# Argo & Geddes Dams, Ann Arbor Hydropower Study Final Report

# Presented to:



# Architecture/Engineering Services Review of Hydropower Study at Geddes & Argo Dams Study Final Report

VA Ann Arbor Healthcare System Ann Arbor, Michigan

Presented by:

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### **1.0 Introduction**

The City of Ann Arbor, Michigan, owns four dams on the Huron River: Barton, Argo, Geddes, and Superior. Following a 1981 study of the hydroelectric generation potential at all four City dams, the citizens of Ann Arbor approved a \$3.2 million bond to restore hydropower at Barton and Superior Dams. Higher construction cost estimates and lower electric energy production potential kept Argo and Geddes from being recommended for restoration at that time.

In 2008, the City of Ann Arbor commissioned Stantec Consulting Michigan Inc. to provide data for use in re-evaluating the feasibility of developing hydroelectric power facilities at the Argo and Geddes dams. The 2008 Report (Ref. 1) provided the following information:

- An estimate of each sites' power potential
- An estimate of redevelopment costs for each dam, including initial capital and operational costs
- An investigation of Federal Energy Regulatory Commission (FERC) licensing requirements

The focus of this report is to provide the results of a review of the 2008 Report for accuracy and completeness, including the following:

- Costs for installing the hydroelectric generating elements
- Anticipated annual maintenance costs of the generating elements
- Regulatory compliance costs
- Miscellaneous costs that the 2008 Report may have missed
- Anticipated generating capacity/capability of each hydroelectric facility
- Anticipated cost avoidance for the VA Ann Arbor Healthcare System (HCS) given current electric rate structure including out years with anticipated future utility costs over a 25 year period
- Viability of providing a dedicated power line from the hydroelectric facility to the VA Ann Arbor HCS, with respect to costs and benefits

### **1.1 Basis of Review**

We consider the 2008 Report as intended to provide preliminary data for use in a preliminary feasibility study. As such, our review of the report takes this into consideration in terms of the level of detail and accuracy of the data that is provided. The analyses provided in this report are also considered to be at the preliminary feasibility level. Additional, more detailed analyses should be performed for each site as a next step if the preliminary evaluation is favorable with respect to hydroelectric development. These additional analyses should incorporate the results of site investigations, such as subsurface and topographic investigations, refined tailwater rating curves and headloss estimates, preliminary designs, more detailed, bottom-up cost estimates for each site and discussions with regulatory agencies for the sites remaining under consideration.

### 2.0 2008 Report Review

The 2008 Report provided data for use in evaluating the feasibility of redeveloping hydroelectric power facilities at the Argo and Geddes dams. Specific data provided in the report included an estimate of each site's power potential, estimated redevelopment costs for each dam, including initial capital and operational costs, and an investigation of FERC licensing requirements.

The following subsections provide the results of Black & Veatch's (B&V) review and assessment of the 2008 Report.

### 2.1 Powerhouse Location

Geddes Dam consists of two concrete ogee spillways, each with a pair of Tainter gates for controlling the elevation of the lake water surface. The two spillways are separated by an approximately 60 feet wide island with concrete retaining walls. The left and right abutments are engineered earthen berm structures. The 2008 Report proposes placement of the hydro facility in the area between the two spillways.



Figure 1 Geddes Dam Looking Downstream

Argo Dam consists of an approximately 165 feet long concrete ogee spillway with a 23 feet wide sluiceway adjacent and left (looking downstream) of the spillway. The spillway includes six Tainter gates for controlling the lake water surface elevation and the

sluiceway includes two 84-inch by 60-inch low-level sluice gates. A millrace channel extending from the left abutment allows for canoe portage around the dam. The 2008 Report proposes placement of the hydro facility either on the left earthen abutment or at the downstream end of the millrace channel. Locating the powerhouse at the end of the existing millrace would yield an additional two feet of net head but would require installation of a twelve foot diameter penstock to replace the open channel millrace.



Figure 2 Argo Dam Looking Downstream

Based on our review of the proposed locations of the powerhouses, for Geddes Dam, we agree that from a hydraulic and constructability standpoint, the preferred powerhouse location would be between the two existing spillways. For Argo Dam, the east abutment is the preferred location for a powerhouse. Placing the powerhouse at the end of the millrace would eliminate the canoe portage and does not appear to be practical.

### 2.2 Available Head

The 2008 Report provided gross head at each site based on measurements at two flow conditions; one at a normal flow and one at an above normal flow condition. For the generation estimates, the upstream water level was assumed constant for all flows and the tailwater level was varied with flow, based on the two tailwater measurements that were available. An additional two feet of head was estimated to be available at Argo Dam if the powerhouse were to be placed at the downstream end of the existing millrace.

Development of tailwater conditions throughout the range of possible flows based on two measurements at each dam is considered reasonable for use in a preliminary feasibility evaluation. However, it is recommended that additional tailwater measurements at various flow conditions be taken to establish the tailwater rating curve for each site with more accuracy, if additional feasibility evaluations are planned. An alternative would be to estimate the tailwater rating curve using hydraulic calculations, and verify with selected tailwater measurements.

Net head was calculated assuming 0.5 foot headloss in the powerhouse forebay/intake. It appears the headloss calculations did not include powerhouse draft tube exit losses, which would be approximately 0.5 feet at the design turbine discharge condition. However, this is not expected to significantly change the results of this preliminary evaluation. If additional feasibility evaluations are planned, the variation of total headloss with turbine discharge should be accounted for; which would improve the accuracy of the net head and generation estimates.

### 2.3 Available Flow

The 2008 Report used river flow duration data for each dam site, as supplied by the Michigan Department of Environmental Quality (MDEQ). A flow duration analysis provides the percent of time that a given flow is equaled or exceeded based on the available period of flow records, and is commonly used as a basis for estimating annual generation potential used in feasibility studies. The MDEQ flow duration data was compared with data derived from a nearby USGS gaging station located downstream from Argo Dam, and this comparison indicated that the MDEQ data yielded slightly less river flow in the lower flow range, when compared to the USGS data. Use of the MDEQ data is reasonably conservative and is therefore appropriate for a preliminary feasibility evaluation. Should additional feasibility evaluations be performed, the difference in data values from these two sources should be resolved and the most appropriate data should be used for generation estimates.

