Ohio | Public Utilities Commission

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

Case No.: 12-2760 -EL-EEC

Mercantile Customer: **The Christ Hospital**

Electric Utility: **Duke Energy**

Program Title or Description: **Cooling Tower Fan #1 VFD**

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

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

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

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

Section 1: Mercantile Customer Information

Name: **The Christ Hospital**

Principal address: **2139 Auburn Avenue Cincinnati. Ohio 45219**

Address of facility for which this energy efficiency program applies:

2139 Auburn Avenue Cincinnati. Ohio 45219

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 February 2012 and was finished June 2012.

1 VFD on 125 HP Cooling Tower #1

□ 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:

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

Annual savings: 284,961 kWh
Refer to Appendix B for calculations and supporting documents

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.

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

Annual savings: _____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.)
- □ 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?

June 2012

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

23.9 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 **$11,500.00. Refer to Appendix C for documentation.**

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: 9.37 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 **$173,120.**

The utility's program costs were **$6,979**

The utility's incentive costs/rebate costs were $**11,500.**

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 Rebate 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
Cincinnati, OH 45202
513 629 5572 fax

September 25, 2012

Mr. Robert Barnett
The Christ Hospital
2129 Auburn Avenue
Cincinnati Ohio 45219

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

Dear Mr. Barnett:

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 $11,500.00 has been proposed for your variable frequency drive project completed in the 2012 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: Mike Heath, Duke Energy
Rob Jung, WECC
Ronald Smolinski, Fosdick and Hilmer, Inc

Please indicate your response to this rebate offer within 30 days of receipt.

☑ Rebate is accepted. ☐ Rebate is declined.

By accepting this rebate, The Christ Hospital 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, The Christ Hospital 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, The Christ Hospital 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?

☑ YES ☐ NO

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

Customer Signature	Robert Braweth	9/23/12
	Printed Name	Date

Proposed Rebate Amounts

Measure ID	Energy Conservation Measure (ECM)	Proposed Rebate Amount
ECM-1	Cooling Tower #1 – CT Fan VFD (125 HP)	$11500.00
Total		$11500.00

Ohio | **Public Utilities Commission**

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

Case No.: ____-____-EL-EEC

State of Ohio :

Robert Barwell, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

The Christ Hospital

[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.

Robert Barwell POA

Signature of Affiant & Title

Sworn and subscribed before me this 16th day of October, 2012 Month/Year

Signature of official administering oath

Angela M Szabo, Notary

Print Name and Title

My commission expires on Dec. 9, 2013

NOTARY PUBLIC STATE OF OHIO

ANGELA M. SZABO
Notary Public, State of Ohio
My Commission Expires
December 9, 2013

03800672 01		
CHRIST HOSPITAL		
2139 AUBURN		
CINCINNATI, OH 45219		
Read Date	Days	KWH Usage
8/31/2010	29	4,565,352
9/30/2010	30	4,519,611
10/29/2010	29	3,904,961
12/1/2010	33	4,045,391
1/4/2011	34	3,995,010
2/2/2011	29	3,441,637
3/3/2011	29	3,436,881
4/1/2011	29	3,508,032
5/3/2011	32	4,289,033
6/2/2011	30	4,307,382
7/1/2011	29	4,577,225
8/31/2011	29	4,743,140
Total		**49,333,655**

Appendix B - Christ Hospital - Energy Savings Achieved

	Baseline Used[1]			Post Project Actual				Savings	
	Description	Annual kWh	Summer Coincident kW	Description	Annual kWh	Summer Coincident kW	Hours of Operation	Annual kWh	Summer Coincident kW[2]
ECM- 1	125 HP Motor on Cooling Tower #1 (No VFD)	654,646	94	Cooling Tower VFD Added	389,398	88.0	6,936	265,248	6.0

Application of 7.43% line losses yields **284,961 kWh savings** and **23.9 summer coincident kW.** These values may also reflect minor DSMore modeling software rounding error.

Notes: 1. Energy consumption baseline, demand baseline and post-project energy consumption basis are outlined in the following pages (see following Calcuation tabs).
2 This value is the difference between the maximum kW demand before implementation and the maximum kW demand after implementation, both of which occur in May and June. The maximum kW demand savings in any month is 45 kW, which occurrs in both December and January

CALCULATION INPUT DATA

JAN 2012 V2.0

Salesforce Opportunity Name	*Christ Hospital - VFD Tower*	Application #	12-495	Rev.	0
Project Name	*Christ Hospital - VFD Tower*			State	OH
ECM	1				

Note: all data from the "Part2-Self-Direct-Custom-VFD-App.xlsx" file, except as otherwise noted

Driven Equipment	**Name**	Cooling Tower #1	**Type** Fan
Quantity		1	
Brake HP (BHP) at Full Load		120.7	
Nameplate HP		125.0	

Current Equipment Operation without VFD - Input values for ONE driven equipment and its motor.

% of Full Load BHP of Driven Equipment		BHP of Driven Equipment @ Actual Load (BHP)	Motor output HP as % of Nameplate HP	Motor Efficiency @ Motor Output HP (%)		Motor Electrical Power Draw (kw)	Monthly hours that each motor runs												Yearly Total (hr)
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
100	%	120.7	97%	95.4	%	94.38	480	228	408	684	744	720	744	744	720	744	444	276	6,936
Not Running		0.0	0%	NA	%	0.00	264	444	336	36	0	0	0	0	0	0	276	468	1,824
						Totals	**744**	**672**	**744**	**720**	**744**	**720**	**744**	**744**	**720**	**744**	**720**	**744**	**8,760**

Proposed Equipment Operation with VFD - Input values for ONE driven equipment and its motor.

Efficiency of VFD	96	%

% of Full Load BHP of Driven Equipment		BHP of Driven Equipment @ Actual Load (BHP)	Motor output HP as % of Motor Nameplate	Motor Efficiency @ Motor Output HP (%)		Motor Electrical Power Draw (kw)	Monthly hours that each motor runs												Yearly Total (hr)
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
100	%	120.7	97%	95.4	%	94.38	0	0	0	0	0	0	0	0	0	0	0	0	0
90	%	108.6	87%	95.4	%	84.95	0	0	0	0	36	36	0	0	0	0	0	0	72
80	%	96.6	77%	95.4	%	75.51	0	0	0	0	168	324	612	504	228	0	0	0	1,836
70	%	84.5	68%	95.4	%	66.07	0	0	24	108	132	300	96	204	168	84	0	0	1,116
60	%	72.4	58%	95.4	%	56.63	0	60	60	156	60	60	24	36	192	96	48	0	792
50	%	60.4	48%	94.4	%	47.69	12	12	12	132	60	0	12	0	120	252	36	12	660
40	%	48.3	39%	92.4	%	38.98	0	0	48	96	144	0	0	0	12	216	96	0	612
30	%	36.2	29%	90.5	%	29.85	468	156	264	192	144	0	0	0	0	96	264	264	1,848
20	%	24.1	19%	85.6	%	21.04	0	0	0	0	0	0	0	0	0	0	0	0	0
10	%	12.1	10%	74.5	%	12.09	0	0	0	0	0	0	0	0	0	0	0	0	0
Not Running		0.0	0%	NA	%	0.00	264	444	336	36	0	0	0	0	0	0	276	468	1,824
						Totals	**744**	**672**	**744**	**720**	**744**	**720**	**744**	**744**	**720**	**744**	**720**	**744**	**8,760**

DETAILED CALCULATIONS

JAN 2012 V2.0

Salesforce Opportunity Name	*Christ Hospital - VFD Tower*	Application #	12-495 MSD	Rev.	0
Project Name	*Christ Hospital - VFD Tower*			State	OH
ECM	1				

1. BASE CONDITION OPERATION without VFD

	Energy Demand (kw)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Maximum
100%	94	94	94	94	94	94	94	94	94	94	94	94	94
Maximum	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**

	Energy Usage (kw-hr)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
100%	45,304	21,520	38,509	64,559	70,222	67,956	70,222	70,222	67,956	70,222	41,906	26,050	654,646
Total	**45,304**	**21,520**	**38,509**	**64,559**	**70,222**	**67,956**	**70,222**	**70,222**	**67,956**	**70,222**	**41,906**	**26,050**	**654,646**

2. PROPOSED OPERATION with VFD

% of Full Load Capacity of Driven Equipment	Energy Demand (kw)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Maximum
100%	0	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	88	88	0	0	0	0	0	0	88
80%	0	0	0	0	79	79	79	79	79	0	0	0	0
70%	0	0	69	69	69	69	69	69	69	69	0	0	69
60%	0	59	59	59	59	59	59	59	59	59	59	0	59
50%	50	50	50	50	50	0	50	0	50	50	50	50	50
40%	0	0	41	41	41	0	0	0	41	41	41	0	41
30%	31	31	31	31	31	0	0	0	0	31	31	31	31
20%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	**50**	**59**	**69**	**69**	**88**	**88**	**79**	**79**	**79**	**69**	**59**	**50**	**88**

DETAILED CALCULATIONS

JAN 2012 V2.0

Salesforce Opportunity Name	*Christ Hospital - VFD Tower*	Application #	12-495 MSD	Rev.	0
Project Name	*Christ Hospital - VFD Tower*			State	OH
ECM	1				

% of Full Load Capacity of Driven Equipment	Energy Usage (kw-hr)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
100%	0	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	3,185	3,185	0	0	0	0	0	0	6,371
80%	0	0	0	0	13,214	25,484	48,136	39,641	17,933	0	0	0	144,407
70%	0	0	1,652	7,433	9,084	20,646	6,607	14,040	11,562	5,781	0	0	76,805
60%	0	3,539	3,539	9,202	3,539	3,539	1,416	2,124	11,326	5,663	2,832	0	46,720
50%	596	596	596	6,558	2,981	0	596	0	5,961	12,519	1,788	596	32,788
40%	0	0	1,949	3,898	5,847	0	0	0	487	8,770	3,898	0	24,849
30%	14,551	4,850	8,208	5,970	4,477	0	0	0	0	2,985	8,208	8,208	57,458
20%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**15,147**	**8,986**	**15,944**	**33,060**	**42,328**	**52,855**	**56,755**	**55,804**	**47,270**	**35,718**	**16,726**	**8,804**	**389,398**

SECTION 4 - SAVINGS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly
Energy Demand (kw)	45	35	26	26	6	6	16	16	16	26	35	45	45
Energy Use (kw-hr)	30,157	12,534	22,564	31,498	27,894	15,101	13,467	14,417	20,687	34,503	25,180	17,246	265,248

Appendix C - Christ Hospital Cash Rebate Calculation

VFD

Measure	Quantity	Cash Rebate Rate	Cash Rebate
Cooling Tower VFD Added	1	50% of incentive that would be offered by the Smart $aver Custom program	**$11,500**

Appendix D -Christ Hospital - UCT Value

VFD

Measure	Total Avoided Cost	Program Cost	Incentive	Quantity	Measure UCT
Cooling Tower VFD Added	$173,120	$6,979	$11,500	1	**9.37**
Totals	**$173,120**	**$6,979**	**$11,500**	**1**	

Total Avoided Supply Costs	$173,120	***Aggregate Application UCT***	***9.37***
Total Program Costs	$6,979		
Total Incentive	$11,500		

Ohio Mercantile Self Direct Program

Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

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

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

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart $aver® Custom Incentive. Self Direct incentives 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	☒ Proof of payment.*	☒ Manufacturer's Spec sheets	☒ Energy model/calculations and detailed inputs for Custom applications

* 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
Lighting	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Prescriptive Lighting ☐	MSD Prescriptive Lighting ☐
		MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐
Heating & Cooling	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Heating & Cooling ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
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 Storage	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Chillers & Thermal Storage ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Motors & Pumps	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Motors, Pumps & Drives ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
VFDs	Not Applicable	MSD Prescriptive Motors, Pumps & Drives ☐	MSD Custom Part 1 ☒ MSD Custom VFD Worksheet ☒
		MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐	
Food Service	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Food Service ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Air Compressors	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Prescriptive Process ☐
			MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐
Process	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Process ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	
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 ☐		
Behavioral* & 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.

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

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. Monthly calculations are best. You, the Duke Energy Ohio customer, or your equipment vendor / engineer should perform these calculations and submit them to Duke Energy for review. *We strongly encourage the use of modeling software (such as eQuest or comparable) for complex projects.*

Upon receipt of your application, an acknowledgement email will be sent to you 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 two ways to submit your completed application.

Email your scanned form to: SelfDirect@duke-energy.com

Or, fax your form to 513-629-5572

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

1. Contact Information (Required)

Duke Energy Customer Contact Information									
Company Name	The Christ Hospital								
Address	2139 Auburn Ave.								
Project Contact	Robert Barnett								
City	Cincinnati	State	Ohio	Zip Code	45219				
Title	Manager Plant Operations & Maintenance								
Office Phone	(513)585-2964	Mobile Phone	(513)310-3392	Fax	(513)585-3913				
E-mail Address	Robert.Barnett@thechristhospital.com								

Equipment Vendor / Contractor / Architect / Engineer Contact Information									
Company Name	Fosdick & Hilmer, Inc.								
Address	309 Vine St.								
City	Cincinnati	State	Ohio	Zip Code	45202				
Project Contact	Ronald Smolinski								
Title	Engineer								
Office Phone	(513)419-4216	Mobile Phone	(513)319-9620	Fax	(513)241-3659				
E-mail Address	rsmolinski@fheng.com								
Describe Role	Engineer for chiller plant energy calculations, component selection, and design								

Payment Information					
Payee Legal Company Name (as shown on Federal income tax return):					
Mailing Address					
City		State		Zip Code	
Type of organization (check one) ☐ Individual/Sole Proprietor ☐ Corporation ☐ Partnership ☐ Unit of Government ☐ Non-Profit (non-corporation)					
Payee Federal Tax ID # of Legal Company Name Above:					
Who should receive incentive payment? (select one) ☐ Customer ☐ Vendor (Customer must sign below)					
If the vendor is to receive payment, please sign below: I hereby authorize payment of incentive directly to vendor: Customer Signature _____ Date____/___/_____ (mm/dd/yyyy)					

2. Project Information (Required)

A. Please indicate project type:
- ☐ New Construction
- ☒ Expansion at an existing facility
- ☐ 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 project.
Add a cooling tower and variable speed drive.

