3-12 for drives on which the line current is greater than 16 A and less

than 75 A. Using the DC choke with the drive complies with standard IEC 61000-3-12 provided that the RSCE > 120 (1) at the point of connection to the public network. 120 represents the minimum value of RSCE (1) for which the values in table 4 of standard

Table 5.1 are not exceeded. It is the responsibility of the installer or the user to ensure that the device is connected correctly to a connection point with an RSCE > 120.

The DC choke is connected to the drive power terminals.

It is supplied as standard with ATV 61HD55M3X, HD90M3X and ATV 61HD00N4...HC63N4 drives and is integrated into ATV 81WaseN4 and ATV 61W###N4C drives.

Applications

Reduction of current harmonics. Reduction of THD to 5% or to 10% in association with passive fillers, see pages 2/231 to 2/235.

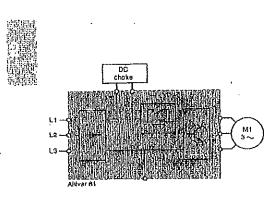
. . .

Maintaining the motor torque in relation to the line choke.

(1) Short-circuit ratio

TO FIRED BROMMAN	From Jarob Kimball
Co /Depi.	Co. SayorpD
Phone #	Phone #

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Mercantile Self Direct	- 44 4	Duke Energy₀
Nonresidential Custom Rebate Application VFD WORKSHEET - CUSTOM VFD APPLICATION PART 2	Rev 7/11	
VFD WORKSHEET - COSTONI VFD ACT SIGNATURE		i i i i i i i i i i i i i i i i i i i

The VFD Worksheet is part 2 of the application. Do not submit this file without submitting a completed Part1 Custom Application document file, which can be found at www.duke-energy.com.

Before you complete this application, please note the following important criteria:

- Submitting this application does not guarantee an rebate will be approved.
- . Rebates are based on electricity conservation only.
- Electric demand and/or energy reductions must be well documented with auditable calculations. •
- •
- Incomplete applications will not be reviewed; all fields are required. Refer to the complete list of Instructions and Disclaimers, found in the Mercantile Self Custom Application Part 1 document. •

Please enter your information and data into the cells that are shaded.
Cells in white are locked and cannot be written over.
Cells III Hallo C

a survey Contact	Information (Match the Information in Application Part 1):
Duke Energy Customer Contact	Fred Brammer
Name	
Company	Vallet Asphalt Corp.
•	
Equipment Vendor / Project En	rineer Contact Information
Equipment vehicler / Project en	Doug Ison
Name	F.D. Lawrence Electric
Company	F.D. Lawrence Electric
Location of Proposed VFD Proje	
	Valley Asphalt Plant#14
Site Name	27202143-01-9
Electric Account Number(s)	7940 Main Street Newtown,Ohio 45244
Site Address	
	tom application, please verify that your project is not on the Self-Direct Prescriptive application.
Refore proceeding with the cus	tom application, please verify that your project is not an an
Deloie processing in	tane can be found at:

The prescriptive rebate applications can be found at:

http://www.duke-energy.com/ohio-large-business/smart-saver/mercantile-self-direct.asp

Prescriptive rebate amounts are pre-approved.

Mercantile S		United Dobot	te Application	1											Re	v 7/1	1	Ø	Ĕne	rgy₀
VFD WORKSI	nresidential Custom Rebate Application D WORKSHEET - CUSTOM VFD APPLICATION PART 2																- -			
the second day of the																		App	Rev.	
Use one worksheet for each type of motor of half dial being process Type Process																				
Dri	ven	Equipment	N	ame	- F	sphalt Dive														
Qu	anti	ty	_		ŀ	200.0														
Brake HP (BHP) at Full Load (see note 1)						200.0														
Na	mej	olate HP			L															
Current Equipment Operation without VFD - Input values for ONE driven equipment and its motor.																				
Current Equipment of																				
		BHP of	Motor	Moto		Motor														
% of Full		Driven	output HP Efficiency		ncy	Electrical	Annual													
Load BHP of Equipment		as % of	@ Motor		1	hours that	Monthly hours that eac					n mote	motor runs (see note 3)					Yearly		
Driven		@ Actual	Nameplate	Output	t HP	Draw	motor runs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	00	Nov	Dec	Total (hr) 2,860
Equipmen	tL	oad (BHP)	HP	(%)		(kw)	(see note 2)	Jan	100					325	400	375	350	250	+	2,800
100 9	_	200.0	100%	95		157.05	2,650									<u> </u>				0
	6	0.0	0%		%	#DIV/01													<u> </u>	0
	%	0.0	0%		%	#DIV/01												470	744	5,900
	%	0.0	0%	<u> </u>	%	#DIV/01	6,110	744	672	544	405	424	395	419		345	394	470 720	744	8,760
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	Totals 8,760 744 672 744 720																			
<u></u>																				
Proposed Equipment Operation with VFD - Input values for ONE driven equipment and its motor.																				
Efficiency of VFD 95			5 %	1					•											
Efficiency	of \	/10		L				-												
		BHP of	Motor	Mo	tor	Motor		1												
% of Fu	% of Full Driven		output HP	Efficiency			Annual													1
	Load BHP of Equipment		as % of	@ Motor			hours that			Mon	thiv h	ours t	hat ea	ch mo	tor ru	ns (se	e note 3)		Yearly Total (hr)
Driven		@ Actual	Motor	Outp			motor runs	Jan	Feb			May	Jun	Jui	Aug	Sep	Oct	Nov	Dec	10tar (m) 60
Equipme	nt	Load (BHP)	Nameplate		<u>6)</u>	(kw)	(see note 2)	Jan	1.6.4	1	+	10	15	15	20	L		-		210
100	%	200.0	1009		5 %				<u>├</u> ──	40	30	60	20	20	10	20	_		+	350
90	%	180.0	909	_	4 %			1	1.	40	40	50	40	50	60	40				180
80	%	160.0	809		_				1	10	30	40	30	20	20	20	10	'		
70	%	140.0	709		92 9			+						<u></u>	<u></u>				╌┼╾╌╴	0
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Not Run	ning	3 0.0	<u>'</u> [_]	/0 11/	<u>`</u> +	Totals			67	z 654	4 62	0 58	4 615	639	634	04	0 09	<u> </u>	<u> </u>	

Page 2 of 3

Duke

Detailed Project Description Attached?