### 2.4 Turbine Selection

The preliminary development concept presented in the 2008 Report includes installation of a single 1,700 mm bulb or pit double regulated propeller turbine with speed increaser and high speed generator at each site. The design turbine discharge was selected based on the 25% exceedance value of discharge as taken from the MDEQ flow duration curve. Budgetary turbine quotations were received from four turbine suppliers; Canadian Hydro Components (CHC), Hydropower Turbine Systems inc. (HTS), VA Tech Hydro, and Voith Siemens. The 2008 Report provided generation estimates assuming CHC and HTS turbines, but presented construction costs assuming the use of a CHC turbine only.

Selection of a bulb or pit turbine is reasonable for the low head applications at Geddes and Argo dams. Using the 25% exceedance value for design turbine discharge capacity is also considered appropriate for a preliminary feasibility evaluation. With this capacity, the units are capable of capturing the majority of the lower flows when net head is

highest. Key turbine operating information for each site is provided in the following table.

Table 2.1 – CHC Turbine Information			
	Geddes	Argo Dam	Argo Dam
	Dam	(Option 1)	(Option 2)
Rated Net Head (ft)	14.25	10	11.9
Flow/Unit Max (cfs)	650	550	610
Total Output (kW)	652	387	508

### **2.5 Estimates of Probable Cost**

**2.5.1 Hydropower Facilities**. The 2008 Report provided a summary of the estimated direct and indirect construction costs for development of a hydro facility at Geddes Dam using CHC turbines. The report indicated that the costs would be similar for Argo Dam. A quantity based estimate was not included in the 2008 Report. It is recommended that a bottom-up quantity based estimate be performed if additional feasibility evaluations are planned.

At Argo Dam, where the hydro facility would be placed near the left abutment (Option 1), an upstream and downstream cofferdam would be required to dewater the powerhouse construction area. For Option 2 at Argo, where the hydro facility would be located at the downstream end of the millrace, only a downstream cofferdam would be required, however an allowance of \$3,000,000 was included for installation of a penstock within the millrace. For the Geddes site, it is concluded that less extensive cofferdams would be required, when compared to the Argo site, due to the presence of existing retaining walls on the inboard side of each spillway chute and at the upstream end between the spillways. For this reason, the construction costs for the Geddes site were reduced by 5 percent when compared to the Argo site.

The direct and indirect costs used in the 2008 Report were adjusted to year 2010 costs using an annual escalation rate of 1.05 based on the ENR Building Cost Index. Additionally, an updated budgetary turbine-generator quotation was obtained from CHC and was included in the project cost estimates (quotation provided in Appendix A).

The 2008 Report used a contingency of 10% of direct costs. This is considered to be low for a preliminary estimate. For the 2010 estimates, a contingency of 25% was applied to both direct and indirect costs.

Table 2.2 – Preliminary Estimate of Probable Hydropower Costs				
	2008 2010		2010	2010
	Report	(Geddes)	(Argo)	(Argo)
	(Geddes)		(Option 1)	(Option 2)
Direct Costs				
Turbine Equipment	\$1,185,000	\$1,400,000	\$1,400,000	\$1,475,000
Construction Costs	\$2,143,000	\$2,138,000	\$2,250,000	\$5,250,000
Subtotal Direct				
Construction Cost	\$3,328,000	\$3,538,000	\$3,650,000	\$6,725,000
Indirect Costs				
Licensing/Permits	\$ 300,000	\$ 315,000	\$ 315,000	\$ 315,000
Engineering	\$ 350,000	\$ 368,000	\$ 368,000	\$ 368,000
Legal/Financial	\$ 50,000	\$ 53,000	\$ 53,000	\$ 53,000
Contingency	\$ 330,000	-	-	-
Subtotal Indirect				
Construction Cost	\$1,030,000	\$ 736,000	\$ 736,000	\$ 736,000
Contingency	-	\$1,068,000	\$1,096,000	\$1,865,000
Total Preliminary				
Estimate of Probable Cost	\$4,358,000	\$5,342,000	\$5,482,000	\$9,326,000

**2.5.2 Dedicated Transmission Line.** A dedicated transmission line extending from the hydropower facilities to the VA Ann Arbor HCS is also being considered as a means to account for the reduction in total energy charges for the HCS in the economic evaluation. A dedicated transmission line would be approximately 3.3 miles in length for the Argo facility and approximately 5.5 miles in length for the Geddes facility. Estimates of probable cost for each transmission line are as follows. These estimated include both direct and indirect costs.

Table 2.3 – Preliminary Estimate of Probable Transmission Line Costs			
	Geddes	Argo	Geddes and
	Dam	Dam	Argo Dams
Total Preliminary			
<b>Estimate of Probable Cost</b>	\$587,000	\$781,000	\$1,325,000

**2.5.3 Annual Costs.** Ongoing annual expenses associated with operations, maintenance (including repairs, rehabilitation and replacement of plant equipment), dam safety and potentially environmental mitigation will be incurred. The 2008 Report estimated the annual costs to be approximately \$110,000 for each facility, based on City of Ann Arbor historical cost data for the Barton and Superior plants. Use of historical cost data is preferred for estimating annual costs, and the estimated annual cost is reasonable.

### 2.6 Annual Energy Evaluation

The 2008 Report provided average annual generation estimates for Geddes Dam and the two options at Argo Dam using the annual flow duration data discussed in Section 2.3

and the net head discussed in Section 2.2. A 3% reduction factor for transformer losses and station power and a 10% reduction factor for miscellaneous downtime were accounted for in the generation estimates.