C. When did you start and complete implementation?
Start date 02/2012 (mm/yyyy) End date 06/2012 (mm/yyyy)

D. Are you also applying for Self-Direct Prescriptive incentives 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)
- ☐ General (for projects not easily submitted using one of the above worksheets)

F. Please tell us if there is anything about your electrical energy projections (either for the baseline or the proposed project) that you are either unsure about or for which you have made significant assumptions. Attach additional sheets as needed.

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)

[1] If your project involves some equipment that is eligible for prescriptive incentives and some equipment that is likely eligible for custom incentives, 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.

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

Duke Energy®

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

Customer Consent to Release of Personal Information

I, (insert name) Bob Barnett, 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 Incentives 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).

Robert D Barnett

Duke Energy Ohio, Inc Customer Signature

Print Name Robert D Barnett

Date 9/1/12

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

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. & Title	Have You:
1. Contact Information	☒ Completed the contact information for the Duke Energy customer? ☒ Completed the contact information for the equipment vendor / project engineer that can answer questions about the technical aspects of the project, if that is a different person than above?
2. Project Information	☒ Answered the questions A-E, including providing a description of your project. ☒ Completed and attached the lighting, compressed air, VFD, EMS and/or General worksheet(s)?
3. Signature	☐ Signed your name? ☐ Printed your name? ☐ Entered the date?
Supplementary information (Required)	☐ Attached a supplier or contractor's invoice or other equivalent information documenting the Implementation Cost for projects listed in your application? (Note: self-install costs cannot be included in the Implementation Cost) ☐ (If submitting the General Worksheet) attached calculations documenting the energy usage and energy savings for **each** 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
  or,
- the Duke Energy Smart $aver® team at 1-866-380-9580.

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

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 Incentive Amount.

8. Customers are encouraged to retain copies of all forms, invoices and supporting documentation for their records.

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 incentives. 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 incentives;
    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
    f. reserves the right to change or discontinue this program at any time. The acceptance of program applications is determined solely by *Duke Energy Ohio, Inc.*

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 incentive 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	Robert Barnett
Company	The Christ Hospital

Equipment Vendor / Project Engineer Contact Information

Name	Ronald Smolinski
Company	Fosdick & Hilmer, Inc.

Location of Proposed VFD Project

Site Name	Chiller Plant
Electric Account Number(s)	0380-0672-01-4
Site Address	2139 Auburn Ave.

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

Use one worksheet for each type of motor or fan that is being evaluated for a VFD

Driven Equipment	**Name**	Cooling Tower #1	**Type**	Fan	**App No.**
Quantity		1			**Rev.**
Brake HP (BHP) at Full Load (see note 1)		120.7			
Nameplate HP		125.0			

Current Equipment Operation without VFD - Input values for ONE driven equipment and its motor.

% of Full Load BHP of Driven Equipment		BHP of Driven Equipment @ Actual Load (BHP)	Motor output HP as % of Nameplate HP	Motor Efficiency @ Motor Output HP (%)		Motor Electrical Power Draw (kw)	Annual hours that motor runs (see note 2)	Monthly hours that each motor runs (see note 3)											Yearly Total (hr)
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
100	%	120.7	97%	95.4	%	94.38		480	228	408	684	744	720	744	744	720	744	444	276	6,936
	%	0.0	0%		%	#DIV/0!														0
	%	0.0	0%		%	#DIV/0!														0
	%	0.0	0%		%	#DIV/0!														0
Not Running		0.0	0%	NA	%	0.00	8,760	264	444	336	36	0	0	0	0	0	0	276	468	1,824
						Totals	**8,760**	**744**	**672**	**744**	**720**	**744**	**720**	**744**	**744**	**720**	**744**	**720**	**744**	**8,760**

Proposed Equipment Operation with VFD - Input values for ONE driven equipment and its motor.

Efficiency of VFD	96	%

% of Full Load BHP of Driven Equipment		BHP of Driven Equipment @ Actual Load (BHP)	Motor output HP as % of Motor Nameplate	Motor Efficiency @ Motor Output HP (%)		Motor Electrical Power Draw (kw)	Annual hours that motor runs (see note 2)	Monthly hours that each motor runs (see note 3)											Yearly Total (hr)
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
100	%	120.7	97%	95.4	%	94.38		0	0	0	0	0	0	0	0	0	0	0	0	0
90	%	108.6	87%	95.4	%	84.95		0	0	0	0	36	36	0	0	0	0	0	0	72
80	%	96.6	77%	95.4	%	75.51		0	0	0	0	168	324	612	504	228	0	0	0	1836
70	%	84.5	68%	95.4	%	66.07		0	0	24	108	132	300	96	204	168	84	0	0	1116
60	%	72.4	58%	95.4	%	56.63		0	60	60	156	60	60	24	36	192	96	48	0	792
50	%	60.4	48%	94.4	%	47.69		12	12	12	132	60	0	12	0	120	252	36	12	660
40	%	48.3	39%	92.4	%	38.98		0	0	48	96	144	0	0	0	12	216	96	0	612
30	%	36.2	29%	90.5	%	29.85		468	156	264	192	144	0	0	0	0	96	264	264	1848
20	%	24.1	19%	85.6	%	21.04		0	0	0	0	0	0	0	0	0	0	0	0	0
10	%	12.1	10%	74.5	%	12.09		0	0	0	0	0	0	0	0	0	0	0	0	0
Not Running		0.0	0%	NA	%	0.00	8,760	264	444	336	36	0	0	0	0	0	0	276	468	1,824
						Totals	**8,760**	**264**	**444**	**336**	**36**	**0**	**0**	**0**	**0**	**0**	**0**	**276**	**468**	**1,824**

Detailed Project Description Attached? Yes (Required)

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)

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 not operating.

3 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.

App No.	0
Rev.	0

Operating Hours (see note 4)

	Weekday		Saturday		Sunday		Weeks of Use in Year (see note 5)	Total Annual Hours of Use
24 x 7	**Start Hour**	**End Hour**	**Start Hour**	**End Hour**	**Start Hour**	**End Hour**		

Energy Savings

	Existing (no VFD)	Proposed (VFD)	Savings	Describe how energy numbers were calculated
Annual Electric Energy	654,620 kWh	373,832 kWh	280,788 kWh	
Electric Demand (kilowatts)	0 kW	0 kW	0 kW	
Calculations attached	Yes	Yes		

Simple Payback

Average electric rate ($/kWh) on the applicable accounts (see note 6)				$0.07	
Estimated annual electric savings				$18,251	
Other annual savings in addition to electric savings, such as operations, maintenance, other fuels				$0.00	
Incremental cost to implement the project (equipment & installation) (see note 7)				$57,486.00	
Copy of vendor proposal is attached (see note 8)				Yes	
Simple Electric Payback in years (see note 9)	3.149708599		**Total Payback in years**		3.149708599

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:

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.

8 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.

DUKE REBATE PROPOSAL

August 15, 2012

August 30, 2012 (Rev1)

This proposal to Duke Energy consists of:

1. This document explains the difference in control strategy from constant speed to variable speed fan design and the calculations that support the energy savings calculations.
2. The Part 1 and Part 2 Application forms for the Mercantile Self Direct program.

The bottom line is that the net annual electrical energy savings are estimated at $18,251.21. We believe that the actual savings will be greater, but the engineering cost to wring out every last dollar would not result in any savings for the Hospital.

The analysis presented herein describes two modes of operation: 1. constant speed fan, plus base loading the new tower; 2. Variable speed operation, sharing the same speed signal with the other tower fans. There has been a belief by certain staff members (but not all) at the Hospital that staging on fans, as needed, would result in the lowest power consumption due to a smaller quantity of fan motors in operation. Part of the purpose for this analysis is to resolve this argument by providing the rationale for this specific chiller plant.

1. Constant speed operation for the new tower – The new tower will operate alongside the other four towers, but one plan for operating the new tower was to stage it on first, then add a tower for each additional chiller. The variable speed towers designated #2 through #5, have variable speed fans and all currently receive the same signal.

2. Variable speed operation for all 5 towers – All five towers have variable speed fans and all receive the same signal, per the alternate operating plan. Fans are turned off when the fan reaches minimum allowable speed of 25% (manufacturer's requirement). This is how the controls are currently configured; however, the Hospital wants a definitive calculation that will demonstrate that this method of operation will result in saves energy and saved money.

3. One assumption is that this mode of operation does not become effective until one chiller of a 100 ton size, or larger, is energized. During free cooling operation, and until at least 100 tons of cooling load is present, the cooling hours are excluded for both modes of analysis.

There is an Excel spreadsheet that accompanies this proposal, entitled: "CT-1 Loads July2010 to June2011_Duke Rebate Calcs.xlsx". This spreadsheet tallies 730 data points (2 per day) that were collected from the Hospital's Building Automation System. The data file identifies which chillers were energized during a recent 12 month period. The reason we used this data, rather than rely on historical weather data, is due to the unique way in which many hospitals operate. In TCH's case, extra chillers are kept on line at very low capacity so that extra cooling will immediately be available should a chiller inadvertently shut down. Furthermore, and in keeping with operating sequences that date back decades, almost all of the equipment is constant speed. This results in "shallow" delta temperatures at part load, due to excess water flow and air flow.

We felt that this type of part-load operation cannot be simulated in any “off-the-shelf” software package. In addition, the big savings for TCH will be to add as many VFDs as possible to compensate for having so many pieces of equipment operating at very low loads (40-50%) for 1,000s of hours. This same philosophy applies to the pumps and chillers which are the focus of additional Duke Energy Incentive applications we intend to process.

There was also a point made by the evaluator that 2011 was an abnormally hot year and that the data should be normalized. We certainly recognize that June 2011 had 31 (14%) more cooling degree days than normal, but our data spans portions of two summers, both of which were warmer than usual due possibly to global warming.

Regardless, our calculations compare that the cost of operating at constant speed versus operating at variable speed, for actual circumstances. The calculations use the same data on the plus side, as on the minus side. So we feel that other factors such as normalizing data are small relative to the savings that could have been had during those 12 months.

In summary….

The cost of electricity to operate the tower per sequence #1 above, less the cost of electricity to operate the tower per sequence #2, is the net savings described above. This translates into a rebate request of $9,125.00.00, based on 50% of first year electrical savings.

The total installed cost for the electrician (Mayers Electric) is $52,260, plus 10% engineering fee, for a total of $57,486.00.

MAYERS ELECTRIC COMPANY

INCORPORATED

ELECTRICAL CONTRACTORS * COMMERCIAL and INDUSTRIAL WIRING

4004 Erie Court, Cincinnati, OH 45227 Phone (513) 272-2900 FAX (513) 272-2904

August 29, 2012

Fosdick & Hilmer
309 Vine St. Suite 50
Cincinnati, OH 45202

Attn. Gerry Donahue

RE: The Christ Hospital Cooling Tower

Dear Gerry,

Per your request, we are pleased to submit a proposal for the electrical work associated with providing a Square D VFD for the new cooling tower at The Christ Hospital.

Total price for this work is …… **$ 50,260.00**

Qualifications:

- Work to be completed during normal working hours.
- Work to be completed per Christ Hospital's Infectious Disease Policies.

Thank you for allowing us the opportunity to submit a proposal for this work.
If you have any questions, please advise.

Sincerely,
Mayers Electric Company, Inc.

Bill Puthoff
Project Manager

FOSDICK & HILMER, INC.

CONSULTING ENGINEERS
309 VINE STREET, SUITE 50
CINCINNATI, OHIO 45202
(513) 241-5640

TO:	**Messer Construction Co.**	**DATE**	**04.30.12**
	2223T Auburn Avenue	**CLIENT**	**Christ Hospital**
	Cincinnati, OH 45219	**PROJECT**	**Cooling Tower Upgrade**
ATTN:	**Sue Millard**	**PROJECT #**	**CHR01.280900**

WE ARE SENDING VIA:

___	U.S. MAIL	X	SHOP DRAWINGS	___	FOR YOUR USE
___	UPS - NEXT DAY	___	DRAWINGS	___	AS REQUESTED
___	HAND DELIVERED	___	PRINTED MATERIAL	___	FOR YOUR REVIEW
___	COURIER	___	SPECIFICATIONS		
___	FAX	___	OTHER		
___	PICK UP				
X	EMAIL				
___	FTP				

RECEIVED WITH: _____ YOUR LETTER OF _____

COPIES	SPEC/DWG NO.	DATE/REV.	DESCRIPTION
1			**VFD/MCC Submittal (NEN)**

REMARKS:

1	COPIES TO	**F & H FILES**	FOSDICK & HILMER, INC.
___	COPIES TO		
___	COPIES TO		
___	COPIES TO		BY **Gerry Donahue**

CHRIST 280900
E001

Schneider Electric

REVIEWED FOR SUBMITTAL
Messer
We Are Building.
Submittal Number: 16000-01
Messer Job #: 12-2420-07
Date: 4.26.12
Reviewed By: SMM

Quotat

Q2C Number: 31421375	Quote Number: 2	Revision Number: 0

Project Name: CHRIST HOSPITAL-COOLING TOWER
Project Sub-Name:
Project Location: CINCINNATI, OH
Quote Name: COPY OF QUOTE1
Through Addenda Number: 0
Bid Date: 04/16/2012
Consultant / Specifier:
Contractor / Installer:
Sales Representative: PHIL POSTOLSKI

Terms & Conditions

This Quotation is subject to Schneider Electric USA, Inc.'s published Terms and Conditions

Payment Terms: STANDARD
Billing Type(s):
Currency: US DOLLARS

Quote Markings

RECEIVED 04.26.12

☑ NO EXCEPTIONS NOTED

☐ EXCEPTIONS NOTED
REVISE AND SUBMIT FILE COPY

☐ RETURN FOR CORRECTION
REVISE AND RESUBMIT

BY _____ DATE 4/30/12

REVIEW DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS OR DEVIATIONS FROM CONTRACT REQUIREMENTS

FOSDICK & HILMER, INC.
309 VINE STREET, SUITE 50
CINCINNATI, OHIO 45202

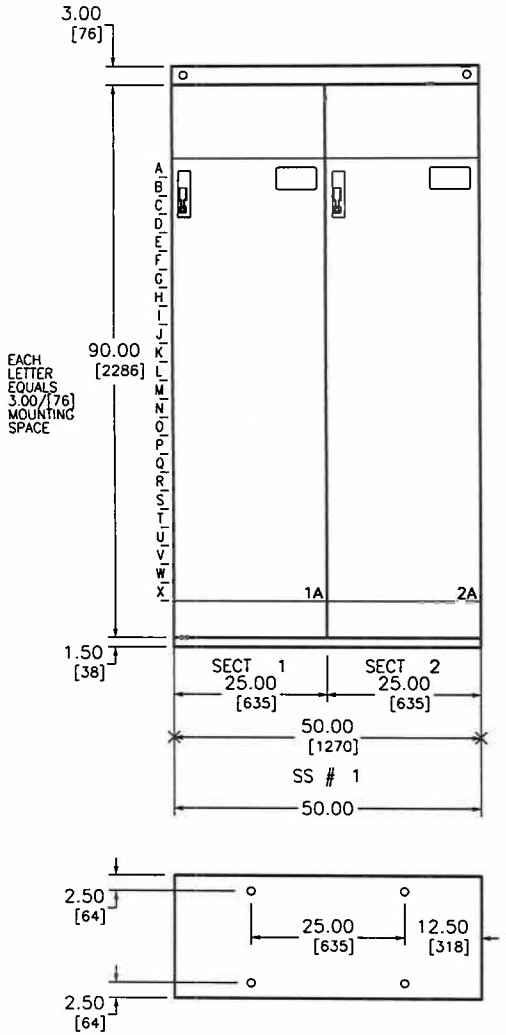
Q2C Number: 31421375 **Quote Number:** 2 **Revision Number:** 0
Project Name: CHRIST HOSPITAL-COOLING TOWER **Quote Name:** COPY OF QUOTE1