(Required) Yes

The "full load" operating condition is the condition at which the driven equipment operates for the base condition (i.e., without the VFD)

If the % operating loads do not vary between months, then enter the total annual hours that the motor will run at full load, partial load and hours not operating.

If the % operating loads vary between months (due to weather conditions or seasonal load), fill in the expected hours that the motor will run each month at full load, partial load and hours not operating.

Mercantile Self Direct	Page 3 of 3	D uke
Nonresidential Custom Rebate Application		Duke Energy₀
VED WORKSHEET - CUSTOM VED APPLICATION PART 2	Rev 7/11	

App No.	0
Rev.	0

Operating Hours (see note 4)

	w	/eekday	Sat	urday	Sun	day	Tose in tear	Total Annual
24 x 7	Start Hour	End Hour	Start Hour	End Hour	Start Hour	End Hour	(see note 5)	Hours of Use
	5:00AM	6:00PM	6:00AM	5:00PM	n/a	n/a	38	2,800

Energy Savings

	Existing (no VFD)	Proposed (VFD)	Savings	
				Describe how energy numbers were calculated
Annual Electric Energy	447,032 kWh	400,000 kWh	47,032 kWh	
Electric Demand (kilowatts)	476 kW	366 kW	110 kW	
Calculations attached	Yes	Yes	=.41 -	Duke Energy Electric Bills

Simple Payback

	\$0.10	
Average electric rate (\$/kWh) on the applicable accounts (see note 6)		
Estimated annual electric savings	\$4,703	
Other annual savings in addition to electric savings, such as operations, maintenance, other fuels	\$2,500.00	
incremental cost to implement the project (equipment & installation) (see note 7)	\$8,300.00	
Copy of vendor proposal is attached (see note 8)	Yes	
Simple Electric Payback in years (see note 9) 1.764755911 Total Payback in years		1.15226566

4 Operating Hours

Describe when the equipment is typically used. If the project is proposed for more than one site, provide any variations in operating hours between the sites on a separate sheet.

5 Weeks of Use in Year

If the equipment is not in use 52 weeks during the year (for example, during holiday or summer break), provide an explanation of when usage is not expected and why: Asphalt Production is seasonal because of temperature.

6 Average electric rate (\$/kWh)

If you do not know your average electric rate, use \$0.10/kWh.

7 Incremental cost to implement the project

Costs exclude self installation costs.

Retrofit projects, incremental cost is the total cost of the proposed project. New construction or where the existing equipment must be replaced anyway, then incremental cost is the premium of the proposed high efficiency project over baseline.

s Copy of vendor invoice is attached

Vendor invoices detailing costs of the project are always required.

New construction projects or where the existing equipment must be replaced anyway, vendor proposal of baseline must also be attached.

9 Simple Electric Payback

If the simple payback on the project is less than 1 year, the rebate structure is affected. Please check that the electric rate is accurate based on history.

ATTH: FRED BRAMER

Altivar[®] 61 Drives Electrical Specifications

Input Voltage	200 - 15% to 240 + 10%; 380 - 15% to 480 + 10%
Displacement Power Factor	98% through speed range
Input Frequency	50 Hz -5% to 60 Hz +5%
Drive Input Section	Six pulse bridge rectifier
Drive Output Section	Three Phase, IGBT Inverter with Pulse Width Modulated (PWM) output Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Converter-	0.6 to 500 Hz
Torque/overtorque	110% of nominal motor torque for 60 s, minimum
Current (transient)	110% of controller, rated current for 60 8 minimum
	2 lost bin from 4 to 40 bits 12 bits pominal rating for 1-60 hp @ 200/240 V, 1-100 hp @
Switching Frequency	Coloriable 2.5 to 8 kHz 2.5 kHz nominal rating 10175-125 m @ 200/240 Free Cod ny C
Speed Reference Inpule	Al: 0.to +10 V. Impedance = 30 kOhms Used for Speed potentiometer, 1-10 kChms Al2: Factory setting = 4 to 20mA, software configurable for current, (0-20mA, X-Y) or volt
Analog Reference Resolution	0.1 for 100 Hz (11 bits)
(O Sampling Time	2 ma 1/- 0.5 ms on analog inpute & outputs; A logic inputs, 7 ms +/ 0.5 ms on relay out
Power Removal/Run Permissive Input	
Efficiency	98% at full load typical
Acceleration and Deceleration Ramps	0.1 to 999.9 seconds (definition in 0.1 s increments)
Skip Frequencies	Three configurable skip (requency/ump frequency bands
	Energy appropriate (Illy optimization) mater algorithm to maximize energy savings.
Motor Control Profiles	(Automatically optimizes voltage based on load.) or select from 2 point or 5 point volts/he
	or SLFV (sensorless flux vector)
Speed Range	to:100 open loop
Motor Protection	Class 10 electronic overload protection or PTC probe
	DID adviser in the motion set up manual Logic I/O & Analog I/O mapp
Graphic Display Terminal	Atamitating and half diganastics with fault massacies and status such as, r owello
	elapsed time, motor, fun time, ine voltage, thour, current, gab,
Compliance	RoHS and WEEE (Waste Electrical & Electronic Equipment compliant
Codes and Standards	UL: CSA: NOM 117; DNV, CE; C-TICK GOST, UL 1995 Plenum rated, SEMI-F47 certified for voltage dip ride-through