Review of the generation estimates indicate that the unit efficiencies used in the 2008 Report appear to be somewhat lower than the efficiency values supplied by the turbine vendors, however this variation is not expected to affect the results of the study. The reduction factors used for transformer losses and availability are appropriate. Table 2.4 provides a summary of the estimated average annual generation provided in the 2008 Report.

Table 2.4 – Average Annual Generation			
	Geddes	Argo Dam	Argo Dam
	Dam	(Option 1)	(Option 2)
Average Annual Generation (kWh)	3,358,190	2,002,344	2,504,126

### 2.7 Regulatory Requirements

Regulatory requirements for one or both of the hydropower projects would include FERC licensing, along with other state and local permits. The 2008 Report provided an allowance of \$300,000 for the FERC licensing and permitting process. The report also notes that Argo and Geddes dams are classified as high hazard by the state and that a detailed inflow design flood (IDF) analysis would likely be required. If the IDF analysis indicates an insufficient spill capacity, substantial additional costs could be incurred to increase spillway capacity.

It is likely that the hydropower projects would be eligible for a 5 MW or Less Exemption from licensing. Qualifications include a rated capacity of less than 5 MW with the project to be located at a non-federal, pre-1977 dam (18 CFR 4.31(c)(2)). An exemption from licensing means that the exemption is not subject to the comprehensive development standard of FPA Section 10(a)(1) and is subject to the conditions attached to the exemption. However, the procedural steps for a 5 MW or less exemption are essentially the same as those that govern an application for license. Additionally, the FERC must include those terms and conditions that the fish and wildlife agencies determine are appropriate to prevent loss of, or damage to, fish and wildlife resources (18 CFR 4.34(f)(2)).

The estimated licensing and permitting costs are judged to be reasonable. However, licensing and permitting costs can vary substantially, depending on the extent of environmental studies required by the resource agencies. Additionally, depending on the license conditions, environmental mitigation costs may be incurred which could substantially increase the amount allotted for regulatory requirements.

### 3.0 Economic Evaluation - Hydropower

### **3.1 Current Energy Rates**

The VA Ann Arbor HCS obtains its energy from DTE Energy. DTE Energy classifies the VA Ann Arbor HCS as an industrial D6 Primary Supply customer. The current monthly rate structure includes demand charges, energy charges and various fixed charges. The monthly on-peak billing demand is defined as the single highest 30-minute integrated kilowatt reading of the demand meter during the on-peak hours of the billing period. On-peak hours are defined as those hours between 11:00 am and 7:00 pm, Monday through Friday, excluding holidays. This on-peak billing demand cannot be less than 65% of the highest monthly on-peak metered billing demand during the billing months of June through October of the preceding eleven billing months.

The current DTE rate structure is as follows:

### **<u>Power Supply Charges</u>**:

Demand Charge:	\$13.61 per kW of on-peak billing demand
Energy Charge:	3.973¢ per kWh for all on-peak kWh
	3.673¢ per kWh for all off-peak kWh
Voltage Level	
Discount:	-0.100¢ per kWh for service at subtransmission voltage
Surcharges:	
	0.0077¢ per kWh for Enhanced Security Cost Surcharge
	-0.564¢ per kWh for Power Supply Cost Recovery Clause
	\$187.50 per meter for Renewable Energy Plan Surcharge

### **Delivery Charges:**

Service Charge:	\$275 per month
Distribution	
Charges:	\$1.38 per kW of maximum demand
C	$0.762\dot{\phi}$ per kWh for all energy delivered
Surcharges:	
	0.1234¢ per kWh for Nuclear Decommissioning Surcharge
	0.4930¢ per kWh for Securitization Bond Charge
	0.2080¢ per kWh for Securitization Bond Tax Charge
	0.0500¢ per kWh for Choice Implementation Surcharge
	-0.410¢ per kWh for Pension Equalization Mechanism Credit
	(for August, September, October bill cycle only)
	\$203.06 per meter for Energy Optimization Surcharge
Special	
Service Charge:	\$9,792.27 per month

Based on current energy usage information provided for this study, the composite rate for energy use varies from approximately  $4.3\phi$  per kWh to  $4.7\phi$  per kWh, depending on

whether the usage is during off- or on-peak periods. The current monthly demand charge rate is \$14.99 per kW of on-peak billing demand, which is comprised of the demand charge and distribution charge. Various fixed charges are also included in the rate structure.

### **3.2 Energy Cost Savings with Hydropower**

**3.2.1 Current Energy Charges.** Electric billing statements from DTE Energy for the VA Ann Arbor HCS were provided for the 12-month period from April 13, 2009 to April 12, 2010, and are summarized in Table 3.1. Copies of the billings statements are provided in Appendix B. The billing statements indicate that the average monthly energy consumption for the VA HCS was about 1,922 MWh and the maximum monthly service demand varied from 3,824 kW to 7,251 kW. For a total average annual energy cost of \$2,111,760 and a total energy consumption of 24,065,848 kWh, the resulting overall blended electric rate for this period is approximately \$0.088 per kWh. Blended billing rates for each month vary from \$0.074 to \$0.10 per kWh for this same period.

Table 3.1 – Energy Charges from April 2009 through March 2010					
	Power Supply Demand (kW)	Maximum Distribution Demand (kW)	Total Energy Demand (kWh)	Off-Peak Energy Demand (kWh)	Statement Total
April 2009	3,824	5,013	1,809,920	1,299,848	\$154,356
May 2009	4,455	4,973	1,924,720	1,388,750	\$162,959
June 2009	4,852	4,852	2,527,280	1,863,707	\$203,241
July 2009*	4,650	4,852	2,397,360	1,755,107	\$182,526
August 2009	6,213	6,213	2,294,320	1,659,682	\$204,322
September 2009	7,251	7,251	2,119,320	1,545,876	\$211,748
October 2009	5,732	7,251	1,648,640	1,192,154	\$169,737
November 2009	4,713	7,251	1,722,000	1,273,702	\$158,858
December 2010	5,181	7,251	1,944,320	1,476,396	\$180,503
January 2010*	4,713	7,251	2,048,048	1,499,376	\$151,752
February 2010	4,713	7,251	1,683,360	1,227,563	\$161,219
March 2010	4,713	7,251	1,946,560	1,444,825	\$176,539
Average Month:	5,084	6,388	1,922,047	1,407,145	\$176,480
Maximum Month:	7,251	7,251	2,527,280	1,863,707	\$203,241
Total:			24,065,848	17,626,986	\$2,111,760
* - Energy demand	d values from DT	E Energy electrical b	oills are missing for	07/13/09 to 07/25/90	) and for 01/26/10

to 02/0910. Values for missing periods estimated via extrapolation of adjacent billing rates.