Item No.	Qty.	Catalog Number / Details
003-00	1	**Designation:** mcccp1 Model 6 LVMCC Model 6 MCC - Standard Package --- System Voltage: 480V 3PH 3W 60Hz Max Available Fault Current (RMS) - 65kA Control Power - 120Vac 1/4" x 1" Horizontal Ground Bus, Tin Plated Copper Class 1 Type B Wiring 1200A Tin Plated Copper Horizontal Bus 20" Deep Construction General Purpose Type 1 Enclosure 65kA Bus Withstand Rating Master Nameplate Engraved with Black Surface/White Letters Standard Exterior Paint ANSI 49 Equipment Mounting Height 72" Manual Vertical Bus Shutters Rodent Barriers Engineered To Order (ETO) 2 - Section(s) with no Vertical Bus DIMENSIONS AND WEIGHT --- Dimensions: 50.00"W X 20"D X 94.5"H Approximate Weight: 1440.00 lbs / 653.18 kgs INCOMING --- Transition to Existing Model 6 Connection on Left of New MCC Existing Factory Order #: 12345678 ADJUSTABLE SPEED DRIVES --- 1 - Altivar 61 AC Drive 125 HP w/Circuit Breaker Rated for Variable Torque Applications 300VA Control Power Transformer #16 AWG MTW Control Wire 30mm Type K Pilot Devices Hand & Auto Push-to-Test LED Pilot Lights (Yellow) 2 Additional Pilot Device Contact Blocks ASD/Off/Bypass Selector Switch Extended I/O Option Card Barriered NEMA Bypass Contactors ASD On Push-to-Test LED Pilot Light (Red) Bypass On Push-to-Test LED Pilot Light (Yellow) Fault Push-to-Test LED Pilot Light (Yellow) Motor Off Push-to-Test LED Pilot Light (Green) Ethernet (ModbusTCP) Comm Card Auto Start Relay With 1.5-30 sec. Delay Hand-Off-Auto SW with Manual Speed Potentiometer Motor On Push-to-Test LED Pilot Light (Red) Line Reactor (3%) (1) FORWARD-OFF-REVERSE-SELECTOR S (TAG#: P48)

Q2C Number: 31421375 **Quote Number:** 2 **Revision Number:** 0
Project Name: CHRIST HOSPITAL-COOLING TOWER **Quote Name:** COPY OF QUOTE1

Item No.	Qty.	Catalog Number / Details
		MISCELLANEOUS DEVICES --- 1 - NEMA Barriered Bypass for Adjustable Speed Drive
004-00	1	HU364DSEI SW UNFUSED HD 200A STAINLESS/INTERLOCK

REV	DESCRIPTION	BY	DATE	-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--
-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--

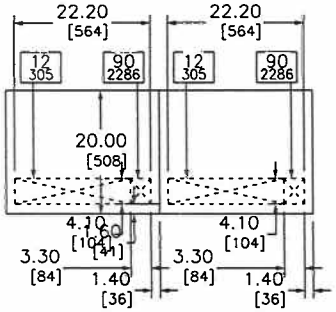


ANCHOR DETAIL

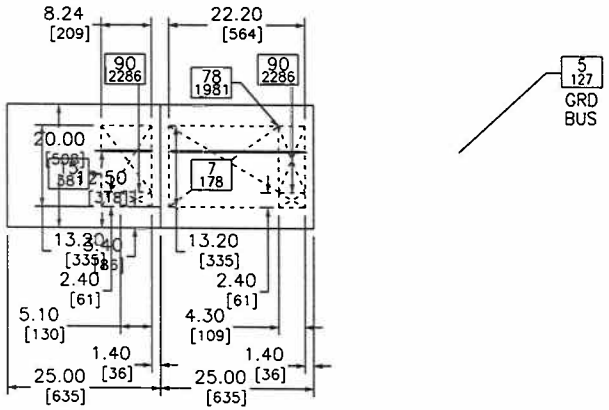
ENGLISH DIMENSIONS: INCHES

JOB NAME:	CHRIST HOSPITAL-COOLING TOWER	EQUIPMENT DESIGNATION:	mcccp1
JOB LOCATION:	CINCINNATI OH	EQUIPMENT TYPE:	MODEL 6 MOTOR CONTROL CENTER
DRAWN BY:	(Q2C)	DRAWING TYPE:	ELEVATION
ENGR:			
DATE:	April 25 2012		
DRAWING STATUS:	QUOTE	DWG#	F31421375-01

REV	DESCRIPTION	BY	DATE	-	----	--	--/--/--	-	----	--	--/--/--
-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--



TOP VIEW



FLOOR VIEW

CROSSED AREA REPRESENTS CONDUIT ENTRY AREA. NUMBERS IN BOXES INDICATE VERTICAL CLEARANCE TO NEAREST OBSTRUCTION.

ENGLISH DIMENSIONS: INCHES

JOB NAME:	CHRIST HOSPITAL-COOLING TOWER	EQUIPMENT DESIGNATION:	mcccp1
JOB LOCATION:	CINCINNATI OH	EQUIPMENT TYPE:	MODEL 6 MOTOR CONTROL CENTER
DRAWN BY:	(Q2C)	DRAWING TYPE:	ELEVATION
ENGR:			by Schneider Electric
DATE:	April 25 2012		
DRAWING STATUS:	QUOTE	DWG# F31421375-01	PG 2 OF 3 REV -

REV	DESCRIPTION	BY	DATE	-	----	--	--/--/--	-	----	--	--/--/--
-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--

GENERAL NOTES

Class 1 Type B Wiring

PRODUCT DESCRIPTION AND RATINGS

POWER SYSTEM DATA:

480V 3PH 3W 60Hz
SHORT CIRCUIT RATING: 65kA
POWER CONNECTS TO EXISTING
CONTROL POWER: 120Vac

BUS SYSTEM DATA:

MAIN HORIZONTAL BUS: 1200 Amp Copper/Tin Plated / 1.5"
BUS BRACING: 65kA
HORIZONTAL GROUND BUS: .25" X 1.0" (6.35mm X 25.4mm) Tin Plated Copper
Units Securely Grounded To Structure

ENCLOSURE DATA:

ENCLOSURE TYPE: 20" DEEP Type 1
EXTERIOR COLOR: Electrodeposition Finish ANSI 49 Medium Light Grey
INTERIOR COLOR: Electrodeposition Finish ANSI 49 Medium Light Grey

STRUCTURE MODIFICATIONS:

Ground Bus Lug
Rodent Barriers 1,2
Manual Bus Shutters
Master Nameplate 1
Splice to M6 L

EQUIPMENT WEIGHT:

SHIPPING SPLIT # 1: 1440.00 Lbs. (653.18 Kg.)
TOTAL LINEUP WEIGHT (APPROX): 1440.00 Lbs. (653.18 Kg.)

PRODUCT ACCESSORIES:

See Unit Features

JOB NAME:	CHRIST HOSPITAL-COOLING TOWER	EQUIPMENT DESIGNATION:	mcccp1
JOB LOCATION:	CINCINNATI OH	EQUIPMENT TYPE:	MODEL 6 MOTOR CONTROL CENTER
DRAWN BY:	(Q2C)	DRAWING TYPE:	ELEVATION
ENGR:			
DATE:	April 25 2012		
DRAWING STATUS:	QUOTE	DWG#	F31421375-01 PG 3 OF 3 REV -

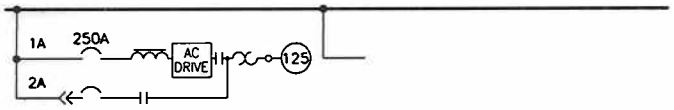
REV	DESCRIPTION	BY	DATE	-	----	--	--/--/--	-	----	--	--/--/--
-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--

UNIT LOC	NAMEPLATE DESIGNATION	UNIT TYPE	SIZE	HP	FRAME AMPS	TRIP AMPS	CONTROL SOURCE	VA	FUSE SIZE PRI	FUSE SIZE SEC	INTERLOCKS NO	INTERLOCKS NC	PILOT DEVICE FEATURES 30 mm- 9001K LED ON LIGHT	PILOT DEVICE FEATURES 30 mm- 9001K LED OFF LIGHT	PILOT DEVICE FEATURES 30 mm- 9001K LED ADDL P/L	PILOT DEVICE FEATURES 30 mm- 9001K LED SS / PB	OTHER UNIT FEATURES	ELEMENTARY #
1A		VT DRIVE	D75	125	LA 400	250	CONTROL TRANSFORMER	300	1.60	3.20			RED PTT	GREEN PTT	BLUE PWR ON	HOA SS SPD POT	#16 AWG MTW CONTROL WIRE, 1.5-30 SEC DELAY AUTO START, ETHERNET TCP COMM, EXTENDED I/O,	E31421375--01
																	PILOT DEVICE ADD'L CONTACT, SPL	
2A	ASD BYPASS STARTER FOR UNIT 1A	NEMA BYPASS	NEMA 5	125	LA 400	400	CONTROL TRANSFORMER	50	.25	.5					RED AFC RUN PTT YELLOW BYPASS RUN PTT	AFC/OFF/BYP SS	1.5-30 SEC DELAY AUTO START, MELTING ALLOY OL	E31421375--01
UNIT LOC	NAMEPLATE DESIGNATION	UNIT TYPE	SIZE	HP	FRAME AMPS	TRIP AMPS	CONTROL SOURCE	VA	PRI	SEC	NO	NC	ON LIGHT	OFF LIGHT	ADDL P/L	SS / PB	OTHER UNIT FEATURES	ELEMENTARY #
									FUSE SIZE		INTERLOCKS		PILOT DEVICE FEATURES 30 mm- 9001K LED					

MCC NAMEPLATE - mcccp1
(BLACK SURFACE/WHITE LETTERS)

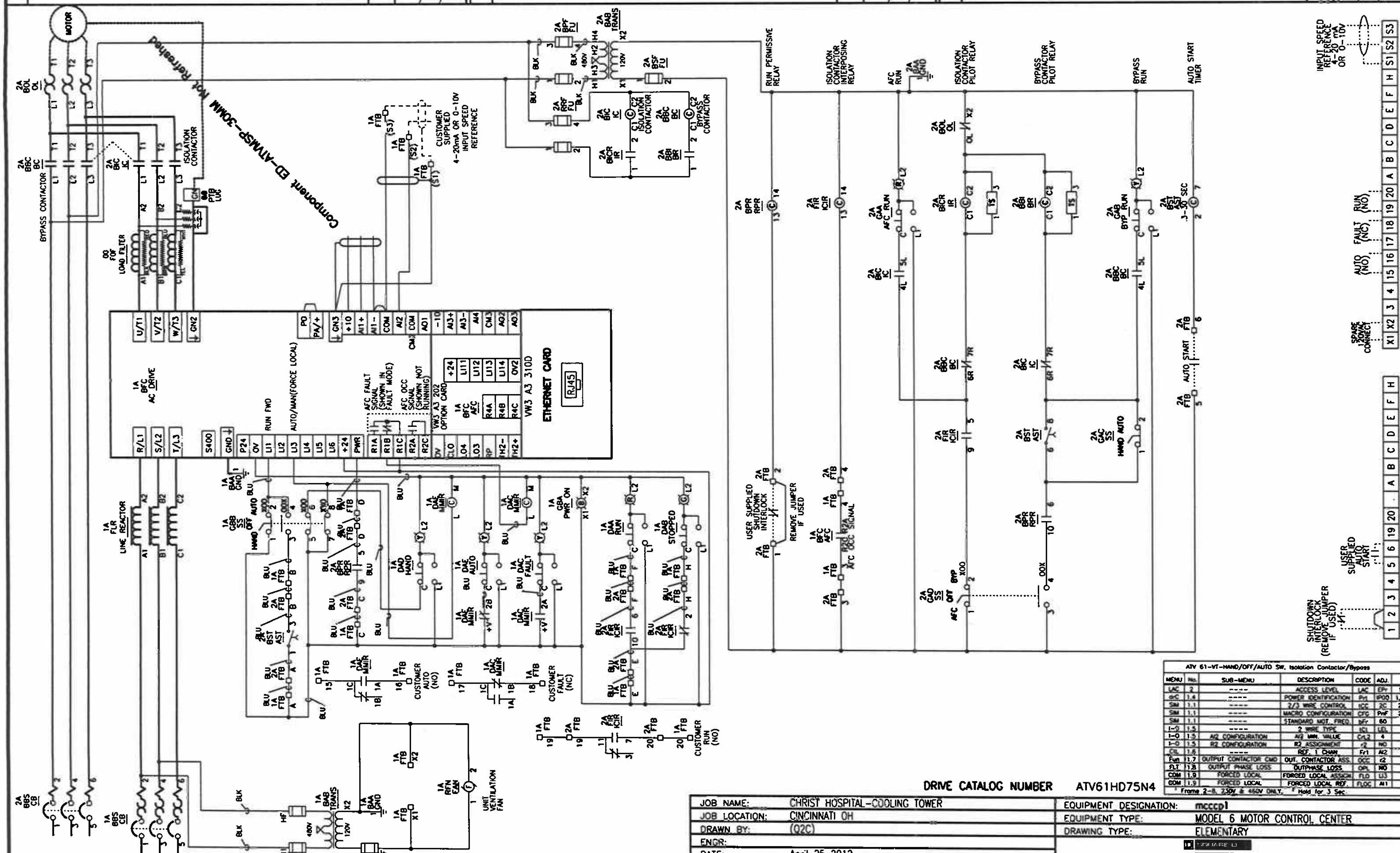
JOB NAME:	CHRIST HOSPITAL-COOLING TOWER	EQUIPMENT DESIGNATION:	mcccp1
JOB LOCATION:	CINCINNATI OH	EQUIPMENT TYPE:	MODEL 6 MOTOR CONTROL CENTER
DRAWN BY:	(Q2C)	DRAWING TYPE:	UNIT INFORMATION
ENGR:			
DATE:	April 25 2012		
DRAWING STATUS:	QUOTE	DWG#	I31421375-01