Altivar® 61 Drives Environmental Specifications

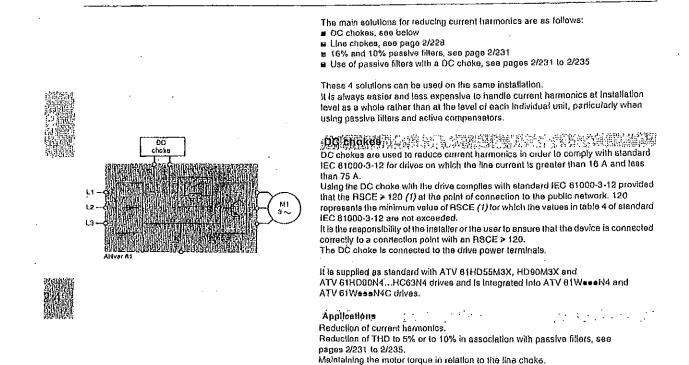
Leongrafilio	Operation:+14 to + 122'F (-10 to +50'C) Storage: 13 to +158'F (-25 to +70'C)
Humidily	ask with no condensation or dripping water, conforming to IEC 600006-2-3.
Almoda	3,300 (f; (1,000 m) without derating; 3,300, 9950 fr (1,000; 3,000 m) derate output current each additional 330 ft; (100 m), 6560 ft (2000m) maximum for corner-grounded distributio
Enclosure Rating	1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V: IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit. 75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V: IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom
Pollution Degree	 1-20 hp @ 200/240, V/1-25 hp @ 380/480 V. Pollution degree 2 per IEC/EN 61800-5-1. Option S337 provides protection par IEC 60721-3-3 Class 3C2 25-50 hp @ 200/240 V/30-100 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-2 Option S337 provides protection per IEC 60721-3-3 Class 3C2 60-125hp @ 200/240 V. 125-800 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-2
ACTION AND A CONTRACT OF A CONTRACT. A CONTRACT OF A CONTRACT. A CONTRACT OF A CONTRACT. A CONTRACT OF A CONTRACT. A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT. A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT. A CONTRACT OF A CONTRACT. A CONTRACT OF A CON	80000 1000 10000 10000

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Mini Aprila (p. 11)

Variable speed drives for asynchronous motors

Altivar 61: Reduction of current harmonics Option: DC chokes



(1) Short-circult ratio

ost-it® Fax Note 7671	Date 1/24/08 pages 5
To Fred Brammar	From Sarob Kimball
Co./Dapi.	CO. SOUMPD
Phone # .	Phone #
Fax # 513. 326. 3662	Fax # 914. 217. 6508

	•	Page 1 of 3	D uke
Mercantile Self Direct Nonresidential Custom Rebate Application		Rev 7/11	Duke Energy _®
VFD WORKSHEET - CUSTOM VFD APPLICATION PART 2			

The VFD Worksheet is part 2 of the application. Do not submit this file without submitting a completed Part1 Custom Application document file, which can be found at www.duke-energy.com.

Before you complete this application, please note the following important criteria:

- Submitting this application does not guarantee an rebate will be approved.
- Rebates are based on electricity conservation only.
- Electric demand and/or energy reductions must be well documented with auditable calculations. .
- Incomplete applications will not be reviewed; all fields are required.

Refer to the complete list of Instructions and Disclaimers, found in the Mercantile Self Custom Application Part 1 document.

Please enter your information and data into the cells that	are shaded.
Cells In white are locked and cannot be written over.	

Duke Energy Customer Contact	Information (Match the information in Application Part 1):
Name	Fred Brammer
Company	Valley Asphalt Corp.

nt Vendor / Project Engineer Contact Information

Equipment venuor / Project ma	
Name	Doug ison
Company	F.D. Lawrence Electric
Location of Proposed VFD Projec	t
Location of Proposed Tro Trojet	
Site Name	Plant #23
Electric Account Number(s)	24600675-01-6
	11641 Mosteller Road
Site Address	11041 Mosteller House

Before proceeding with the custom application, please verify that your project is not on the Self-Direct Prescriptive application.

The prescriptive rebate applications can be found at:

http://www.duke-energy.com/ohlo-large-business/smart-saver/mercantile-self-direct.asp

Prescriptive rebate amounts are pre-approved.

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ercantile Self Inresidential	Custom Doba	te Application																	
D WORKSHEI	ET - CUSTOM	VFD APPLICA	TION P	AKI					·								A	No	
						dusted for a	VED							1			App	lev.	
e one worksł	neet for each	type of motor	or fan	that	is being ev	er) Rotary Kil	 Lm]	Ту	pe Pr	ocess					Ŀ	iev.	
Driver	n Equipment	N	ame	14	sphart Dry	er river y m													
Quant	tity			+	200.0														
		Full Load (see r	ote 1)	\vdash	200.0														
	plate HP			L															
	t Owerest	ion without V	FD - In	out v	alues for C	ONE driven e	qulpm	ent a	nd its	motor	•								
irrent Equipi	ment Operat	ion without																	
	BHP of	Motor	Moto	-	Motor														
	Driven		Efficien	cy E	lectrical	Annual													
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%	0.0	0%		%	#DIV/01	<u> </u>	744	672	744	520	439	340	314		300	369	545	669	5,960
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Vot Running Proposed Eq Efficiency of % of Full Load BHP of Driven Equipment 100 % 90 % 80 % 70 % 60 % 30 % 20 %	0.0 uipment Ope VFD BHP of Driven Equipment @ Actual Load (BHP) 200.0 180.0 160.0 140.0 120.0 100.0 80.0 60.0 60.0	0% eration with V Motor output HP as % of Motor Nameplate 100% 90% 80% 70% 60% 50% 40% 30% 20%	FD - In 95 Mot Efficie @ Mo Outpu (% 95 95 95 9 5 9 5 9 5 9 5 9 5 9 5 9 5 9	% %	0.00 Totals alues for C Motor Electrical Power Draw (kw) #DIV/01 128.34 113.52 98.37 #DIV/01 #DIV/01 #DIV/01 #DIV/01 #DIV/01	8,760 NE driven en Annual hours that motor runs (see note 2) 230 315 220 130	744 quipm Jan	Feb	Mont Mar	720 notor Apr 20 40 10	744 urs tl May 30 10	720 hat ee Jun 30 20 20	r44 Jul 30 45 40	744 btor ru Aug 50 60 30 15 	720 ns (see Sep 300 400 255	744 e note 3 Oct 200 300 200	720 Nov 10 10	744 Dec 10 10 10 10 	8,760 Yearly Total (hr 230 315 220 130 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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Page 2 of 3

Detailed Project Description Attached?