**3.2.2 Energy Cost Offset Resulting From Selling Hydropower to DTE Energy.** If the energy generated from the hydro facilities were to be sold directly to the grid, the amount paid by the energy purchaser, such as DTE Energy, to the VA would be defined in a Power Purchase Agreement (PPA) between the VA and the utility, and the annual energy payment by the utility would offset a portion of the VA's current energy costs. DTE Energy has advised that PPAs are negotiated separately with each energy supplier and a standard rate has not been established. They also indicated that a long term (say 20 yrs) purchase rate is estimated to be about \$0.052 per kWh based on current conditions. This would equate to the following offsets in average annual energy cost for the alternatives being considered.

Table 3.2 – Energy Cost Offset – Energy Sales to Grid				
	Average Annual Average Annual Cha			
Alternative	<b>Generation from Hydro</b>	Offset with Hydro		
Geddes Dam:	3,358,190 kWh	\$174,626		
Argo Dam (Option 1)	2,002,344 kWh	\$104,122		
Argo Dam (Option 2)	2,504,126 kWh	\$130,215		
Geddes & Argo	5,360,534 kWh	\$278,748		

**3.2.3 Reduction in Energy Costs With Dedicated Power Line.** Construction of a dedicated power transmission line between the hydropower facility(ies) and the VA Ann Arbor HCS would allow for a direct reduction in the current electric costs based on the current billing rate structure and the hydropower energy generated. Both power supply and delivery charges would be reduced with this arrangement. Average monthly electric costs for existing conditions and for each alternative considered are provided in Table 3.3. The table assumes average hydropower generation output and that the maximum on-peak billing demand would be reduced by the installed capacity of the hydroelectric facility.

Table 3.3 – Average Monthly Electric Charges					
	VA Charges with Hydroelectric Power			Power	
	Existing Charges	Geddes Dam	Argo Dam (Opt 1)	Argo Dam (Opt 2)	Geddes & Argo
On-Peak Billing Demand (kW)	5,084	4,412	4,710	4,585	4,038
Maximum Billing Demand (kW)	7,251	6,579	6,877	6,752	6,205
Total Energy Demand (MWh)	1,922	1,642.2	1,755.2	1,713.4	1,475.3
Off- Peak Energy Demand (MWh)	1,407	1,198.8	1,281.3	1,250.8	1,077.0
On-Peak Energy Demand (MWh)	514.9	443.4	473.9	462.6	398.3
Power Supply Charges:					
•Power Supply Demand (\$13.61/kW)	\$69,193	\$60,047	\$64,103	\$62,402	\$54,957
•Power Supply Energy (3.973¢/kWh)	\$76,363	\$65,245	\$69,733	\$68,072	\$58,615
•Off-Peak Discount (-0.300¢/kWh)	-\$4,221	-\$3,596	-\$3,844	-\$3,752	-\$3,231
•Voltage Level Discount (-0.10¢/kWh)	-\$1,922	-\$1,642	-\$1,755	-\$1,713	-\$1,475
•ESCS (0.0077¢/kWh)	\$148	\$126	\$135	\$132	\$113
•PSCR Clause (-0.564¢/kWh)	-\$10,840	-\$9,262	-\$9,899	-\$9,663	-\$8,321
•Reg. Asset Recovery (\$187.5/meter)	\$375	\$375	\$375	\$375	\$375
Delivery Charges					
•Service Charge	\$275	\$275	\$275	\$275	\$275
•Maximum Demand (\$1.380/kW)	\$10,006	\$9,079	\$9,490	\$9,318	\$8,563
•Energy Delivered (0.7620¢/kWh)	\$14,646	\$12,514	\$13,375	\$13,056	\$11,242
•Nuclear Decomm. (0.1234¢/kWh)	\$2,372	\$2,026	\$2,166	\$2,114	\$1,821
•Securitization Bond (0.4930¢/kWh)	\$9,476	\$8,096	\$8,653	\$8,447	\$7,273
•Secur. Bond Tax (0.2080¢/kWh)	\$3,998	\$3,416	\$3,651	\$3,564	\$3,069
•CIS (0.0500¢/kWh)	\$961	\$821	\$878	\$857	\$738
•PEM Credit (-0.4100¢/kWh/4)	-\$1,970	-\$1,683	-\$1,799	-\$1,756	-\$1,512
•EOS (\$203.06/meter)	\$406	\$406	\$406	\$406	\$406
Special Service Charge	\$9,792	\$9,792	\$9,792	\$9,792	\$9,792
Total Average Monthly Rate:	\$179,057	\$156,035	\$165,735	\$161,924	\$142,700
Average Annual Electrical Charge:	\$2,148,689	\$1,872,417	\$1,988,819	\$1,943,093	\$1,712,402
Average Annual Charge Reduction:	-	\$276,272	\$159,870	\$205,596	\$436,287

### **3.3 Present Worth Analysis**

A net present worth analysis was performed for the alternatives being considered to determine a benefit cost ratio for each alternative. The economic parameters used in the analysis are as follows:

Parameter	Value
Evaluation Period	25 years
	Construction in 2011
	Begin generating in 2012
Annual Escalation Rate for Capital and Annual Costs	3 percent
Annual Escalation Rate for Energy Charges	3 percent
Discount Rate	4.5 percent

The present worth analysis compares the project capital costs with the present worth of the annual costs and generation benefits. The sources of the cost information used in the analysis are as follows.