REV	DESCRIPTION	BY	DATE	-	----	--	--/--/--	-	----	--	--/--/--
-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--



JOB NAME:	CHRIST HOSPITAL-COOLING TOWER	EQUIPMENT DESIGNATION:	mcccp1
JOB LOCATION:	CINCINNATI OH	EQUIPMENT TYPE:	MODEL 6 MOTOR CONTROL CENTER
DRAWN BY:	(Q2C)	DRAWING TYPE:	ONE LINE DIAGRAM
ENGR:			
DATE:	April 25 2012		
DRAWING STATUS:	QUOTE	DWG# 031421375-01	PG 1 OF 1 REV -

REV	DESCRIPTION	BY	DATE	-	----	--	--/--/--	-	----	--	--/--/--
-	----	--	--/--/--	-	----	--	--/--/--	-	----	--	--/--/--

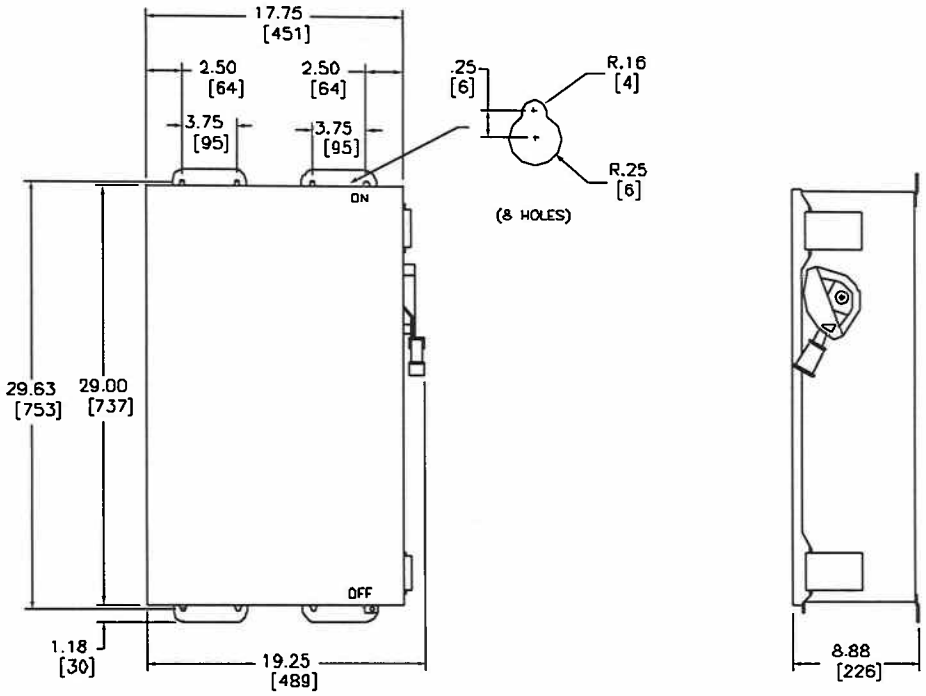


DRAWING IS NOT COMPLETE AND IS FOR QUOTATION PURPOSES ONLY.

ATV 61-VT-HAND/OFF/AUTO SW, Isolation Contactor/Bypass						
MENU	No.	SUB-MENU	DESCRIPTION	CODE	ADJ.	
LAC	2	----	ACCESS LEVEL	LAC	EPr	1
drC	1.4	----	POWER IDENTIFICATION	Prt	IPOO	1,2
SIM	1.1	----	2/3 WIRE CONTROL	tCC	2C	2
SIM	1.1	----	MACRO CONFIGURATION	CFG	PnF	2
SIM	1.1	----	STANDARD MOT. FREQ.	bFr	60	
I-O	1.5	----	2 WIRE TYPE	tCt	LEL	
I-O	1.5	AI2 CONFIGURATION	AI2 MIN. VALUE	CrL2	4	
I-O	1.5	R2 CONFIGURATION	R2 ASSIGNMENT	r2	NO	
CtL	1.6	----	REF. 1 CHAN	Fr1	AI2	
Fun	1.7	OUTPUT CONTACTOR CMD	OUT. CONTACTOR ASS.	OCC	r2	
FLT	1.8	OUTPUT PHASE LOSS	OUTPHASE LOSS	OPL	NO	
COM	1.9	FORCED LOCAL	FORCED LOCAL ASSIGN	FLO	LI3	
COM	1.9	FORCED LOCAL	FORCED LOCAL REF.	FLOC	AI1	
[1] Frame 2-6, 230V & 460V ONLY. [2] Hold for 3 Sec.						

DRIVE CATALOG NUMBER ATV61HD75N4

JOB NAME:	CHRIST HOSPITAL-COOLING TOWER	EQUIPMENT DESIGNATION:	mcccp1
JOB LOCATION:	CINCINNATI OH	EQUIPMENT TYPE:	MODEL 6 MOTOR CONTROL CENTER
DRAWN BY:	(Q2C)	DRAWING TYPE:	ELEMENTARY
ENGR:			SQUARE D by Schneider Electric
DATE:	April 25 2012		
DRAWING STATUS:	QUOTE	DWG# E31421375-01	PG1 OF1 REV -



WIRING DIAGRAMS	
FUSIBLE	NOT FUSIBLE
A, B, C	D

TERMINAL LUG DATA ‡			
AMPERES	MAX WIRE	MIN WIRE	TYPE
200	250 KCMIL	#6 AWG	CU/AL

DUAL DIMENSIONS: INCHES / MILLIMETERS

CATALOG NUMBER	VOLTAGE RATINGS	WIRING DIAG	HORSEPOWER RATINGS													
			240VAC				480VAC				600VAC				250 VDC	600 VDC
			STD		MAX		STD		MAX		STD		MAX		STD	STD
			1Ø	3Ø	1Ø	3Ø	1Ø	3Ø	1Ø	3Ø	1Ø	3Ø	1Ø	3Ø		
H224DS	240VAC;250VDC	A	15	25&	–	60&	–	–	–	–	–	–	–	–	40^	–
HJ24DS	240VAC;250VDC	B	15^	25&	–	60&	–	–	–	–	–	–	–	–	40^	–
H364DS	600VAC;600VDC	B	15^	25&	–	60&	25^	50&	50^	125&	30^	60	50^	150	40^	50^
H364NDS	600VAC;600VDC	C	15^	25//	–	60//	25^	50//	50^	125//	30^	60	50^	150	40^	50^
HJ364DS	600VAC;600VDC	D	–	–	15^	60&	–	–	60^	125&	–	–	50^	150	40^<	50^<

NOTES:
FINISH - TYPE 304 STAINLESS STEEL
UL LISTED - E2875
NEUTRALS - INSULATED GROUNDABLE
SUITABLE FOR USE AS SERVICE EQUIPMENT
SHORT CIRCUIT CURRENT RATINGS:
10,000 AMPERES WHEN USED WITH OR PROTECTED BY CLASS H OR K FUSES.
200,000 AMPERES WHEN USED WITH OR PROTECTED BY CLASS R OR J FUSES.
ON 600V SWITCHES, 100,000 AMPERES MAX ON CORNER GROUNDED DELTA WHEN PROTECTED BY CLASS J OR R FUSES, 200 AMPERE MAX.
‡ LUGS SUITABLE FOR 75°C CONDUCTORS.
// IF CORNER GROUNDED DELTA, USE OUTER SWITCHING POLES FOR UNGROUNDED CONDUCTORS.
& IF CORNER GROUNDED DELTA, INSTALL NEUTRAL AND USE OUTER SWITCHING POLES FOR UNGROUNDED CONDUCTORS.
^ USE ANY TWO SWITCHING POLES.
< MAX RATING

HEAVY DUTY SAFETY SWITCHES
VISIBLE BLADE TYPE
200 AMPERE - SERIES F6
ENCLOSURE - NEMA 4, 4X AND 5 STAINLESS STEEL

SQUARE D COMPANY

DWG# NO. 3232

NOVEMBER 2002

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

DateTime	Total Chiller Load, 2011	Total Chiller Load, 2012	Total Chiller Load, 2013	Indicates when a chiller is running		VFD speed (% of total connected tons)		Variable Speed Fan %Capacty	Motor HP at GPM	Monthly hours at % GPM	% of Maximum GPM	% of Full Load BHP of Fan Motor	Monthly hours at % Load	% Load Range for Part 2 of Custom Incentive
Minimum Condenser														
01 Jul 2010 07:29:43:000	2116		3,229	1		56.4%	0	56.43%				1		
01 Jul 2010 19:29:43:000	2506	2,656	3,919	1		66.8%	0	66.83%				1		
02 Jul 2010 07:29:43:000	2051		3,139	1		54.7%	0	54.69%				1		
02 Jul 2010 19:29:43:000	2588	2,738	4,032	1		69.0%	0	69.01%				1		
03 Jul 2010 07:29:43:000	2139		3,261	1		57.0%	0	57.04%				1		
03 Jul 2010 19:29:43:000	2931			1		78.2%	0	78.16%				1		
04 Jul 2010 07:29:43:000	2824			1		75.3%	0	75.31%				1		
04 Jul 2010 19:29:43:000	2949			1		78.6%	0	78.64%				1		
05 Jul 2010 07:29:43:000	2843			1		75.8%	0	75.81%				1		
05 Jul 2010 19:29:43:000	3060			1		81.6%	0	81.60%				1		
06 Jul 2010 07:29:43:000	3054			1		81.4%	0	81.44%				1		
06 Jul 2010 19:29:43:000	3027			1		80.7%	0	80.72%				1		
07 Jul 2010 07:29:43:000	2976			1		79.4%	0	79.36%				1		
07 Jul 2010 19:29:43:000	2865			1		76.4%	0	76.40%				1		
08 Jul 2010 07:29:43:000	2818			1		75.1%	0	75.15%				1		
08 Jul 2010 19:29:43:000	2974			1		79.3%	0	79.31%				1		
09 Jul 2010 07:29:43:000	3021			1		80.6%	0	80.56%				1		
09 Jul 2010 19:29:43:000	2899			1		77.3%	0	77.31%				1		
10 Jul 2010 07:29:43:000	2973			1		79.3%	0	79.28%				1		
10 Jul 2010 19:29:43:000	2918			1		77.8%	0	77.81%				1		
11 Jul 2010 07:29:43:000	2714			1		72.4%	0	72.37%				1		
11 Jul 2010 19:29:43:000	2897			1		77.3%	0	77.25%				1		
12 Jul 2010 07:29:43:000	2902			1		77.4%	0	77.39%				1		
12 Jul 2010 19:29:43:000	2966			1		79.1%	0	79.09%				1		
13 Jul 2010 07:29:43:000	3101			1		82.7%	0	82.69%				1		
13 Jul 2010 19:29:43:000	2953			1		78.7%	0	78.75%				1		
14 Jul 2010 07:29:43:000	2818			1		75.1%	0	75.15%				1		
14 Jul 2010 19:29:43:000	2909			1		77.6%	0	77.57%				1		
15 Jul 2010 07:29:43:000	2990			1		79.7%	0	79.73%				1		
15 Jul 2010 19:29:43:000	2915			1		77.7%	0	77.73%				1		
16 Jul 2010 07:29:43:000	2976			1		79.4%	0	79.36%				1		
16 Jul 2010 19:29:43:000	2914			1		77.7%	0	77.71%				1		
17 Jul 2010 07:29:43:000	2941			1		78.4%	0	78.43%				1		
17 Jul 2010 19:29:43:000	2959			1		78.9%	0	78.91%				1		
18 Jul 2010 07:29:43:000	2853			1		76.1%	0	76.08%				1		
18 Jul 2010 19:29:43:000	3010			1		80.3%	0	80.27%				1		
19 Jul 2010 07:29:43:000	2898			1		77.3%	0	77.28%				1		
19 Jul 2010 19:29:43:000	3004			1		80.1%	0	80.11%				1		
20 Jul 2010 07:29:43:000	2880			1		76.8%	0	76.80%				1		
20 Jul 2010 19:29:43:000	3044			1		81.2%	0	81.17%				1		
21 Jul 2010 07:29:43:000	2932			1		78.2%	0	78.19%				1		
21 Jul 2010 19:29:43:000	2929			1		78.1%	0	78.11%				1		
22 Jul 2010 07:29:43:000	3079			1		82.1%	0	82.11%				1		
22 Jul 2010 19:29:43:000	2977			1		79.4%	0	79.39%				1		
23 Jul 2010 07:29:43:000	2832			1		75.5%	0	75.52%				1		
23 Jul 2010 19:29:43:000	2867			1		76.5%	0	76.45%				1		
24 Jul 2010 07:29:43:000	2998			1		79.9%	0	79.95%				1		
24 Jul 2010 19:29:43:000	2932			1		78.2%	0	78.19%				1		
25 Jul 2010 07:29:43:000	2905			1		77.5%	0	77.47%				1		
25 Jul 2010 19:29:43:000	2947			1		78.6%	0	78.59%				1		
26 Jul 2010 07:29:43:000	2829			1		75.4%	0	75.44%				1		
26 Jul 2010 19:29:43:000	2987			1		79.7%	0	79.65%		0	100%	1	744	100%
27 Jul 2010 07:29:43:000	2803			1		74.7%	0	74.75%		0	90%	1	0	90%
27 Jul 2010 19:29:43:000	2946			1		78.6%	0	78.56%		612	80%	1	0	80%
28 Jul 2010 07:29:43:000	3003			1		80.1%	0	80.08%		96	70%	1	0	70%
28 Jul 2010 19:29:43:000	2850			1		76.0%	0	76.00%		24	60%	1	0	60%
29 Jul 2010 07:29:43:000	2772			1		73.9%	0	73.92%		12	50%	1	0	50%
29 Jul 2010 19:29:43:000	3029			1		80.8%	0	80.77%		0	40%	1	0	40%
30 Jul 2010 07:29:43:000	2466			1		65.8%	0	65.76%		0	30%	1	0	30%
30 Jul 2010 19:29:43:000	2746			1		73.2%	0	73.23%			20%	1	0	20%
31 Jul 2010 07:29:43:000	2653			1		70.7%	0	70.75%			10%	1	0	10%
31 Jul 2010 19:29:43:000	2849			1		76.0%	0	75.97%		744		1	744	