Yes (Required)

The "full load" operating condition is the condition at which the driven equipment operates for the base condition (i.e., without the VFD)

If the % operating loads do not vary between months, then enter the total annual hours that the motor will run at full load, partial load and hours not operating.

If the % operating loads vary between months (due to weather conditions or seasonal load), fill in the expected hours that the motor will run each month at full load, partial load and hours not operating.

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Nonresidential Custom Rebate Application VFD WORKSHEET - CUSTOM VFD APPLICATION PART 2	Rev 7/11	

App No. 0 0 Rev.

Operating	Hours (see note 4)					<u> </u>	Weeks of	
24 x 7	W	reekday	Satu	rday	Sun	day	Use in Year	Total Annual
	Start Hour	End Hour	Start Hour	End Hour	Start Hour	End Hour	(see note 5)	Hours of Use
	5:00AM	7:00PM	6:00AM	5:00PM	n/a	n/a	36	2,600

nergy Savings

Energy Savings	Existing (no VFD)	Proposed (VFD)	Savings	
				Describe how energy numbers were calculated
Annuai Electric Energy	1,396,076 kWh	1,310,000 kWh		4
Electric Demand (kilowatts)			52 kW	Duke Energy Electric Bill
	Yes	Yes	<u> </u>	Duke Energy Electric Bin

Simple Payback	\$0.10	
Average electric rate (\$/kWh) on the applicable accounts (see note 6)	\$8,608	l
	\$1,000.00	
Estimated annual electric savings Other annual savings in addition to electric savings, such as operations, maintenance, other fuels	\$8,300.00	ļ
Incremental cost to implement the project (equipment & installation) (see note 7)	Yes	
Copy of vendor proposal is attached (see note 8) Copy of vendor proposal is attached (see note 8) 0.964264139 Total Payback in years		0.863899413
Simple Electric Payback in years (see note 9) 0.964264139		

4 Operating Hours

Describe when the equipment is typically used. If the project is proposed for more than one site, provide any variations in operating hours between the sites on a separate sheet.

If the equipment is not in use 52 weeks during the year (for example, during holiday or summer break), provide an explanation of when Asphalt Production is Seasonal Work due to Temperatures. usage is not expected and why:

6 Average electric rate (\$/kWh)

If you do not know your average electric rate, use \$0.10/kWh.

7 Incremental cost to implement the project

Costs exclude self installation costs.

Retrofit projects, incremental cost is the total cost of the proposed project. New construction or where the existing equipment must be replaced anyway, then incremental cost is the premium of the proposed high efficiency project over baseline.

s Copy of vendor involce is attached

Vendor invoices detailing costs of the project are always required. New construction projects or where the existing equipment must be replaced anyway, vendor proposal of baseline must also be attached.

9 Simple Electric Payback

If the simple payback on the project is less than 1 year, the rebate structure is affected. Please check that the electric rate is accurate based on history.

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Part2-Self-Direct-Custom-VFD-App Input Data

ATTH: FRED BRAMER

Altivar® 61 Drives Electrical Specifications

Input Voltage	200 -15% to 240 +10%; 380 -15% to 480 +10%
Displacement Power Factor	98% through speed range
Input Frequency	50 Hz -5% to 60 Hz +5%
Drive Input Section	Six pulse bridge rectifier
Drive Output Section	Three Phase, IGBT inverter with Pulse Width Modulated (PWM) output Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Converter	0.6 to 500 Hz
Torque/overtorque	110% of nominal motor torque for 60 s, minimum
Current (transient)	110% of controller rated current for 60 8. Minimum
Switching Frequency	Selectable from 1 to 16 kHz, 12 kHz nominal rating for 1-60 hp @ 200/240 V, 1-100 hp @ Selectable; 2.5 to 8 kHz, 2.5 kHz nominal rating for 75-125 hp @ 200/240 V125-900 hp @
Speed Reference Inpute	Al: 0 to +10 V. Impedance = 30 kOhms Used for Speed potentiometer 1-10 kChms Al2: Factory setting = 4 to 20mA, software configurable for current, (0-20mA, X-Y) or val
Analog Reference Resolution	0.1 for 100 Hz (11 bits)
VO Sampling Time	2 ms +/ 0.5 ms on analog inplus & outplus & logic inplus, 7 ms +/ 0.5 ms on relay out
Power Removal/Run Permissive Input	
Efficiency	98% at full load typical
Acceleration and Deceleration Ramps	
Skip Frequencies	Three configurable skip frequency/ump frequency bands
. The definition of the processing of a section of the processing section of the	Energy economizer (flux optimization) motor algorithm to maximize energy savings.
Motor Control Profiles	(Automatically optimizes voltage based on load.) or select from 2 point or 5 point voltance
	or SLFV (sensorless flux vector)
Speed Range	1 to:100, open loop
Motor Protection	Class 10 electronic overload protection or PTC probe
	Simply Start menu; PID'sotup menu, network set up menu, Logic I/O & Analog VO map
Graphic Display Terminal	status, Monitoring and self diagnostics with fault messages and statue such as. Power of
	ellepsed ume, motor run ume, line voltage, motor current, ready to run, running; motor sp
Compliance	RoHS and WEEE (Waste Electrical & Electronic Equipment compliant
Codes and Standards	UL, CSA, NOM 117, DNV, CE, C-Tick, GOST, UL 1995 Planum rated, SEMI-F47 contiled for voltage dip ride through