Item	Source
Capital Costs of Construction	Tables 2.2 and 2.3
Annual Costs	Section 2.5.3
Energy Cost Offset – Sales to Grid	Table 3.2
Energy Cost Reduction – Dedicated	Table 3.3
Transmission Line	

The results of the present worth analysis are shown in Table 3.4. The analysis indicates that none of the alternatives have a benefit cost ratio greater than one and that hydropower development at Geddes Dam has the highest benefit cost ratio. Installation of a dedicated transmission line to the VA HCS results in higher benefit cost ratios for all alternatives when compared to selling power directly to the grid. The present worth analysis calculations are provided in Appendix C.

Table 3.4 – Present Worth Analysis						
	Benefit Cost Ratio					
Direct Power Line Selling to Utility						
Geddes Dam	0.66	0.48				
Argo Dam (Option 1)	0.37	0.28				
Argo Dam (Option 2)	0.33	0.23				
Geddes & Argo	0.51	0.38				

### **3.4 Decision Matrix**

The following cost benefit analysis decision matrix was prepared for each alternative considered. This matrix is qualitative in nature and should only be used as an indication of which alternative may be more favorable than another. For each item considered, a value of one was assigned to an alternative if it was considered more favorable when compared the other alternatives. A zero was assigned if it was not favorable or less favorable than the other alternatives.

Table 3.5 – Cost Benefit Analysis Decision Matrix									
Geddes Argo Dam Argo I									
Item	Dam	(Option 1)	(Option 2)						
Public acceptance of the plan	0	0	0						
Costs associated with installation	1	1	0						
Costs associated with maintenance	0	0	0						
Potential costs not addressed in report	0	0	0						
Environmental factors	0	0	0						
Generating capacity of hydro facilities	1	0	0						
Anticipated cost avoidance over next 25-years	1	0	0						
Total:	3	1	0						

Based on this analysis matrix, the Geddes Dam project is preferred over the other two alternatives.

### **3.5** Compliance with the Energy Policy Act of 2005.

The VA Ann Arbor HCS is part of the VA VISN 11 integrated service network which requires compliance with the Energy Policy Act of 2005 and the E.O. 13423 requirement for 7.5 percent renewable energy. Using the electricity billing statements that were provided from April 2009 to April 2010, the average annual energy consumption was about 24,066 MWh. To satisfy the 7.5 percent renewable energy requirement, the average annual generation from Geddes and/or Argo would have to be at least 1,805 MWh. The generation estimates used in this study indicate that the average annual generation would range from approximately 2,002 MWh (Argo-Option 1) to 3,358 MWh (Geddes). As a result, development of a hydropower facility at either dam site would be sufficient to meet the renewable energy requirements, provided the 2009 electricity usage is representative of future energy consumption.

### 4.0 Other Renewable Options

The subject of this task is to compare hydropower to other renewable energy sources that may be implemented at the Ann Arbor VA. The sources initially envisioned for this task included:

- Solar PV on the VA hospital building and parking structure roofs.
- Gasification of biomass fuel on site and Combined Heat & Power (CHP) gas engine to simultaneously generate electricity and heated water.
- Green power purchases for the application of power generated from remote wind power, hydroelectric production, or other renewables through the local electric utility Detroit Edison.

### 4.1 Present Utility Unit Costs.

In order to properly assess the savings and costs available for any energy management opportunity, such as installation of on site CHP or Solar PV generation, some knowledge of the current utility costs need to be determined.

The Client provided facility natural gas and electricity bills to review and use in this assessment. These bills show that during the 12 month period from April 2009 to March 2010, the facility had a monthly peak kW demand of 7,251 kW (maximum), 3,824 kW (minimum), and 5,084 kW (average).

The most recent demand rates include \$13.61/kW for supply and \$1.38 for distribution, or a total demand charge of \$14.99/kW.

During this period the variable usage charges total approximately \$982,426, which were billable for a total of 21,838 MWh consumed during the last 12 months. The average usage cost may be calculated as follows:

\$982,426/(21,838,000 kWh) = \$0.0450/kWh

During the same 12 month period, the facility consumed 129 Million cubic feet of Natural Gas at a cost of \$960,005. Assuming 1,000 Btu/cubic foot, the relevant cost per Million Btu may is calculated as follows:

129,000,000 cubic feet x (1,000 Btu/cubic foot) x (1 MMBtu/1,000,000 Btu) = 129,043 MMBtu/year

The following table shows an approximate summary of the current annual utility consumption and costs:

Table 4.1 – Present Utility Costs				
Natural Gas				
Normal Natural Gas Purchases, MMBtu	129,043			
Natural Gas Cost \$/MMBtu	7.44			
Annual Natural Gas Cost	\$ 960,005			
Electricity				
Billable Average Monthly Demand, kW	5084			
Monthy Demand Rate, \$/kW	\$14.99			
Annual Demand Charges, \$	\$914,510			
Billable Annual Usage, kWh	21,838,040			
Usage Rate, \$kWh	\$0.0450			
Annual Electricity Usage Cost, \$	\$982,712			
Total Annual Energy Cost	\$2,857,227			

### 4.2 Renewable Energy Options

In addition to the main objective of this study, hydropower generated from the Huron River, the facility may employ a number of on-site renewable strategies which are discussed herein.

**4.2.1 Green Currents Program**. The electricity provider, DTE Energy offers billing options that support renewable energy. Under the program, clients are billed an additional 0.02 per kWh which are used to support the generation of electricity from Michigan-based, renewable energy sources. It is unclear from the program description if these are existing or future sources. The customer may opt to purchase blocks of 1,000-kWh at a cost of 20 each or do a complete 100 percent match whereby an additional 0.02/kWh are added to the customer's usage charge. If the facility were to decide to purchase all of their electricity using the program, the total annual cost would be approximately: 21,838,040 kWh x 0.02/kWh, or an additional operating cost 436,760 per year charged for electricity usage. This program would not affect electricity demand charges, and the facility would not be impacted by any need for additional infrastructure or capital cost.