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

01 Aug 2010 07:29:43:000	2608	1	69.5%	0	69.55%				1			
01 Aug 2010 19:29:43:000	2814	1	75.0%	0	75.04%				1			
02 Aug 2010 07:29:43:000	2758	1	73.5%	0	73.55%				1			
02 Aug 2010 19:29:43:000	2826	1	75.4%	0	75.36%				1			
03 Aug 2010 07:29:43:000	2916	1	77.8%	0	77.76%				1			
03 Aug 2010 19:29:43:000	2824	1	75.3%	0	75.31%				1			
04 Aug 2010 07:29:43:000	2966	1	79.1%	0	79.09%				1			
04 Aug 2010 19:29:43:000	2992	1	79.8%	0	79.79%				1			
05 Aug 2010 07:29:43:000	2937	1	78.3%	0	78.32%				1			
05 Aug 2010 19:29:43:000	2930	1	78.1%	0	78.13%				1			
06 Aug 2010 07:29:43:000	2865	1	76.4%	0	76.40%				1			
06 Aug 2010 19:29:43:000	2851	1	76.0%	0	76.03%				1			
07 Aug 2010 07:29:43:000	2736	1	73.0%	0	72.96%				1			
07 Aug 2010 19:29:43:000	2828	1	75.4%	0	75.41%				1			
08 Aug 2010 07:29:43:000	2720	1	72.5%	0	72.53%				1			
08 Aug 2010 19:29:43:000	2855	1	76.1%	0	76.13%				1			
09 Aug 2010 07:29:43:000	2791	1	74.4%	0	74.43%				1			
09 Aug 2010 19:29:43:000	2977	1	79.4%	0	79.39%				1			
10 Aug 2010 07:29:43:000	2891	1	77.1%	0	77.09%				1			
10 Aug 2010 19:29:43:000	2816	1	75.1%	0	75.09%				1			
11 Aug 2010 07:29:43:000	2988	1	79.7%	0	79.68%				1			
11 Aug 2010 19:29:43:000	2995	1	79.9%	0	79.87%				1			
12 Aug 2010 07:29:43:000	2857	1	76.2%	0	76.19%				1			
12 Aug 2010 19:29:43:000	2878	1	76.7%	0	76.75%				1			
13 Aug 2010 07:29:43:000	3027	1	80.7%	0	80.72%				1			
13 Aug 2010 19:29:43:000	2963	1	79.0%	0	79.01%				1			
14 Aug 2010 07:29:43:000	2990	1	79.7%	0	79.73%				1			
14 Aug 2010 19:29:43:000	3031	1	80.8%	0	80.83%				1			
15 Aug 2010 07:29:43:000	2902	1	77.4%	0	77.39%				1			
15 Aug 2010 19:29:43:000	2982	1	79.5%	0	79.52%				1			
16 Aug 2010 07:29:43:000	2674	1	71.3%	0	71.31%				1			
16 Aug 2010 19:29:43:000	2876	1	76.7%	0	76.69%				1			
17 Aug 2010 07:29:43:000	2700	1	72.0%	0	72.00%				1			
17 Aug 2010 19:29:43:000	3007	1	80.2%	0	80.19%				1			
18 Aug 2010 07:29:43:000	2724	1	72.6%	0	72.64%				1			
18 Aug 2010 19:29:43:000	2920	1	77.9%	0	77.87%				1			
19 Aug 2010 07:29:43:000	2929	1	78.1%	0	78.11%				1			
19 Aug 2010 19:29:43:000	2905	1	77.5%	0	77.47%				1			
20 Aug 2010 07:29:43:000	2781	1	74.2%	0	74.16%				1			
20 Aug 2010 19:29:43:000	2920	1	77.9%	0	77.87%				1			
21 Aug 2010 07:29:43:000	2849	1	76.0%	0	75.97%				1			
21 Aug 2010 19:29:43:000	2982	1	79.5%	0	79.52%				1			
22 Aug 2010 07:29:43:000	2800	1	74.7%	0	74.67%				1			
22 Aug 2010 19:29:43:000	2991	1	79.8%	0	79.76%				1			
23 Aug 2010 07:29:43:000	2664	1	71.0%	0	71.04%				1			
23 Aug 2010 19:29:43:000	2848	1	75.9%	0	75.95%				1			
24 Aug 2010 07:29:43:000	2714	1	72.4%	0	72.37%				1			
24 Aug 2010 19:29:43:000	2828	1	75.4%	0	75.41%				1			
25 Aug 2010 07:29:43:000	2751	1	73.4%	0	73.36%				1			
25 Aug 2010 19:29:43:000	2890	1	77.1%	0	77.07%				1			
26 Aug 2010 07:29:43:000	2344	1	62.5%	0	62.51%				1			
26 Aug 2010 19:29:43:000	2721	1	72.6%	0	72.56%	0	100%	1	744	100%		
27 Aug 2010 07:29:43:000	2141	1	57.1%	0	57.09%	0	90%	1	0	90%		
27 Aug 2010 19:29:43:000	2567	1	68.5%	0	68.45%	504	80%	1	0	80%		
28 Aug 2010 07:29:43:000	2337	1	62.3%	0	62.32%	204	70%	1	0	70%		
28 Aug 2010 19:29:43:000	2859	1	76.2%	0	76.24%	36	60%	1	0	60%		
29 Aug 2010 07:29:43:000	2795	1	74.5%	0	74.53%	0	50%	1	0	50%		
29 Aug 2010 19:29:43:000	2800	1	74.7%	0	74.67%	0	40%	1	0	40%		
30 Aug 2010 07:29:43:000	2893	1	77.1%	0	77.15%	0	30%	1	0	30%		
30 Aug 2010 19:29:43:000	2898	1	77.3%	0	77.28%		20%	1	0	20%		
31 Aug 2010 07:29:43:000	2939	1	78.4%	0	78.37%		10%	1	0	10%		
31 Aug 2010 19:29:43:000	3030	1	80.8%	0	80.80%	744		1	744			
01 Sep 2010 07:29:43:000	2945	1	78.5%	0	78.53%			1				
01 Sep 2010 19:29:43:000	1888	1	50.3%	0	50.35%			1				
02 Sep 2010 07:29:43:000	2840	1	75.7%	0	75.73%			1				
02 Sep 2010 19:29:43:000	3028	1	80.7%	0	80.75%			1				
03 Sep 2010 07:29:43:000	2942	1	78.5%	0	78.45%			1				
03 Sep 2010 19:29:43:000	2600	1	69.3%	0	69.33%			1				

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

04 Sep 2010 07:29:43:000	2027	1	54.1%	0	54.05%			1			
04 Sep 2010 19:29:43:000	2396	1	63.9%	0	63.89%			1			
05 Sep 2010 07:29:43:000	1820	1	48.5%	0	48.53%			1			
05 Sep 2010 19:29:43:000	2409	1	64.2%	0	64.24%			1			
06 Sep 2010 07:29:43:000	2102	1	56.1%	0	56.05%			1			
06 Sep 2010 19:29:43:000	2734	1	72.9%	0	72.91%			1			
07 Sep 2010 07:29:43:000	2446	1	65.2%	0	65.23%			1			
07 Sep 2010 19:29:43:000	3030	1	80.8%	0	80.80%			1			
08 Sep 2010 07:29:43:000	2371	1	63.2%	0	63.23%			1			
08 Sep 2010 19:29:43:000	2600	1	69.3%	0	69.33%			1			
09 Sep 2010 07:29:43:000	2010	1	53.6%	0	53.60%			1			
09 Sep 2010 19:29:43:000	2565	1	68.4%	0	68.40%			1			
10 Sep 2010 07:29:43:000	2097	1	55.9%	0	55.92%			1			
10 Sep 2010 19:29:43:000	2620	1	69.9%	0	69.87%			1			
11 Sep 2010 07:29:43:000	2353	1	62.7%	0	62.75%			1			
11 Sep 2010 19:29:43:000	2880	1	76.8%	0	76.80%			1			
12 Sep 2010 07:29:43:000	2580	1	68.8%	0	68.80%			1			
12 Sep 2010 19:29:43:000	2577	1	68.7%	0	68.72%			1			
13 Sep 2010 07:29:43:000	2375	1	63.3%	0	63.33%			1			
13 Sep 2010 19:29:43:000	2818	1	75.1%	0	75.15%			1			
14 Sep 2010 07:29:43:000	2405	1	64.1%	0	64.13%			1			
14 Sep 2010 19:29:43:000	2600	1	69.3%	0	69.33%			1			
15 Sep 2010 07:29:43:000	2253	1	60.1%	0	60.08%			1			
15 Sep 2010 19:29:43:000	2979	1	79.4%	0	79.44%			1			
16 Sep 2010 07:29:43:000	3023	1	80.6%	0	80.61%			1			
16 Sep 2010 19:29:43:000	2896	1	77.2%	0	77.23%			1			
17 Sep 2010 07:29:43:000	2428	1	64.7%	0	64.75%			1			
17 Sep 2010 19:29:43:000	2576	1	68.7%	0	68.69%			1			
18 Sep 2010 07:29:43:000	2304	1	61.4%	0	61.44%			1			
18 Sep 2010 19:29:43:000	2846	1	75.9%	0	75.89%			1			
19 Sep 2010 07:29:43:000	2596	1	69.2%	0	69.23%			1			
19 Sep 2010 19:29:43:000	2863	1	76.3%	0	76.35%			1			
20 Sep 2010 07:29:43:000	2705	1	72.1%	0	72.13%			1			
20 Sep 2010 19:29:43:000	2971	1	79.2%	0	79.23%			1			
21 Sep 2010 07:29:43:000	2658	1	70.9%	0	70.88%			1			
21 Sep 2010 19:29:43:000	3077	1	82.1%	0	82.05%			1			
22 Sep 2010 07:29:43:000	3049	1	81.3%	0	81.31%			1			
22 Sep 2010 19:29:43:000	2847	1	75.9%	0	75.92%			1			
23 Sep 2010 07:29:43:000	2952	1	78.7%	0	78.72%			1			
23 Sep 2010 19:29:43:000	2985	1	79.6%	0	79.60%			1			
24 Sep 2010 07:29:43:000	2339	1	62.4%	0	62.37%			1			
24 Sep 2010 19:29:43:000	2985	1	79.6%	0	79.60%			1			
25 Sep 2010 07:29:43:000	2340	1	62.4%	0	62.40%			1			
25 Sep 2010 19:29:43:000	2472	1	65.9%	0	65.92%	0	100%	1	720	100%	
26 Sep 2010 07:29:43:000	1865	1	49.7%	0	49.73%	0	90%	1	0	90%	
26 Sep 2010 19:29:43:000	2385	1	63.6%	0	63.60%	228	80%	1	0	80%	
27 Sep 2010 07:29:43:000	1789	1	47.7%	0	47.71%	168	70%	1	0	70%	
27 Sep 2010 19:29:43:000	1826	1	48.7%	0	48.69%	192	60%	1	0	60%	
28 Sep 2010 07:29:43:000	1875	1	50.0%	0	50.00%	120	50%	1	0	50%	
28 Sep 2010 19:29:43:000	1909	1	50.9%	0	50.91%	12	40%	1	0	40%	
29 Sep 2010 07:29:43:000	1342	1	35.8%	0	35.79%	0	30%	1	0	30%	
29 Sep 2010 19:29:43:000	2147	1	57.3%	0	57.25%		20%	1	0	20%	
30 Sep 2010 07:29:43:000	1781	1	47.5%	0	47.49%		10%	1	0	10%	
30 Sep 2010 19:29:43:000	2144	1	57.2%	0	57.17%	720		1	720		
01 Oct 2010 07:29:43:000	1708	1	45.5%	0	45.55%			1			
01 Oct 2010 19:29:43:000	2006	1	53.5%	0	53.49%			1			
02 Oct 2010 07:29:43:000	1742	1	46.5%	0	46.45%			1			
02 Oct 2010 19:29:43:000	1635	1	43.6%	0	43.60%			1			
03 Oct 2010 07:29:43:000	1410	1	37.6%	0	37.60%			1			
03 Oct 2010 19:29:43:000	1625	1	43.3%	0	43.33%			1			
04 Oct 2010 07:29:43:000	1423	1	37.9%	0	37.95%			1			
04 Oct 2010 19:29:43:000	1723	1	45.9%	0	45.95%			1			
05 Oct 2010 07:29:43:000	1440	1	38.4%	0	38.40%			1			
05 Oct 2010 19:29:43:000	1992	1	53.1%	0	53.12%			1			
06 Oct 2010 07:29:43:000	1403	1	37.4%	0	37.41%			1			
06 Oct 2010 19:29:43:000	1929	1	51.4%	0	51.44%			1			
07 Oct 2010 07:29:43:000	1785	1	47.6%	0	47.60%			1			
07 Oct 2010 19:29:43:000	2280	1	60.8%	0	60.80%			1			