Altivar® 61 Drives Environmental Specifications

Temperatura Humidity	Operation:+14 to + 122 F (-10 to +50 C) Storage - 13 to +158 F (-25 to +70 C) 95% with no condensation or dripping water, conforming to IEC 600068-2-3.
Altinucia	3,300 ft: (1:000 m) without deraling; 3:300- 9950 ft (1:000-3:000 m) derate output current each additional 330 ft; (100 m): 6580 ft (2000m) maximum for corner grounded distributio
Enclosure Rating	1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V: IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit. 75-125 hp @ 200/240 V, 125-500 hp @ 380/490 V: IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom
Pollution Degree	1-20 hp @ 200/240 V. 1-25 hp @ 380/480 V. Pollution degree 2 per IEC/EN 61800-5-1, Option S337 provides protection per IEC 60721-3-3 Class 3C2) 25-60 hp @ 200/240 V. 90-100 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5- Option S337 provides protection per IEC 60721-3-3 Class 3C2 60-125hp @ 200/240 V. 125-900 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-

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Mercantile Self Direct
Nonresidential Custom Rebate Application
VED WORKSHEET - CUSTOM VED APPLICATION PART 2

Page 1 of 3

Rev 7/11



The VFD Worksheet is part 2 of the application. Do not submit this file without submitting a completed Part1 Custom Application document file, which can be found at www.duke-energy.com.

Before you complete this application, please note the following important criteria:

- Submitting this application does not guarantee an rebate will be approved. .
- Rebates are based on electricity conservation only. .
- Electric demand and/or energy reductions must be well documented with auditable calculations. .
- Incomplete applications will not be reviewed; all fields are required.
- Refer to the complete list of Instructions and Disclaimers, found in the Mercantile Self Custom Application Part 1 document.

Please enter your information and data into the cells that are shaded. Cells in white are locked and cannot be written over.

Duke Frierey Customer Contact li	formation (Match the information	in Application Part 1):	
Name	Fred Brammer		
Company	Valley Corporation		
66(()p)	Doug Ison F.D. Lawrence Electric		
Location of Proposed VFD Project	t		
Site Name	Plant#23		
Electric Account Number(s) Site Address	24600675-01-6 11641 Mosteller Road, Cincinnati,C	Dhio 45241	

Before proceeding with the custom application, please verify that your project is not on the Self-Direct Prescriptive application.

The prescriptive rebate applications can be found at:

http://www.duke-energy.com/ohio-large-business/smart-saver/mercantile-self-direct.asp

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Prescriptive rebate amounts are pre-approved.

Mercanti Nonresid VFD WOI	entia	l Custom Rel	oate Applicatio M VFD APPLIC	on CATION	PAR	T 2								<u></u>		Page 2 Rev 7/		2	Du En	ike ergy₀
	Driv	en Equipmen	h type of mot t	or or fai Name	n tha	it is being e Burner Blo 1	evaluated for wer	a VFC)			Type	Fan				[Ap	p No. Rev.	
		ntity	15			100.0														
			it Fuli Load (see	e note 1)	}	100.0														
		eplate HP			L															
Current	Eauli	oment Opera	tion without	VFD - li	nput	values for	ONE driven	equip	ment	and it	s moto	or.								
		BHP of	Motor	Moto	or	Motor														
% of Fi	all	Driven	output HP	Efficie	· '	Electrical	Annual													_
Load BH	P of	Equipment	as % of	@ Mo		Power	hours that			Mont	hly ho	urs th	at ear	:h mo	tor ru	ns (see	note 3)			Yearly
Drive	n	@ Actual	Nameplate	Output		Draw	motor runs	Jan	Feb	Mar		May	Jun	Jul	Aug		Oct	Nov	Dec	Total (hr)
Equipm	_	Load (BHP)	HP	(%)		(kw) 78.53	(see note 2) 2,800	Jan	100	IVIU	200	305	380	430	440	420	375	175	75	2,800
100	%	100.0	100%	95	%	78.53 #DIV/01	2,800													0
	%	0.0	0%		% %	#DIV/01					_									0
 -	%	0.0	0%		~~ %	#DIV/01				<u> </u>									<u> </u>	0
Mot Dun	<u>%</u>	0.0	0%	NA	%	0.00	5,960	744	672	744	520	439	340	314	304	300	369	545	669	5,960
Not Run	ang	0.0	0/3			Totals	8,760	744	672	744	720	744	720	744	744	720	744	720	744	8,760
Efficienc	y of ull	VFD BHP of Driven	Motor output HP	95 Mot Efficie	or ncy	Motor Electrical	Annual	guipi	nent a	nd its	moro	Γ.								
		Equipment	as % of	@ Mo Outpu		Power Draw	hours that			Mont	hlyhe	ours ti	iat ea	ch mo	tor ru	ns (see	note 3)			Yearly
Drive		@ Actual	Motor Nameplate	Outpu (%)		(kw)	(see note 2)	Jan	Feb		Apr			Jul		Sep	Oct	Nov	Dec	
Equipm 100	ent %	Load (BHP) 100.0	Nameplate 100%	(70)	/ %	#DIV/0!	(acciloter)		1										<u> </u>	0
90	%	90.0	90%	- ,95	· · · ·	70.67					20	30	30	30	50	30	20	10	10	230
80	%	80.0	80%			64.17					. 40	40	50.	45	60	30	30	10	10	315
70	%	70.0	70%	92	%	56.76					10	30	20	40	30	40	30	10	10 10	130
60	%	60.0	60%	91	%	49.19		1			10	10	20	10	15	25	20	10	10	0
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10	%	10.0	10%		%	#DIV/01	0.700		672	744	640	634	600	619	589	595	644	680	704	
Not Rur	ning	0.0	0%	NA	%	0.00	8,760 8,760	744		744	640	634	+	619	589	595	644	+		
Détaile	d Pro	ject Descript	l tion Attached		<u> </u> 237	Totals Yes	(Required)	1.44	1012	1,44	1			, _			u.e			

1 Brake HP (BHP) at Full Load

The "full load" operating condition is the condition at which the driven equipment operates for the base condition (i.e., without the VFD)

•

 $(x,y) \in \{x_i\}_{i \in \mathbb{N}}$

2 Annual hours that motor runs

If the % operating loads do not vary between months, then enter the total annual hours that the motor will run at full load, partial load and hours

s Monthly hours that each motor runs If the % operating loads vary between months (due to weather conditions or seasonal load), fill in the expected hours that the motor will run each month at full load, partial load and hours not operating.