**4.2.2 Solar PV**. There is room for a significant number of solar PV arrays on the roof of the Clinical Addition Building, the West Parking Structure, and the East Parking Structure. However the East Parking Structure is located adjacent to city owned land; which includes significant canopy tree cover, which shades the East Parking Structure and make it unsuitable for solar PV arrays.

Available Footprint:	
West Parking Structure	120' x 120' = 14,400 square feet
Clinical Addition	120' x 220' = <u>26,400 square feet</u>
Total:	40,800 square feet

DTE Energy, the present electricity provider to the facility, offers incentives of \$2.40 per watt through its Solar Currents Customer Owned Program; which may be used to offset some of the installation cost. In addition, a monthly credit for solar generation is available at a rate of \$0.11/kWh. However, the program pertains to only systems sized from 1 to 20 kW. Based on this, it appears that the most economical solar configuration would be sized for the maximum available credit of 20 kW, as a best case scenario for implementation.

 $\frac{\text{Installation Cost:}}{20,000 \text{ watt x } $7/\text{watt} = $140,000}$ 

<u>Up Front REC Payment:</u> 20,000 watt X \$2.40/watt = \$48,000 upon completion of installation.

Ongoing REC Payment: 20 kW x 730 hours/month x 0.13 capacity factor x \$.11/kWh x 12 months/year = \$2,505 /year

Under this program, the electricity produced by the PV array is sold to DTE for the agreed upon price of \$11/kWh, and DTE would own all of the REC credits associated with the generation for a period of 20 years. Electricity billed to the facility would remain unchanged. The net result of this is a modest savings to the facility of \$2,505/year, and results in a simple pay back of 37 years.

**4.2.3 Biomass Based On Site CHP.** The facility is presently served by a central plant that generates steam and chilled water that is distributed to the building complex. The chilled water plant is electric centrifugal based and has implemented efficiency upgrades including variable frequency drives that substantially improve the part load chiller performance. This is the optimal configuration for producing chilled water in an area where electricity rates are low, relative to gas rates and offers no area for improvement related to integration of CHP with absorption chillers. The larger opportunity for CHP projects is generally found in heating systems because the long heating season in southeast Michigan improves the availability of heat loads which my be served by a CHP asset.

The existing boiler plant has four Cleaver Brooks firetube boilers of nominal 500 BHP capacity. These boilers are rated for 200 psig, but they serve the distribution system at 68 psig. An interview with the central plant manager revealed that two boilers are kept on line year round and that the average load was 20% during the summer (mainly to supply reheat units), and 80% during the winter.

<u>4.2.3.1 Biomass CHP Option</u>. The existing steam distribution header offers the opportunity to support a backpressure steam turbine generator into the central plant. Carrier Corporation markets a 275 kW backpressure turbine that is rated to accept incoming steam at 200 psig. Since the existing boilers are rated for 200 psig, this equipment, at first glance, appears to be suitable to supply the steam turbine, but to do so with the existing natural gas fuel supply would not be renewable generation, which is the subject of this task.

B&V contacted Chiptec Wood Energy Systems, a company that manufactures small biomass gasification burner systems for use on new or existing commercial and industrial boilers. Through a phone interview with a Chiptec Technical Representative, it was discovered that because of the design of the air-box, the existing CB boiler models are not candidates for retrofit. Therefore in order to utilize a ChipTec gasifier, a new boiler is needed. In addition, biomass receiving, storage, and materials handling delivery systems are needed to supply and meter biomass to the gasification system.

### Equipment Required

- 275 kW backpressure steam turbine generator
- Biomass firetube boiler and biomass equipment

### Electricity Generated

The amount of electricity generated from this, or any CHP system depends on a detailed analysis of the facility load profile because the throughput of steam to the turbine is based on steam system demands. Because of its small size relative to the overall load, a reasonable assumption for this system is that it will have relatively good capacity factor of 75 percent. This is because during the summer months, the central plant is operated at very low loads (20%) which, when shared between two boilers, will provide insufficient steam flow to run the backpressure turbine. A more detailed analysis of the load profile, which is beyond the scope of this study, is needed to verify this assumption.

The 200 psig to 60 psig curve for the Carrier Micro-Steam 18MS model turbine is the closest available approximation to actual performance. In actuality, a 68 psig header pressure will result in lower unit output for a given flow of steam, so the amount of generation predicted by the curve is slightly better than what may be achieved in this application. A steaming rate of 13,000 lb/hour has been chosen as a conceptual design point based on the largest size biomass boiler that is available in a package format in order to reduce the cost for capital equipment available from Chiptec.



At that steaming rate the following electrical generation may be achieved.

200 kW X 8760 hours/year X 0.75 = 1,314,000 kWh

The electrical generation reduces the amount of peak demand and electrical usage, resulting in electrical cost savings.

### **Biomass Consumption**

In order to estimate fuel consumption to produce the 13,000 lb/hour of steam, one needs to know the enthalpy of the steam out of the boiler, the enthalpy of the feed water, and the boiler efficiency. Generally, biomass boilers are less efficient than other types of boilers because higher air fuel ratios are needed due to the high moisture fuel. 70 percent is typically used for biomass boiler efficiency as a conservative assumption.

Saturated Steam Enthalpy at 200 psig = 1,199 Btu/lb Saturated Feedwater Enthalpy at 212 Deg F = 180 Btu/lb

Total Heat Energy Out of Boiler = (1,199 Btu/lb – 180 Btu/lb) x 13,000 Btu/hour = 13.25 MMBtuh.