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

08 Oct 2010 07:29:43:000	1720	1	45.9%	0	45.87%			1			
08 Oct 2010 19:29:43:000	2419	1	64.5%	0	64.51%			1			
09 Oct 2010 07:29:43:000	1864	1	49.7%	0	49.71%			1			
09 Oct 2010 19:29:43:000	2477	1	66.1%	0	66.05%			1			
10 Oct 2010 07:29:43:000	2065	1	55.1%	0	55.07%			1			
10 Oct 2010 19:29:43:000	2710	1	72.3%	0	72.27%			1			
11 Oct 2010 07:29:43:000	2138	1	57.0%	0	57.01%			1			
11 Oct 2010 19:29:43:000	2632	1	70.2%	0	70.19%			1			
12 Oct 2010 07:29:43:000	2238	1	59.7%	0	59.68%			1			
12 Oct 2010 19:29:43:000	2504	1	66.8%	0	66.77%			1			
13 Oct 2010 07:29:43:000	1903	1	50.7%	0	50.75%			1			
13 Oct 2010 19:29:43:000	2356	1	62.8%	0	62.83%			1			
14 Oct 2010 07:29:43:000	1500	1	40.0%	0	40.00%			1			
14 Oct 2010 19:29:43:000	1807	1	48.2%	0	48.19%			1			
15 Oct 2010 07:29:43:000	1634	1	43.6%	0	43.57%			1			
15 Oct 2010 19:29:43:000	1862	1	49.7%	0	49.65%			1			
16 Oct 2010 07:29:43:000	1329	1	35.4%	0	35.44%			1			
16 Oct 2010 19:29:43:000	1767	1	47.1%	0	47.12%			1			
17 Oct 2010 07:29:43:000	1756	1	46.8%	0	46.83%			1			
17 Oct 2010 19:29:43:000	1726	1	46.0%	0	46.03%			1			
18 Oct 2010 07:29:43:000	1568	1	41.8%	0	41.81%			1			
18 Oct 2010 19:29:43:000	1700	1	45.3%	0	45.33%			1			
19 Oct 2010 07:29:43:000	1488	1	39.7%	0	39.68%			1			
19 Oct 2010 19:29:43:000	1723	1	45.9%	0	45.95%			1			
20 Oct 2010 07:29:43:000	1468	1	39.1%	0	39.15%			1			
20 Oct 2010 19:29:43:000	1845	1	49.2%	0	49.20%			1			
21 Oct 2010 07:29:43:000	1634	1	43.6%	0	43.57%			1			
21 Oct 2010 19:29:43:000	1638	1	43.7%	0	43.68%			1			
22 Oct 2010 07:29:43:000	1258	1	33.5%	0	33.55%			1			
22 Oct 2010 19:29:43:000	1748	1	46.6%	0	46.61%			1			
23 Oct 2010 07:29:43:000	1539	1	41.0%	0	41.04%			1			
23 Oct 2010 19:29:43:000	1739	1	46.4%	0	46.37%			1			
24 Oct 2010 07:29:43:000	1727	1	46.1%	0	46.05%			1			
24 Oct 2010 19:29:43:000	2712	1	72.3%	0	72.32%			1			
25 Oct 2010 07:29:43:000	2427	1	64.7%	0	64.72%			1			
25 Oct 2010 19:29:43:000	2528	1	67.4%	0	67.41%			1			
26 Oct 2010 07:29:43:000	2725	1	72.7%	0	72.67%			1			
26 Oct 2010 19:29:43:000	1663	1	44.3%	0	44.35%	0	100%	1	744	100%	
27 Oct 2010 07:29:43:000	1510	1	40.3%	0	40.27%	0	90%	1	0	90%	
27 Oct 2010 19:29:43:000	2244	1	59.8%	0	59.84%	0	80%	1	0	80%	
28 Oct 2010 07:29:43:000	1616	1	43.1%	0	43.09%	84	70%	1	0	70%	
28 Oct 2010 19:29:43:000	1158	1	30.9%	0	30.88%	96	60%	1	0	60%	
29 Oct 2010 07:29:43:000	1155	1	30.8%	0	30.80%	252	50%	1	0	50%	
29 Oct 2010 19:29:43:000	1102	1	29.4%	0	29.39%	216	40%	1	0	40%	
30 Oct 2010 07:29:43:000	1144	1	30.5%	0	30.51%	96	30%	1	0	30%	
30 Oct 2010 19:29:43:000	1173	1	31.3%	0	31.28%		20%	1	0	20%	
31 Oct 2010 07:29:43:000	1124	1	30.0%	0	29.97%		10%	1	0	10%	
31 Oct 2010 19:29:43:000	1161	1	31.0%	0	30.96%	744		1	744		
01 Nov 2010 07:29:43:00(	1155	1	30.8%	0	30.80%			1			
01 Nov 2010 19:29:43:00(	1167	1	31.1%	0	31.12%			1			
02 Nov 2010 07:29:43:00(	1186	1	31.6%	0	31.63%			1			
02 Nov 2010 19:29:43:00(	1113	1	29.7%	0	29.68%			1			
03 Nov 2010 07:29:43:00(	1120	1	29.9%	0	29.87%			1			
03 Nov 2010 19:29:43:00(	1179	1	31.4%	0	31.44%			1			
04 Nov 2010 07:29:43:00(	1170	1	31.2%	0	31.20%			1			
04 Nov 2010 19:29:43:00(	1134	1	30.2%	0	30.24%			1			
05 Nov 2010 07:29:43:00(	1168	1	31.1%	0	31.15%			1			
05 Nov 2010 19:29:43:00(	0	0	0.0%	0	0.00%			-			
06 Nov 2010 07:29:43:00(	0	0	0.0%	0	0.00%			-			
06 Nov 2010 19:29:43:00(	0	0	0.0%	0	0.00%			-			
07 Nov 2010 06:29:43:00(	0	0	0.0%	0	0.00%			-			
07 Nov 2010 18:29:43:00(	1112	1	29.7%	0	29.65%			1			
08 Nov 2010 06:29:43:00(	1108	1	29.5%	0	29.55%			1			
08 Nov 2010 18:29:43:00(	1526	1	40.7%	0	40.69%			1			
09 Nov 2010 06:29:43:00(	1550	1	41.3%	0	41.33%			1			
09 Nov 2010 18:29:43:00(	1596	1	42.6%	0	42.56%			1			
10 Nov 2010 06:29:43:00(	1154	1	30.8%	0	30.77%			1			
10 Nov 2010 18:29:43:00(	2134	1	56.9%	0	56.91%			1			

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

11 Nov 2010 06:29:43:000	1596		1	42.6%	0	42.56%							1		
11 Nov 2010 18:29:43:000	2161		1	57.6%	0	57.63%							1		
12 Nov 2010 06:29:43:000	1134		1	30.2%	0	30.24%							1		
12 Nov 2010 18:29:43:000	2185		1	58.3%	0	58.27%							1		
13 Nov 2010 06:29:43:000	1199		1	32.0%	0	31.97%							1		
13 Nov 2010 18:29:43:000	2280		1	60.8%	0	60.80%							1		
14 Nov 2010 06:29:43:000	1139		1	30.4%	0	30.37%							1		
14 Nov 2010 18:29:43:000	1165		1	31.1%	0	31.07%							1		
15 Nov 2010 06:29:43:000	1136		1	30.3%	0	30.29%							1		
15 Nov 2010 18:29:43:000	1170		1	31.2%	0	31.20%							1		
16 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
16 Nov 2010 18:29:43:000	1000		1	26.7%	0	26.67%							1		
17 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
17 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
18 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
18 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
19 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
19 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
20 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
20 Nov 2010 18:29:43:000	1161		1	31.0%	0	30.96%							1		
21 Nov 2010 06:29:43:000	1121		1	29.9%	0	29.89%							1		
21 Nov 2010 18:29:43:000	1635		1	43.6%	0	43.60%							1		
22 Nov 2010 06:29:43:000	1621		1	43.2%	0	43.23%							1		
22 Nov 2010 18:29:43:000	1873		1	49.9%	0	49.95%							1		
23 Nov 2010 06:29:43:000	1686		1	45.0%	0	44.96%							1		
23 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
24 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
24 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
25 Nov 2010 06:29:43:000	1111		1	29.6%	0	29.63%							1		
25 Nov 2010 18:29:43:000	1432		1	38.2%	0	38.19%					0	100%	1	444	100%
26 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%					0	90%	-	0	90%
26 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%					0	80%	-	0	80%
27 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%					0	70%	-	0	70%
27 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%					48	60%	-	0	60%
28 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%					36	50%	-	0	50%
28 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%	45	53	8		96	40%	-	0	40%
29 Nov 2010 06:29:43:000	0		0	0.0%	0	0.00%					264	30%	-	0	30%
29 Nov 2010 18:29:43:000	1764		1	47.0%	0	47.04%						20%	1	0	20%
30 Nov 2010 06:29:43:000	1790		1	47.7%	0	47.73%						10%	1	0	10%
30 Nov 2010 18:29:43:000	0		0	0.0%	0	0.00%					444		-	444	
01 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
01 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
02 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
02 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
03 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
03 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
04 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
04 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
05 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
05 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
06 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
06 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
07 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
07 Dec 2010 18:29:43:000	1101		1	29.4%	0	29.36%							1		
08 Dec 2010 06:29:43:000	1101		1	29.4%	0	29.36%							1		
08 Dec 2010 18:29:43:000	1111		1	29.6%	0	29.63%							1		
09 Dec 2010 06:29:43:000	1139		1	30.4%	0	30.37%							1		
09 Dec 2010 18:29:43:000	1103		1	29.4%	0	29.41%							1		
10 Dec 2010 06:29:43:000	1167		1	31.1%	0	31.12%							1		
10 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
11 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
11 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%							-		
12 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%							-		
12 Dec 2010 18:29:43:000	1119		1	29.8%	0	29.84%							1		
13 Dec 2010 06:29:43:000	1081		1	28.8%	0	28.83%							1		
13 Dec 2010 18:29:43:000	1085		1	28.9%	0	28.93%							1		
14 Dec 2010 06:29:43:000	1144		1	30.5%	0	30.51%							1		
14 Dec 2010 18:29:43:000	1153		1	30.7%	0	30.75%							1		

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

15 Dec 2010 06:29:43:000	1074		1	28.6%	0	28.64%				1		
15 Dec 2010 18:29:43:000	1192		1	31.8%	0	31.79%				1		
16 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
16 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
17 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
17 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
18 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
18 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
19 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
19 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
20 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
20 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
21 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
21 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
22 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
22 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
23 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
23 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
24 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
24 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
25 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%				-		
25 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%				-		
26 Dec 2010 06:29:43:000	1147		1	30.6%	0	30.59%				1		
26 Dec 2010 18:29:43:000	1175		1	31.3%	0	31.33%	0	100%	1	276	100%	
27 Dec 2010 06:29:43:000	1103		1	29.4%	0	29.41%	0	90%	1	0	90%	
27 Dec 2010 18:29:43:000	1126		1	30.0%	0	30.03%	0	80%	1	0	80%	
28 Dec 2010 06:29:43:000	1134		1	30.2%	0	30.24%	0	70%	1	0	70%	
28 Dec 2010 18:29:43:000	1137		1	30.3%	0	30.32%	0	60%	1	0	60%	
29 Dec 2010 06:29:43:000	1182		1	31.5%	0	31.52%	12	50%	1	0	50%	
29 Dec 2010 18:29:43:000	0		0	0.0%	0	0.00%	0	40%	-	0	40%	
30 Dec 2010 06:29:43:000	0		0	0.0%	0	0.00%	264	30%	-	0	30%	
30 Dec 2010 18:29:43:000	1102		1	29.4%	0	29.39%		20%	1	0	20%	
31 Dec 2010 06:29:43:000	826		1	22.0%	0	22.03%		10%	1	0	10%	
31 Dec 2010 18:29:43:000	1877		1	50.1%	0	50.05%	276		1	276		
01 Jan 2011 06:29:43:000	1764		1	47.0%	0	47.04%				1		
01 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-		
02 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-		
02 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-		
03 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-		
03 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-		
04 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-		
04 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-		
05 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-		
05 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-		
06 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-		
06 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-		
07 Jan 2011 06:29:43:000	1158		1	30.9%	0	30.88%				1		
07 Jan 2011 18:29:43:000	1147		1	30.6%	0	30.59%				1		
08 Jan 2011 06:29:43:000	1144		1	30.5%	0	30.51%				1		
08 Jan 2011 18:29:43:000	1162		1	31.0%	0	30.99%				1		
09 Jan 2011 06:29:43:000	1046		1	27.9%	0	27.89%				1		
09 Jan 2011 18:29:43:000	1110		1	29.6%	0	29.60%				1		
10 Jan 2011 06:29:43:000	1169		1	31.2%	0	31.17%				1		
10 Jan 2011 18:29:43:000	1190		1	31.7%	0	31.73%				1		
11 Jan 2011 06:29:43:000	1160		1	30.9%	0	30.93%				1		
11 Jan 2011 18:29:43:000	1118		1	29.8%	0	29.81%				1		
12 Jan 2011 06:29:43:000	1190		1	31.7%	0	31.73%				1		
12 Jan 2011 18:29:43:000	1160		1	30.9%	0	30.93%				1		
13 Jan 2011 06:29:43:000	1083		1	28.9%	0	28.88%				1		
13 Jan 2011 18:29:43:000	1155		1	30.8%	0	30.80%				1		
14 Jan 2011 06:29:43:000	1168		1	31.1%	0	31.15%				1		
14 Jan 2011 18:29:43:000	1196		1	31.9%	0	31.89%				1		
15 Jan 2011 06:29:43:000	1155		1	30.8%	0	30.80%				1		
15 Jan 2011 18:29:43:000	1160		1	30.9%	0	30.93%				1		
16 Jan 2011 06:29:43:000	1116		1	29.8%	0	29.76%				1		
16 Jan 2011 18:29:43:000	1158		1	30.9%	0	30.88%				1		
17 Jan 2011 06:29:43:000	1166		1	31.1%	0	31.09%				1		
17 Jan 2011 18:29:43:000	1171		1	31.2%	0	31.23%				1		