Mercantile Self Direct	Page 3 of 3	Duke
Nonresidential Custom Rebate Application	Pov. 7/11	Duke Energy₀
VFD WORKSHEET - CUSTOM VFD APPLICATION PART 2	Rev 7/11	

Onerating H	OURS (see note 4)						App No. Rev.	······································
operating ri							Weeks of	
	v	Veekday	Satu	ırday	Sun	day	Use in Year	Total Annual
24 x 7	Start Hour	End Hour	Start Hour	End Hour	Start Hour	End Hour	(see note 5)	Hours of Use
	5:00AM	7:00PM	5:00AM	4:00PM	n/a	n/a	36	2,800

Enorgy Sovings

LiterBy Savings	Existing (no VFD)	Proposed (VFD)	Savings	
				Describe how energy numbers were calculated
Annual Electric Energy	1,396,076 kWh	1,320,000 kWh	76,076 kWh	
Electric Demand (kilowatts)	612 kW	560 kW	52 kW	
Calculations attached	Yes	Yes		Duke Energy Electric Bills

Simple Payback		I
Average electric rate (\$/kWh) on the applicable accounts (see note 6)	\$0.10	
Estimated annual electric savings	\$7,608	
Other annual savings in addition to electric savings, such as operations, maintenance, other fuels	\$2,000.00	
incremental cost to implement the project (equipment & installation) (see note 7)	\$4,869.00	
Copy of vendor proposal is attached (see note 8)	Yes	
Simple Electric Payback in years (see note 9) 0.640017877 Total Payback in years		0.506786294

4 Operating Hours

. . . .

Describe when the equipment is typically used. If the project is proposed for more than one site, provide any variations in operating hours between the sites on a separate sheet.

5 Weeks of Use in Year

If the equinment is not in use 52	weeks during the y	ear (for example, during holiday or summer break), provide an explanation of when	
in the equipment is not in use of	meens aanne me j		
usage is not expected and why:	1. 1954 (Sto 1. 18)	Asphalt Production is seasonal due temperatures.	_

6 Average electric rate (\$/kWh)

If you do not know your average electric rate, use \$0.10/kWh.

7 Incremental cost to implement the project

Costs exclude self installation costs.

Retrofit projects, incremental cost is the total cost of the proposed project. New construction or where the existing equipment must be replaced anyway, then incremental cost is the premium of the proposed high efficiency project over baseline.

a Copy of vendor invoice is attached and the leavest of

Vendor invoices detailing costs of the project are always required.

New construction projects or where the existing equipment must be replaced anyway, vendor proposal of baseline must also be attached.

 $(1,1) \in \mathcal{F}_{\mathcal{T}}$

9 Simple Electric Payback

If the simple payback on the project is less than 1 year, the rebate structure is affected. Please check that the electric rate is accurate based on history.



ATTH: FRED BRAMER

Altivar® 61 Drives Electrical Specifications

Input Voltage	200 -15% to 240 +10%, 380 -15% to 480 +10%
Displacement Power Factor	98% through speed range
Input Frequency	50 Hz -5% to 60 Hz +5%
Drive Input Section	Six pulse bridge rectifier
Drive Output Section	Three Phase, IGBT Inverter with Pulse Width Modulated (PWM) output
and share a share and the state of the state	Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Convert	er 0,6 to 500 Hz
Torque/overtorque	110% of nominal motor torque for 80 s, minimum
Current (transient)	110% of controller rated corrent for 60 s, minimum
Switching Frequency	Selectable from 1 to 16 kHz, 12 kHz nominal rating for 1-60 hp @ 200/240 V, 1-100 hp @ Selectable 0.5 to 16 kHz, 12 kHz nominal rating for 1-60 hp @ 200/240 V, 1-100 hp @
	Selectable: 2.5 to 8 kHz, 2.5 kHz nominal rating for 75-125 hp @ 200/240 V125-900 hp (
Speed Reference Inpute	Al: 0.10 +10 V. Impedance - 30 Kohms Used for Speed potentiometer (1-10 Kohme
AND STREET AND	Al2 Hactory setting - 4 to 20mA, software configurable for current, (0-20mA, X-Y) or volu
Analog Reference Resolution	0.1 for 100 Hz (11 bits)
VO Sampling Time	2 ms +/-0.5 me on analog inputs & outputs; & logic inputs, 7 ms +/-0.5 ms on relay out
Power Removal/Run Permissive Inpu	The second of a
Efficiency	90% at full load typical
Acceleration and Deceleration Ramps	
Skip Frequencies	Three configurable skip frequency/ump frequency bands
Marian Carta I Pr. 11	Energy economizer (flux optimization) motor algorithm to maximize energy savings
Motor Control Profiles	(Automatically optimizes voltage based on load.) or select from 2 point or 5 point volte/bo
Speed Range	GI GLI V (Selfeoness lux vector)
	1 to:100, open loop
Motor Protection	Class 10 electronic overload protection or PTC probe
Graphic Display Terminal	Simply Start menu, PID set-up menu, network set up menu, Logic I/O & Analog I/O mapp
ANNUS DISPUTA LATINITIEN	SSEATATERNALY MANULAN GUV QUI U GOUDDHOS WILL GUUR DAGAGAGA CARADO DO SODOD AND AND AND AND A CARADO AND AND A
Compliance	endpoor uniter thord, run tune, line voltage, motor current ready to run, running, motor spi-
CONTRACTOR CONTRACTOR OF THE OWNER O	RoHS and WEEE (Waste Electrical & Electronic Equipment compliant
Codes and Standards	UL CSA NOM 117 DNV, CE C Tick GOST,
	UL 1995 Plenum rated, SEMI-F47 centiled for voltage dip ride-through