Boiler Efficiency = Heat Outputs / Heat Inputs = 70% assumed for biomass

Therfore, the heat input from fuel may be estimated as follows:

Heat Input = 13.25 MMBtuh / 70% = 18.9 MMBtuh (18.9 MMBtu/hour) x (.75 x 8760 hours/year) = 124,332 MMBtu/year

Biomass fuels have a wide range of energy densities, but for the purpose of this study, wood chips with 50 percent moisture and 4,300 Btu/lb are a likely available source of fuel in southeast Michigan. This results in an annual wood consumption of 14,457 tons per year. Typical delivered costs for wood chips are approximately \$35 per ton. This results in annual cost for wood of approximately \$505,995

Natural Gas Fuel Credit

The exhaust steam from the steam turbine generator will be used to supply the steam distribution header, and this steam will displace heating steam that is normally supplied with natural gas fired boilers. So the energy content of this exhaust steam may be expressed as a fuel credit that will reduce natural gas consumption.

The enthalpy of the steam leaving turbine is reduced due to the work extracted by the turbine. A rough approximation of this energy loss is the mechanical equivalent of heat or 3,413 Btu/ kWh. The turbine is estimated above to produce 1,314,000 kWh annually. So the equivalent amount of heat energy consumed in the turbine is approximately:

 $(1,314,000 \text{ kWh}) \times (3,413 \text{ Btu/ kWh}) = 4,484 \text{ MMBtu/year}$ 

The total amount of energy into the turbine (from the boiler) shown above is:

13.25 MMBtuh, or on an annual basis, (13.25 MMBtuh) x (8,760) x (70%) = 81,249 MMBtu/year

So the estimated fuel credit is (81,249 - 4484) = 76,765 MMBtu/year. This reduces the natural gas consumption of the facility, resulting in savings of approximately \$571,057, which exceeds the cost of the wood fuel (\$505,995).

<u>4.2.3.2 Small Scale On-Site Option</u>. This option includes gasification of biomass fuel on site and CHP gas engine to simultaneously generate electricity and heated water. This type of system has limited project history and requires much tighter fuel specifications and gas clean-up equipment needed for the internal combustion process. Commercial applications are available, and are being marketed in increments as small as 2 MW. A CHP system of this size is likely to be at the upper end of its usefulness at this site based on the available electric and waste heat loads and would require the installation of hot water distribution systems to replace existing steam system.

Equipment Cost

• 2 MW – Wood gas fired reciprocating engine w/gasification system – approximately \$6500/kW or \$13,000,000.

- Hot water distribution system unknown, likely to add at least \$2,000,000 for conversion of existing systems.
- \$15,000,000 total cost

### Electricity Generated

This is a 2 MW system. If operated year round it may produce 17,520,000 kWh of electricity, and reduce peak demand by 2,000 kW, resulting in savings of billed electricity.

### **Biomass Consumption**

For this biomass case, the high amount of electrical generation warrants running the system continuously regardless of the available waste heat demand. Vendor correspondence states that the system is expected to consume 12,500 bone dry tons of wood per year. On an as-received 50% moisture basis this equates to 25,000 tons per year. Using the same assumed rate of \$35/per ton for wood chips, this results in a delivered fuel cost for wood of \$875,000.

### Natural Gas Fuel Credit

Vendor correspondence indicates that this engine produces 3 MWth of waste heat. Assuming year round utilization, this results in the following production of waste heat:

 $(3,000 \text{ kW}) \times (8,760 \text{ hours/year}) \times (3,413 \text{ Btu/kWh}) / (1,000,000 \text{ Btu/MMBtu}) = 89,694 \text{ MMBtu/year}, or approximately $667,246 in reduced costs for natural gas. Note that this presumes that most of the existing steam loads may be converted to hot water loads, which may not be feasible for this site.$ 

### 4.3 Results and Recommendations for Renewable Energy Options

- <u>Solar PV Not recommended over hydropower.</u>
  - Solar PV has potential for the site based on the relatively large available footprint on the roof of the Clinical Addition. It is less disruptive than the biomass options because fuel deliveries are not required and it is therefore likely to have greater public acceptance. The simple payback for a 20 kW system that is subject to the Solar Currents program is approximately 37 years which is not competitive with the Geddes Dam project, and is therefore not a recommended alternative to it.
- <u>Green Currents Not recommended over hydropower.</u>
  - Overall it is fair to say that the Green Currents program is the least attractive option because there are costs and no savings available and because the benefits are not easily quantified to the customer. This is because there is an assurance but no guarantee, that the costs will be applied to renewable power generation. The result is considerable operating costs with non-firm benefits which are available from the other options considered.

• <u>Biomass – Not recommended over hydropower, further study recommended.</u> Biomass generation has a simple payback period that is potentially competitive with a Geddes Dam project, and is more competitive than an Argo Dam project. Biomass has the greatest costs, savings, and potential for site disruption during construction and operation, and will require additional expansion that is not required for the hydroelectric project. It is not clear that there is sufficient expansion area available on the site to accommodate a significant biomass project or to accommodate fuel receiving operations. If there were, then it would be an attractive option because the high savings available, especially of natural gas prices rise relative to biomass prices.

### 5.0 References

- 1. "Hydoelect Redevelopment Argo and Geddes Dams Feasibility Study", City of Ann Arbor, July 2008, Stantec Consulting Michigan Inc.
- 2. "*Rate Book for Electrical Service*", The Detroit Edison Company, Issued September 16, 2009, with revisions dated July 1, 2010.
- 3. DTE Energy Billing Statements for the VA Ann Arbor HCS, April 13, 2009 to April 12, 2010.
- 4. Budget Price from Canadian Hydro Components LTD, August 9, 2010.
- 5. Natural Gas Billing Data
- 6. Carrier Micro Steam Turbine Performance Data

- Appendix A Canadian Hydro Components Turbine Quote
- Appendix B DTE Energy Billing Statements
- Appendix C Net Present Worth Calculations

# APPENDIX A

### CANADIAN HYDRO COMPONENTS TURBINE QUOTE



# **BUDGET PRICE**

### **DATE: 09 August 2010**

### TURBINE DATA

Argo-Option 1	Argo – Option 2
3.048 m	3.627 m
Axial Flow Pit	Axial Flow Pit
Double Regulated (4 blade)	Double Regulated (4 blade)
1700 mm	1700 mm
15.576 cms	17.275 cms
225 rpm	240 rpm
225 rpm	240 rpm
415 kW	546 kW
387 kW	508 kW
2.64 m above TWL	1.16 m above TWL
1	1
387 kW	508 kW
	Argo-Option 1 3.048 m Axial Flow Pit Double Regulated (4 blade) 1700 mm 15.576 cms 225 rpm 225 rpm 415 kW 387 kW 2.64 m above TWL 1 387 kW