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

18 Jan 2011 06:29:43:000	1150		1	30.7%	0	30.67%				1			
18 Jan 2011 18:29:43:000	1186		1	31.6%	0	31.63%				1			
19 Jan 2011 06:29:43:000	1134		1	30.2%	0	30.24%				1			
19 Jan 2011 18:29:43:000	1144		1	30.5%	0	30.51%				1			
20 Jan 2011 06:29:43:000	1114		1	29.7%	0	29.71%				1			
20 Jan 2011 18:29:43:000	1129		1	30.1%	0	30.11%				1			
21 Jan 2011 06:29:43:000	1158		1	30.9%	0	30.88%				1			
21 Jan 2011 18:29:43:000	1182		1	31.5%	0	31.52%				1			
22 Jan 2011 06:29:43:000	1162		1	31.0%	0	30.99%				1			
22 Jan 2011 18:29:43:000	1110		1	29.6%	0	29.60%				1			
23 Jan 2011 06:29:43:000	1142		1	30.5%	0	30.45%				1			
23 Jan 2011 18:29:43:000	1180		1	31.5%	0	31.47%				1			
24 Jan 2011 06:29:43:000	1197		1	31.9%	0	31.92%				1			
24 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
25 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
25 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%				-	480		
26 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
26 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%		0	100%	-	480	100%	
27 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%		0	90%	-	0	90%	
27 Jan 2011 18:29:43:000	400		1	10.7%	0	10.67%		0	80%	1	0	80%	
28 Jan 2011 06:29:43:000	400		1	10.7%	0	10.67%		0	70%	1	0	70%	
28 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%		0	60%	-	0	60%	
29 Jan 2011 06:29:43:000	1064		1	28.4%	0	28.37%		12	50%	1	0	50%	
29 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%		0	40%	-	0	40%	
30 Jan 2011 06:29:43:000	0		0	0.0%	0	0.00%		468	30%	-	0	30%	
30 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%			20%	-	0	20%	
31 Jan 2011 06:29:43:000	1079		1	28.8%	0	28.77%			10%	1	0	10%	
31 Jan 2011 18:29:43:000	0		0	0.0%	0	0.00%		480		-	480		
01 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
01 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
02 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
02 Feb 2011 18:29:43:000	1106		1	29.5%	0	29.49%				1			
03 Feb 2011 06:29:43:000	1135		1	30.3%	0	30.27%				1			
03 Feb 2011 18:29:43:000	1178		1	31.4%	0	31.41%				1			
04 Feb 2011 06:29:43:000	1147		1	30.6%	0	30.59%				1			
04 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
05 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
05 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
06 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
06 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
07 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
07 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
08 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
08 Feb 2011 18:29:43:000	400		1	10.7%	0	10.67%				1			
09 Feb 2011 06:29:43:000	400		1	10.7%	0	10.67%				1			
09 Feb 2011 18:29:43:000	1152		1	30.7%	0	30.72%				1			
10 Feb 2011 06:29:43:000	1199		1	32.0%	0	31.97%				1			
10 Feb 2011 18:29:43:000	1109		1	29.6%	0	29.57%				1			
11 Feb 2011 06:29:43:000	1113		1	29.7%	0	29.68%				1			
11 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
12 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
12 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
13 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
13 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
14 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
14 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
15 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
15 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
16 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
16 Feb 2011 18:29:43:000	2349		1	62.6%	0	62.64%				1			
17 Feb 2011 06:29:43:000	1112		1	29.7%	0	29.65%				1			
17 Feb 2011 18:29:43:000	2353		1	62.7%	0	62.75%				1			
18 Feb 2011 06:29:43:000	2382		1	63.5%	0	63.52%				1			
18 Feb 2011 18:29:43:000	2223		1	59.3%	0	59.28%				1			
19 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
19 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			
20 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%				-			
20 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%				-			

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

21 Feb 2011 06:29:43:000	1762		1	47.0%	0	46.99%					1		
21 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%					-		
22 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%					-		
22 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%					-		
23 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%					-		
23 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%			0	100%	-	228	100%
24 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%			0	90%	-	0	90%
24 Feb 2011 18:29:43:000	358		1	9.5%	0	9.55%			0	80%	1	0	80%
25 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%			0	70%	-	0	70%
25 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%			60	60%	-	0	60%
26 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%			12	50%	-	0	50%
26 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%			0	40%	-	0	40%
27 Feb 2011 06:29:43:000	0		0	0.0%	0	0.00%			156	30%	-	0	30%
27 Feb 2011 18:29:43:000	1169		1	31.2%	0	31.17%				20%	1	0	20%
28 Feb 2011 06:29:43:000	2096		1	55.9%	0	55.89%				10%	1	0	10%
28 Feb 2011 18:29:43:000	0		0	0.0%	0	0.00%			228		-	228	
01 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
01 Mar 2011 18:29:43:00(	332		1	8.9%	0	8.85%					1		
02 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
02 Mar 2011 18:29:43:00(	338		1	9.0%	0	9.01%					1		
03 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
03 Mar 2011 18:29:43:00(	1118		1	29.8%	0	29.81%					1		
04 Mar 2011 06:29:43:00(	1121		1	29.9%	0	29.89%					1		
04 Mar 2011 18:29:43:00(	880		1	23.5%	0	23.47%					1		
05 Mar 2011 06:29:43:00(	959		1	25.6%	0	25.57%					1		
05 Mar 2011 18:29:43:00(	646		1	17.2%	0	17.23%					1		
06 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
06 Mar 2011 18:29:43:00(	0		0	0.0%	0	0.00%					-		
07 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
07 Mar 2011 18:29:43:00(	280		1	7.5%	0	7.47%					1		
08 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
08 Mar 2011 18:29:43:00(	1237		1	33.0%	0	32.99%					1		
09 Mar 2011 06:29:43:00(	703		1	18.7%	0	18.75%					1		
09 Mar 2011 18:29:43:00(	1225		1	32.7%	0	32.67%					1		
10 Mar 2011 06:29:43:00(	695		1	18.5%	0	18.53%					1		
10 Mar 2011 18:29:43:00(	0		0	0.0%	0	0.00%					-		
11 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
11 Mar 2011 18:29:43:00(	328		1	8.7%	0	8.75%					1		
12 Mar 2011 06:29:43:00(	0		0	0.0%	0	0.00%					-		
12 Mar 2011 18:29:43:00(	1382		1	36.9%	0	36.85%					1		
13 Mar 2011 07:29:43:00(	0		0	0.0%	0	0.00%					-		
13 Mar 2011 19:29:43:00(	0		0	0.0%	0	0.00%					-		
14 Mar 2011 07:29:43:00(	0		0	0.0%	0	0.00%					-		
14 Mar 2011 19:29:43:00(	316		1	8.4%	0	8.43%					1		
15 Mar 2011 07:29:43:00(	290		1	7.7%	0	7.73%					1		
15 Mar 2011 19:29:43:00(	810		1	21.6%	0	21.60%					1		
16 Mar 2011 07:29:43:00(	356		1	9.5%	0	9.49%					1		
16 Mar 2011 19:29:43:00(	1573		1	41.9%	0	41.95%					1		
17 Mar 2011 07:29:43:00(	718		1	19.1%	0	19.15%					1		
17 Mar 2011 19:29:43:00(	2335		1	62.3%	0	62.27%					1		
18 Mar 2011 07:29:43:00(	2259		1	60.2%	0	60.24%					1		
18 Mar 2011 19:29:43:00(	1561		1	41.6%	0	41.63%					1		
19 Mar 2011 07:29:43:00(	696		1	18.6%	0	18.56%					1		
19 Mar 2011 19:29:43:00(	946		1	25.2%	0	25.23%					1		
20 Mar 2011 07:29:43:00(	644		1	17.2%	0	17.17%					1		
20 Mar 2011 19:29:43:00(	2262		1	60.3%	0	60.32%					1		
21 Mar 2011 07:29:43:00(	2222		1	59.3%	0	59.25%					1		
21 Mar 2011 19:29:43:00(	2608		1	69.5%	0	69.55%					1		
22 Mar 2011 07:29:43:00(	1773		1	47.3%	0	47.28%					1		
22 Mar 2011 19:29:43:00(	2468		1	65.8%	0	65.81%					1		
23 Mar 2011 07:29:43:00(	2287		1	61.0%	0	60.99%					1		
23 Mar 2011 19:29:43:00(	1475		1	39.3%	0	39.33%					1		
24 Mar 2011 07:29:43:00(	815		1	21.7%	0	21.73%					1		
24 Mar 2011 19:29:43:00(	0		0	0.0%	0	0.00%					-		
25 Mar 2011 07:29:43:00(	0		0	0.0%	0	0.00%					-		
25 Mar 2011 19:29:43:00(	0		0	0.0%	0	0.00%					-		
26 Mar 2011 07:29:43:00(	0		0	0.0%	0	0.00%					-		
26 Mar 2011 19:29:43:00(	0		0	0.0%	0	0.00%			0	100%	-	408	100%

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

27 Mar 2011 07:29:43:000	0		0	0.0%	0	0.00%		0	90%	-	0	90%
27 Mar 2011 19:29:43:000	0		0	0.0%	0	0.00%		0	80%	-	0	80%
28 Mar 2011 07:29:43:000	0		0	0.0%	0	0.00%		24	70%	-	0	70%
28 Mar 2011 19:29:43:000	0		0	0.0%	0	0.00%		60	60%	-	0	60%
29 Mar 2011 07:29:43:000	0		0	0.0%	0	0.00%		12	50%	-	0	50%
29 Mar 2011 19:29:43:000	0		0	0.0%	0	0.00%		48	40%	-	0	40%
30 Mar 2011 07:29:43:000	0		0	0.0%	0	0.00%		264	30%	-	0	30%
30 Mar 2011 19:29:43:000	0		0	0.0%	0	0.00%			20%	-	0	20%
31 Mar 2011 07:29:43:000	0		0	0.0%	0	0.00%			10%	-	0	10%
31 Mar 2011 19:29:43:000	0		0	0.0%	0	0.00%		408		-	408	
01 Apr 2011 07:29:43:000	0		0	0.0%	0	0.00%				-		
01 Apr 2011 19:29:43:000	313		1	8.3%	0	8.35%				1		
02 Apr 2011 07:29:43:000	0		0	0.0%	0	0.00%				-		
02 Apr 2011 19:29:43:000	400		1	10.7%	0	10.67%				1		
03 Apr 2011 07:29:43:000	0		0	0.0%	0	0.00%				-		
03 Apr 2011 19:29:43:000	2265		1	60.4%	0	60.40%				1		
04 Apr 2011 07:29:43:000	2240		1	59.7%	0	59.73%				1		
04 Apr 2011 19:29:43:000	910		1	24.3%	0	24.27%				1		
05 Apr 2011 07:29:43:000	640		1	17.1%	0	17.07%				1		
05 Apr 2011 19:29:43:000	755		1	20.1%	0	20.13%				1		
06 Apr 2011 07:29:43:000	698		1	18.6%	0	18.61%				1		
06 Apr 2011 19:29:43:000	2257		1	60.2%	0	60.19%				1		
07 Apr 2011 07:29:43:000	1865		1	49.7%	0	49.73%				1		
07 Apr 2011 19:29:43:000	2234		1	59.6%	0	59.57%				1		
08 Apr 2011 07:29:43:000	1856		1	49.5%	0	49.49%				1		
08 Apr 2011 19:29:43:000	2587		1	69.0%	0	68.99%				1		
09 Apr 2011 07:29:43:000	1934		1	51.6%	0	51.57%				1		
09 Apr 2011 19:29:43:000	2216		1	59.1%	0	59.09%				1		
10 Apr 2011 07:29:43:000	2155		1	57.5%	0	57.47%				1		
10 Apr 2011 19:29:43:000	2752		1	73.4%	0	73.39%				1		
11 Apr 2011 07:29:43:000	2608		1	69.5%	0	69.55%				1		
11 Apr 2011 19:29:43:000	2534		1	67.6%	0	67.57%				1		
12 Apr 2011 07:29:43:000	1527		1	40.7%	0	40.72%				1		
12 Apr 2011 19:29:43:000	1125		1	30.0%	0	30.00%				1		
13 Apr 2011 07:29:43:000	797		1	21.3%	0	21.25%				1		
13 Apr 2011 19:29:43:000	2214		1	59.0%	0	59.04%				1		
14 Apr 2011 07:29:43:000	1511		1	40.3%	0	40.29%				1		
14 Apr 2011 19:29:43:000	2215		1	59.1%	0	59.07%				1		
15 Apr 2011 07:29:43:000	1615		1	43.1%	0	43.07%				1		
15 Apr 2011 19:29:43:000	1411		1	37.6%	0	37.63%				1		
16 Apr 2011 07:29:43:000	1947		1	51.9%	0	51.92%				1		
16 Apr 2011 19:29:43:000	817		1	21.8%	0	21.79%				1		
17 Apr 2011 07:29:43:000	881		1	23.5%	0	23.49%				1		
17 Apr 2011 19:29:43:000	2177		1	58.1%	0	58.05%				1		
18 Apr 2011 07:29:43:000	2166		1	57.8%	0	57.76%				1		
18 Apr 2011 19:29:43:000	2223		1	59.3%	0	59.28%				1		
19 Apr 2011 07:29:43:000	1845		1	49.2%	0	49.20%				1		
19 Apr 2011 19:29:43:000	2188		1	58.3%	0	58.35%				1		
20 Apr 2011 07:29:43:000	2221		1	59.2%	0	59.23%				1		
20 Apr 2011 19:29:43:000	1580		1	42.1%	0	42.13%				1		
21 Apr 2011 07:29:43:000	778		1	20.7%	0	20.75%				1		
21 Apr 2011 19:29:43:000	1378		1	36.7%	0	36.75%				1		
22 Apr 2011 07:29:43:000	1119		1	29.8%	0	29.84%				1		
22 Apr 2011 19:29:43:000	1659		1	44.2%	0	44.24%				1		
23 Apr 2011 07:29:43:000	1956		1	52.2%	0	52.16%				1		
23 Apr 2011 19:29:43:000	1915		1	51.1%	0	51.07%				1		
24 Apr 2011 07:29:43:000	1869		1	49.8%	0	49.84%				1		
24 Apr 2011 19:29:43:000	2023		1	53.9%	0	53.95%				1		
25 Apr 2011 07:29:43:000	1989		1	53.0%	0	53.04%				1		
25 Apr 2011 19:29:43:000	2686		1	71.6%	0	71.63%		0	100%	1	684	100%
26 Apr 2011 07:29:43:000	2506		1	66.8%	0	66.83%		0	90%	1	0	90%
26 Apr 2011 19:29:43:000	2728		1	72.7%	0	72.75%		0	80%	1	0	80%
27 Apr 2011 07:29:43:000	2695		1	71.9%	0	71.87%		108	70%	1	0	70%
27 Apr 2011 19:29:43:000	2476		1	66.0%	0	66.03%		156	60%	1	0	60%
28 Apr 2011 07:29:43:000	915		1	24.4%	0	24.40%		132	50%	1	0	50%
28 Apr 2011 19:29:43:000	1274		1	34.0%	0	33.97%		96	40%	1	0	40%
29 Apr 2011 07:29:43:000	1101		1	29.4%	0	29.36%		192	30%	1	0	30%
29 Apr 2011 19:29:43:000	1496		1	39.9%	0	39.89%			20%	1	0	20%