Altivar® 61 Drives Environmental Specifications

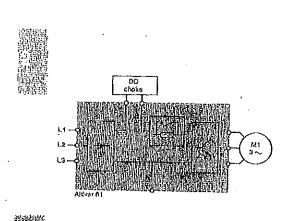
TemperatureOperation: +14 to + 122 F (-10 to +50 C) Storage: 13 to +158 F (-25 to +70 C)Humidity95% with no condensation or dripping water, conforming to IEC 600068-2-3.Alimude3,300 II: (1,000 m) without derating; 3,300 9950 ft (1,000 3,000 m) derate output currenteech additional 330 if: (100 m), 6560 ft (2000m) maximum for corner grounded distribution1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V:IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit.75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V:IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit.60 -900 hp @ 380/480 V. IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit.60 -900 hp @ 380/480 V. IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit.60 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom120 hp @ 200/240 V, 125 hp @ 380/480 V. Pollution degree 2 per IEC/EN 61800-5-1.Option S337 provides protection par IEC 60721 3-3 Class 3C225-60 hp @ 200/240 V, 30-100 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-1.Option S337 provides protection per IEC 60721 3-3 Class 3C260-125hp @ 200/240 V, 125 900 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-1.Option S337 provides protection per IEC 60721 3-3 Class 3C260-125hp @ 200/240 V, 125 900 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-1.00100 S337 provides protection per IEC 60721 3-3 Class 3C260-125hp @ 200/240 V, 125 900 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-1.		
Attnude3,300 fl. (1,000 m) without derating; 3,300 9950 ft (1,000 3,000 m) derate output current each additional 330 ft (100 m), 8560 ft (2000m) maximum for corner grounded distributionEnclosure Rating1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V: IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit. 75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V: IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom1-30 hp @ 200/240 IV, 125 hp @ 380/480 V. IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom1-30 hp @ 200/240 IV, 125 hp @ 380/480 V. IP 41 on top, IP30 sides protection par IEC 60721 -3 3 Class 3C2 25-60 hp @ 200/240 V/ 30-100 hp @ 380/480 V. Pollution degree 3 per IEC/EN 61800-53 Option S337 provides protection per IEC 60721 -3 3 Class 3C2	1. 1. 1. 1.	95% with no condensation or dripping water, conforming to JEC 600068-2-3
Enclosure Rating1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V: IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit. 75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V: IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom1-80 hp @ 200/240 V, 125 hp @ 200/240 V, 125 hp @ 380/480 V: IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom1-80 hp @ 200/240 IV, 125 hp @ 380/480 V: Pollution degree 2 per JEC/EN 61800-5-1.Pollution DegreePollution DegreeOption S337 provides protection per IEC 60721-3-3 Class 3C2 Option S337 provides protection per IEC 60721-3-3 Class 3C2	Althida	3.300 ft: (1,000 m) without deration; 3.300-9450 ft (1,000,3.00 m) derate output
 F-20 hp @ 200/240 V, 1,25 hp @ 380/480 V. Pollution degree 2 per JEC/EN 61800-5-1. Option S337 provides protection par IEC 60721-3-3 Class 3C2 Pollution Degree Option S337 provides protection per IEC 60721-3-3 Class 3C2 Option S337 provides protection per IEC 60721-3-3 Class 3C2 	Enclosure Rating	1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V: IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit. 75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V: IP 41 on top, IP30 sides & front IP00 on bottom. Type 1 w/ optional conduit kit
	Pollution Degree	 M1-20. hp:@ 200/240 V, 1;25 hp @ 380/480 V. Pollution degree 2 per IEC/EN 61800-5-1; Option S337 provides protection per IEC 60721-3-3 Class 3C2 25-60 hp @ 200/240 V, 30-100 hp @ 380/480V. Pollution degree 3 per IEC/EN 61800-5-1;

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Pro April Varia

Variable speed drives for asynchronous motors

Altivar 61: Reduction of current harmonics Option: DC chokes



The main solutions for reducing current harmonics are as follows:

- DC chokes, see below
- Line chokes, see page 2/228
 16% and 10% passive filters, see page 2/231
- Use of passive fillers with a DC choke, see pages 2/231 to 2/235

These 4 solutions can be used on the same installation.

It is always easier and lass expensive to handle current harmonics at installation level as a whole rather than at the level of each individual unit, particularly when using passive filters and active compensators.

DC chokes are used to reduce current harmonics in order to comply with standard

IEC 61000-3-12 for drives on which the line current is greater than 16 A and less

Iten 75 A. Using the DC choke with the drive compiles with standard IEC 61000-3-12 provided that the RSCE \neq 120 (1) at the point of connection to the public network. 120 represents the minimum value of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the represent the minimum value of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the represent the minimum value of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the represent the minimum value of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the represent the represent the represent the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the values in table 4 of standard IEC 61000-3-12 provided that the representation of RSCE (1) for which the representation of RSCE (1) for the representation o IEC 61000-3-12 are not exceeded.

It is the responsibility of the installer or the user to ensure that the device is connected correctly to a connection point with an RSCE > 120. The DC choke is connected to the drive power terminals.

and the second second

It is supplied as standard with ATV 61HD55M3X, HD90M3X and ATV 61HD00N4...HC63N4 drives and is integrated into ATV 61WeeeN4 and ATV 61WessN4C drives.

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Applications

Reduction of current harmonics. Reduction of THD to 5% or to 10% in association with passive fillers, see pages 2/231 to 2/235. Maintaining the motor lorque in relation to the line choke.

(1) Short-circuit ratio

You I a	Date 1/24/08 pages 5
To Fred Brammar	From Sando Kimball
Co./Dapt.	Co. Caugaal
Plione # .	Phone #
Fax # 517. 276. 2/10	Fax # ALA DI (CAA

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2/224 2/224			And Barris and Andrew Andrew
	a de la companya de la compan	CD THEILERIGENE	·

Request for Taxpayer
Identification Number and Certification

Give form to the requester. Do not send to the IRS.

Employer identification number

3 1 +0 5 1 5 1 9

CV.	Name (as shown on your income tax return)		
page	Valley Asphalt Corporation		
ő	Business name, if different from above		
Print or type instructions	Check appropriate box: Individual/ Sole proprietor Sole proprietor Ot	her ►	Exempt from backup withholding
t ti	Address (number, street, and apt. or suite no.)	Requester's name and	address (optional)
Print c Instr	11641 Mosteller Road	fiequester a fianta and	address (optional)
F Specific	City, state, and ZIP code		
bed	Cincinnati, OH 45241		
See SI	List account number(s) here (optional)		
Par	Taxpayer Identification Number (TIN)		
alien,	your TIN in the appropriate box. The TIN provided must match the name given on Line p withholding. For individuals, this is your social security number (SSN). However, for sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other employer identification number (EIN). If you do not have a number, see How to get a Ti	a resident	urity number

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter,

Part II Certification

Form

(Rev. November 2005)

Internal Revenue Service

Department of the Treasury

Under penalties of perjury, I certify that:

- 1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and 2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal
- Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- 3. I am a U.S. person (including a U.S. resident alien).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. (See the instructions on page 4.)

Sign Here	Signature of U.S. person > Throthy	184000.		
	U.S. person P I Mach	1 Vancen	Date 🕨	
Purpos	se of Form	1		·

of Form

A person who is required to file an information return with the IRS, must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

U.S. person. Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),

2. Certify that you are not subject to backup withholding, or

3. Claim exemption from backup withholding if you are a U.S. exempt payee.

In 3 above, if applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

For federal tax purposes, you are considered a person if you are:

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 An individual who is a citizen or resident of the United States,

 A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States, or

 Any estate (other than a foreign estate) or trust. See Regulations sections 301.7701-6(a) and 7(a) for additional information.

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

The U.S. owner of a disregarded entity and not the entity.

Cat. No. 10231X

3450 BEEKMAN STREET CINCINNATI, OHIO

452232743

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513-542-1100 FAX 542-2422

VALLEY ASPHALT 11641 MOSTELLER RD CINCINNATI, OH 45241

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OUR TRUCK		

INVOICE

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VALLEY ASPHALT 4850 STUBBS MILL ROAD MORROW, OH 45152

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These goods were produced in compliance with all applicable requirements of section 6, 7, and 12 of the Fair Labor Standards Act as amended and of regulation and orders of the United States Department of Labor

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issued under Section 14 thereof. Returned merchandise or claims are subject to the conditions shown on sales tickets.

Merchandise shall not be returned without prior approvall A charge of 1.5% monthly of 18% per annum will be added to all past due balances.

3450 BEEKMAN STREET CINCINNATI, OHIO

513-542-1100 FAX 542-2422

VALLEY ASPHALT 11641 MOSTELLER RD CINCINNATI, OH 45241

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452232743

ShipiDate Inside Salesperson JOE KELLEY 6-13-12 Acct# Outside Salesperson DOUG EISEN Ship.Via OUR TRUCK Ship To Information Below:

> VALLEY ASPHALT 7940 MAIN ST NEWTON, OH 45244

INVOICE Type Number Level Date

Customer RO/JOB#

S100066104

0214

6-13-12

*IMPORTANT!! Remit check to The F.D. Lawrence Electric Co. Dept.00341 Cincinnati, OH 452630341 Net Amnt Dis Ordered Backord Shipped UM Unit Price Line Product Description/Customer Designation 1.0 8300.00 8300.00 ΕA 533 1 1 SQD ATV61HC22N4 1 449 8300.00 Net Tax If your account is current 8300.00 Total

and this invoice is paid by:

These goods were produced in compliance with all applicable requirements of section 6, 7, and 12 of the Fair Labor standards Act as amended and of regulation and orders of the United States Department of Labor

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3450 BEEKMAN STREET CINCINNATI, OHIO

452232743

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513-542-1100 FAX 542-2422

VALLEY ASPHALT 11641 MOSTELLER RD CINCINNATI, OH 45241

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OUR TRUCK	

Ship To Information Below:

VALLEY ASPHALT 11641 MOSTELLER CINCINNATI, OH 45241

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These goods were produced in compliance with all applicable requirements of section 6, 7, and 12 of the Fair Labor Standards Act as amended and of regulation and orders of the United States Department of Labor issued under Section 14 thereof. Returned merchandise or claims are subject to the conditions shown on sales tickets.

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Merchandise shall not be returned without prior approval! A charge of 1.5% monthly of 18% per annum will be added to all past due balances.

3450 BEEKMAN STREET CINCINNATI, OHIO

452232743

513-542-1100 FAX 542-2422

VALLEY ASPHALT 11641 MOSTELLER RD CINCINNATI, OH 45241

	INVOICE
	Type Number Level Date
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	0223
Ship Date 1 Inside	Salesperson
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Acct# Outsid	e Salesperson
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Ship Via	
OUR TRUCK	

Ship To Information Below:

VALLEY ASPHALT 11641 MOSTELLER RD CINCINNATI, OH 45241

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These goods were produced in compliance with all applicable requirements of section 6, 7, and 12 of the Fair Labor

Standards Act as amended and of regulation and orders of the United States Department of Labor

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This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

5/30/2013 4:06:12 PM

in

Case No(s). 13-1280-EL-EEC

Summary: Application Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)- Valley Asphalt Corporation electronically filed by Carys Cochern on behalf of Duke Energy