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

30 Apr 2011 07:29:43:000	1100	1	29.3%	0	29.33%			10%	1	0	10%
30 Apr 2011 19:29:43:000	1737	1	46.3%	0	46.32%		684		1	684	
01 May 2011 07:29:43:00(	1700	1	45.3%	0	45.33%				1		
01 May 2011 19:29:43:00(	1769	1	47.2%	0	47.17%				1		
02 May 2011 07:29:43:00(	1369	1	36.5%	0	36.51%				1		
02 May 2011 19:29:43:00(	1208	1	32.2%	0	32.21%				1		
03 May 2011 07:29:43:00(	959	1	25.6%	0	25.57%				1		
03 May 2011 19:29:43:00(	1078	1	28.7%	0	28.75%				1		
04 May 2011 07:29:43:00(	862	1	23.0%	0	22.99%				1		
04 May 2011 19:29:43:00(	1113	1	29.7%	0	29.68%				1		
05 May 2011 07:29:43:00(	935	1	24.9%	0	24.93%				1		
05 May 2011 19:29:43:00(	1452	1	38.7%	0	38.72%				1		
06 May 2011 07:29:43:00(	1133	1	30.2%	0	30.21%				1		
06 May 2011 19:29:43:00(	1636	1	43.6%	0	43.63%				1		
07 May 2011 07:29:43:00(	1404	1	37.4%	0	37.44%				1		
07 May 2011 19:29:43:00(	1626	1	43.4%	0	43.36%				1		
08 May 2011 07:29:43:00(	1564	1	41.7%	0	41.71%				1		
08 May 2011 19:29:43:00(	1710	1	45.6%	0	45.60%				1		
09 May 2011 07:29:43:00(	1416	1	37.8%	0	37.76%				1		
09 May 2011 19:29:43:00(	2572	1	68.6%	0	68.59%				1		
10 May 2011 07:29:43:00(	2329	1	62.1%	0	62.11%				1		
10 May 2011 19:29:43:00(	2853	1	76.1%	0	76.08%				1		
11 May 2011 07:29:43:00(	2809	1	74.9%	0	74.91%				1		
11 May 2011 19:29:43:00(	3221	1	85.9%	0	85.89%				1		
12 May 2011 07:29:43:00(	3107	1	82.9%	0	82.85%				1		
12 May 2011 19:29:43:00(	3176	1	84.7%	0	84.69%				1		
13 May 2011 07:29:43:00(	2910	1	77.6%	0	77.60%				1		
13 May 2011 19:29:43:00(	2973	1	79.3%	0	79.28%				1		
14 May 2011 07:29:43:00(	2643	1	70.5%	0	70.48%				1		
14 May 2011 19:29:43:00(	2538	1	67.7%	0	67.68%				1		
15 May 2011 07:29:43:00(	1388	1	37.0%	0	37.01%				1		
15 May 2011 19:29:43:00(	1470	1	39.2%	0	39.20%				1		
16 May 2011 07:29:43:00(	1178	1	31.4%	0	31.41%				1		
16 May 2011 19:29:43:00(	1255	1	33.5%	0	33.47%				1		
17 May 2011 07:29:43:00(	1151	1	30.7%	0	30.69%				1		
17 May 2011 19:29:43:00(	1193	1	31.8%	0	31.81%				1		
18 May 2011 07:29:43:00(	1211	1	32.3%	0	32.29%				1		
18 May 2011 19:29:43:00(	1442	1	38.5%	0	38.45%				1		
19 May 2011 07:29:43:00(	1636	1	43.6%	0	43.63%				1		
19 May 2011 19:29:43:00(	1757	1	46.9%	0	46.85%				1		
20 May 2011 07:29:43:00(	1638	1	43.7%	0	43.68%				1		
20 May 2011 19:29:43:00(	2642	1	70.5%	0	70.45%				1		
21 May 2011 07:29:43:00(	2339	1	62.4%	0	62.37%				1		
21 May 2011 19:29:43:00(	2911	1	77.6%	0	77.63%				1		
22 May 2011 07:29:43:00(	2706	1	72.2%	0	72.16%				1		
22 May 2011 19:29:43:00(	2766	1	73.8%	0	73.76%				1		
23 May 2011 07:29:43:00(	2184	1	58.2%	0	58.24%				1		
23 May 2011 19:29:43:00(	3056	1	81.5%	0	81.49%				1		
24 May 2011 07:29:43:00(	2770	1	73.9%	0	73.87%				1		
24 May 2011 19:29:43:00(	3062	1	81.7%	0	81.65%				1		
25 May 2011 07:29:43:00(	2834	1	75.6%	0	75.57%				1		
25 May 2011 19:29:43:00(	3221	1	85.9%	0	85.89%				1		
26 May 2011 07:29:43:00(	2917	1	77.8%	0	77.79%				1		
26 May 2011 19:29:43:00(	2696	1	71.9%	0	71.89%		0	100%	1	744	100%
27 May 2011 07:29:43:00(	2024	1	54.0%	0	53.97%		36	90%	1	0	90%
27 May 2011 19:29:43:00(	2097	1	55.9%	0	55.92%		168	80%	1	0	80%
28 May 2011 07:29:43:00(	2148	1	57.3%	0	57.28%		132	70%	1	0	70%
28 May 2011 19:29:43:00(	2740	1	73.1%	0	73.07%		60	60%	1	0	60%
29 May 2011 07:29:43:00(	2747	1	73.3%	0	73.25%		60	50%	1	0	50%
29 May 2011 19:29:43:00(	2999	1	80.0%	0	79.97%		144	40%	1	0	40%
30 May 2011 07:29:43:00(	2852	1	76.1%	0	76.05%		144	30%	1	0	30%
30 May 2011 19:29:43:00(	3232	1	86.2%	0	86.19%			20%	1	0	20%
31 May 2011 07:29:43:00(	3125	1	83.3%	0	83.33%			10%	1	0	10%
31 May 2011 19:29:43:00(	3098	1	82.6%	0	82.61%		744		1	744	
01 Jun 2011 07:29:43:000	3243	1	86.5%	0	86.48%				1		
01 Jun 2011 19:29:43:000	2882	1	76.9%	0	76.85%				1		
02 Jun 2011 07:29:43:000	2728	1	72.7%	0	72.75%				1		
02 Jun 2011 19:29:43:000	2873	1	76.6%	0	76.61%				1		

Calculations for Duke Custom Incentive

Basis: TCH data July 1, 2010 to June 30, 2011

03 Jun 2011 07:29:43:000	2592		1	69.1%	0	69.12%			1		
03 Jun 2011 19:29:43:000	2734		1	72.9%	0	72.91%			1		
04 Jun 2011 07:29:43:000	2618		1	69.8%	0	69.81%			1		
04 Jun 2011 19:29:43:000	3253		1	86.7%	0	86.75%			1		
05 Jun 2011 07:29:43:000	2149		1	57.3%	0	57.31%			1		
05 Jun 2011 19:29:43:000	3105		1	82.8%	0	82.80%			1		
06 Jun 2011 07:29:43:000	2952		1	78.7%	0	78.72%			1		
06 Jun 2011 19:29:43:000	3053		1	81.4%	0	81.41%			1		
07 Jun 2011 07:29:43:000	2934		1	78.2%	0	78.24%			1		
07 Jun 2011 19:29:43:000	3139		1	83.7%	0	83.71%			1		
08 Jun 2011 07:29:43:000	3023		1	80.6%	0	80.61%			1		
08 Jun 2011 19:29:43:000	3162		1	84.3%	0	84.32%			1		
09 Jun 2011 07:29:43:000	2947		1	78.6%	0	78.59%			1		
09 Jun 2011 19:29:43:000	3142		1	83.8%	0	83.79%			1		
10 Jun 2011 07:29:43:000	2998		1	79.9%	0	79.95%			1		
10 Jun 2011 19:29:43:000	2676		1	71.4%	0	71.36%			1		
11 Jun 2011 07:29:43:000	2720		1	72.5%	0	72.53%			1		
11 Jun 2011 19:29:43:000	2764		1	73.7%	0	73.71%			1		
12 Jun 2011 07:29:43:000	2533		1	67.5%	0	67.55%			1		
12 Jun 2011 19:29:43:000	2476		1	66.0%	0	66.03%			1		
13 Jun 2011 07:29:43:000	2645		1	70.5%	0	70.53%			1		
13 Jun 2011 19:29:43:000	2401		1	64.0%	0	64.03%			1		
14 Jun 2011 07:29:43:000	2159		1	57.6%	0	57.57%			1		
14 Jun 2011 19:29:43:000	2485		1	66.3%	0	66.27%			1		
15 Jun 2011 07:29:43:000	2237		1	59.7%	0	59.65%			1		
15 Jun 2011 19:29:43:000	2640		1	70.4%	0	70.40%			1		
16 Jun 2011 07:29:43:000	2651		1	70.7%	0	70.69%			1		
16 Jun 2011 19:29:43:000	2710		1	72.3%	0	72.27%			1		
17 Jun 2011 07:29:43:000	2595		1	69.2%	0	69.20%			1		
17 Jun 2011 19:29:43:000	3123		1	83.3%	0	83.28%			1		
18 Jun 2011 07:29:43:000	2924		1	78.0%	0	77.97%			1		
18 Jun 2011 19:29:43:000	3057		1	81.5%	0	81.52%			1		
19 Jun 2011 07:29:43:000	2818		1	75.1%	0	75.15%			1		
19 Jun 2011 19:29:43:000	3009		1	80.2%	0	80.24%			1		
20 Jun 2011 07:29:43:000	2831		1	75.5%	0	75.49%			1		
20 Jun 2011 19:29:43:000	2951		1	78.7%	0	78.69%			1		
21 Jun 2011 07:29:43:000	2999		1	80.0%	0	79.97%			1		
21 Jun 2011 19:29:43:000	3067		1	81.8%	0	81.79%			1		
22 Jun 2011 07:29:43:000	2916		1	77.8%	0	77.76%			1		
22 Jun 2011 19:29:43:000	3028		1	80.7%	0	80.75%			1		
23 Jun 2011 07:29:43:000	2945		1	78.5%	0	78.53%			1		
23 Jun 2011 19:29:43:000	2807		1	74.9%	0	74.85%			1		
24 Jun 2011 07:29:43:000	2578		1	68.7%	0	68.75%			1		
24 Jun 2011 19:29:43:000	2530		1	67.5%	0	67.47%			1		
25 Jun 2011 07:29:43:000	2516		1	67.1%	0	67.09%			1		
25 Jun 2011 19:29:43:000	2683		1	71.5%	0	71.55%	0	100%	1	720	100%
26 Jun 2011 07:29:43:000	2633		1	70.2%	0	70.21%	36	90%	1	0	90%
26 Jun 2011 19:29:43:000	2656		1	70.8%	0	70.83%	324	80%	1	0	80%
27 Jun 2011 07:29:43:000	2487		1	66.3%	0	66.32%	300	70%	1	0	70%
27 Jun 2011 19:29:43:000	3236		1	86.3%	0	86.29%	60	60%	1	0	60%
28 Jun 2011 07:29:43:000	3044		1	81.2%	0	81.17%	0	50%	1	0	50%
28 Jun 2011 19:29:43:000	2865		1	76.4%	0	76.40%	0	40%	1	0	40%
29 Jun 2011 07:29:43:000	2403		1	64.1%	0	64.08%	0	30%	1	0	30%
29 Jun 2011 19:29:43:000	2698		1	71.9%	0	71.95%		20%	1	0	20%
30 Jun 2011 07:29:43:000	2664		1	71.0%	0	71.04%		10%	1	0	10%
30 Jun 2011 19:29:43:000	2839		1	75.7%	0	75.71%	720		1	720	

Max>>>	3,253	578
Added load for OS&C	1,250	
Future Peak	4,503	
peak increase yr/yr	1.384	
% peak increase	38.4%	
Added 365-day loads		
MRI	150	
IT	300	

HOURS AT PERCENT CAPACITY, GPM

% GPM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		% BHP
100%	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
90%	0	0	0	0	36	36	0	0	0	0	0	0	72	90%
80%	0	0	0	0	168	324	612	504	228	0	0	0	1836	80%
70%	0	0	24	108	132	300	96	204	168	84	0	0	1116	70%
60%	0	60	60	156	60	60	24	36	192	96	48	0	792	60%
50%	12	12	12	132	60	0	12	0	120	252	36	12	660	50%
40%	0	0	48	96	144	0	0	0	12	216	96	0	612	40%
30%	468	156	264	192	144	0	0	0	0	96	264	264	1848	30%
20%													0	20%
10%													0	10%
	480	228	408	684	744	720	744	744	720	744	444	276	6936	

HOURS AT PERCENT MOTOR CAPACITY, HP

% HP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		% BHP
100%	480	228	408	684	744	720	744	744	720	744	444	276	6936	100%
90%	0	0	0	0	0	0	0	0	0	0	0	0	0	90%
80%	0	0	0	0	0	0	0	0	0	0	0	0	0	80%
70%	0	0	0	0	0	0	0	0	0	0	0	0	0	70%
60%	0	0	0	0	0	0	0	0	0	0	0	0	0	60%
50%	0	0	0	0	0	0	0	0	0	0	0	0	0	50%
40%	0	0	0	0	0	0	0	0	0	0	0	0	0	40%
30%	0	0	0	0	0	0	0	0	0	0	0	0	0	30%
20%	0	0	0	0	0	0	0	0	0	0	0	0	0	20%
10%	0	0	0	0	0	0	0	0	0	0	0	0	0	10%
	480	228	408	684	744	720	744	744	720	744	444	276	6936	
	744	672	744	744	744	720	744	744	720	744	720	744		
	264	444	336	60	0	0	0	0	0	0	276	468		

FOSDICK & HILMER, Inc.
309 Vine St., Suite 50, Cincinnati, OH 45202, Tel: (513) 241-5640
http://www.fheng.com

9/4/2012

	kW-Hr
100.38	-
90.34	6,504
80.31	147,449
70.27	78,421
60.23	47,702
50.7	33,462
41.45	25,367
31.74	58,656
22.37	-
12.84	-
	397,562

	kW-Hr
95.79	664,399
	-
	-
	-
	-
	-
	-
	-
	-
	-

Data for input to Duke Part 2 Custom Incentive Application

CT-1 operating at full power

95.79	6936	664399.44
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00
0.00	0	0.00

6,936	664,399.44	$0.065		$43,185.964
HR	kW-HR			Cost to run constant speed fan ^

Variable speed fan power consumption

100%	100.38	0	0
90%	90.34	72	6,504
80%	80.31	1,836	147,449
70%	70.27	1,116	78,421
60%	60.23	792	47,702
50%	50.70	660	33,462
40%	41.45	612	25,367
30%	31.74	1,848	58,656
20%	22.37	0	0
10%	12.84	0	0

6,936	397,562.04	$0.065		$25,841.533
HR	kW-HR			Cost to run variable speed fan ^

SAVINGS >>> **$17,344.43**

FOSDICK & HILMER, Inc.
309 Vine St., Suite 50, Cincinnati, OH 45202, Tel: (513) 241-5640
http://www.fheng.com