10 %

**BP #2008-146 REV** 

### **BUDGET PRICE INCLUDES:** (either option)

1-Runner/Distributor Assembly 1-Draft Tube Liner 1-Synchronous Generator 1-Hydraulic Power Unit 1-Switchgear/Control/Protection

# TOTAL ABOVE PACKAGE PRICE:Option 1<br/>\$1,475,000 USDOption 2<br/>\$1,400,000 USDPAYMENT SCHEDULE<br/>Deposit25 % with orderProgress Payment Due Mid-Contract45 %Due Before Shipment20 %

At successful start-up No later than 120 days after shipment

GOOD FOR 90 DAYS PRICES QUOTED IN US DOLLARS FOB ALMONTE, ONTARIO CUSTOMS AND BROKERAGE EXTRA



# BUDGET PRICE

### **DATE: 09 August 2010**

### **BP #2008-147 REV**

### **TURBINE DATA**

Project Name Geddes Rated Net Head 4.343 m Turbine Type Axial Flow Pit Double Regulated (4 blade) Runner Diameter 1700 mm 18.408 cms Flow/Unit max 240 rpm **Turbine Speed** Generator Speed 240 rpm Turbine Shaft Output/unit 700 kW Generator Output/unit 652 kW Turbine Setting 0.06 m below TWL Number of Units 1 Total Output 652 kW

### **BUDGET PRICE**

1-Runner/Distributor Assembly1-Draft Tube Liner1-Synchronous Generator1-Hydraulic Power Unit1-Switchgear/Control/Protection

### TOTAL ABOVE PACKAGE PRICE: \$ 1,400,000 USD

### **PAYMENT SCHEDULE**

Deposit	25 % with order
Progress Payment Due Mid-Contract	45 %
Due Before Shipment	20 %
At successful start-up No later than 120 days after shipment	10 %

GOOD FOR 90 DAYS ALL PRICES QUOTED IN US DOLLARS FOB ALMONTE, ONTARIO CUSTOMS AND BROKERAGE EXTRA

> P.O. Box 640 – 16 Main Street Almonte, Ontario CANADA K0A 1A0 Tel: (613) 256-1983 Fax: (613) 256-4235 Email: inquiries@canadianhydro.com

# APPENDIX B

### DTE ENERGY BILLING STATEMENTS

000002709	00020324119	E
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а.

# Payment Coupon





	Accou	Int Number	0000-0270
	Due D Total I	late: Due:	August 7, 20 \$203,241.
US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303 "I <sup>II</sup> IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	յու	Mail Payme DTE Energ P.O. Box 6 Cincinnati,	PALD Phote To: Py 30795 OH 45263-0795
JUGC 450 + 2	<u>}</u>		
Picase delach and return coupon with appoint number	on check. Agencies are not authorize	ad to accept payman	nt of this bill
Ploase delach and return coupon with account inmbe	on check. Agencies are not authorize	t Numbers	nt of this bill.
US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd	on check. Agencies are not authorize	t Number	nt of this bill.
US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105	on check. Agencies are not authorize Account	t Number gy Federal ID N	nt of this bill, 0000-0270-9 10. 38-3217752
US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105	on chock. Agencies and not authorized Account DTE-Energ How to c	t Number gy Federal ID N	0000-0270-9

# Important Information

On June 2, 2009, in Case No. U-15806, the MPSC authorized the implementation of an Energy Efficiency Surcharge (EES) for electric customers in accordance with the Clean, Renewable, and Energy Efficiency Act, PA295 of 2008. The EES will be used to fund energy efficiency programs for Detroit Edison customers. The EES for primary voltage customers is a per meter per month charge which is based on your monthly energy consumption. The EES for customers without self directed plans is \$28.32 per meter for 0-11,500kWh or \$283.32 per meter if above 11,500kWh. For customers with self directed plans the EES is \$4.63 per meter for 0-11,500kWh or \$42.35 per meter if above 11,500kWh. The EES is effective for bills rendered on and







### **Summary Of Charges** Γ

Account Number	0000-0270-9				
Previous Balance as of 06/15 Payment(s) and Credit(s) Remaining Balance	5/2009				162,958.53 -162,958.53 \$0.00
Current Charges					40.04
Service Location	łtem	Service Туре	Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	220	06/10 - 07/12/09	203,241.19
		Taxes Miscellaneous Charges			0.00
		Current Bill		······································	\$203,241.19
Amount Due on or before	Due Date of 08/0	7/2009		9	5203.241.19
Late Payment Charge if paid Total Amount Due if paid aft	d after Due Date ler 08/07/2009		<u></u>	· · · · · · · · · · · · · · · · · · ·	4,064.82 207,306,01





Page 3 of 6

Statement Mailing 07/17/2009

Account No: 0000-0270-9 Summary ID.1566739 ( 17072009 INDUS 941 RE ]

VA ANN ARBOR (734) 845-3253

# Detail Charges

	······						:
For Service at; Invoice: {	2215 Fuller Rd, . 5568438	Ann Arbor, N Billing Peri	ll 48105 od: 06/10/200	C 9 through 07/12	Dutage Contact Nu 2/2009 Days	mber: 1-313-2 Billed: 33	35-1300
Metering Inform	ation						
Meter Start Number Date	Start Read	Stop Date	Stop Read	Read Difference	Units Muttiplier	Usage	
8989698 06/10 8989698 06/10 8989335 06/10 8989335 06/10	2,255.2A 4,541.4A 0.0A 0.0A	07/12 07/12 07/12 07/12	2.478.5A 4,992.7A 0.0A 0.0A Tota Tota	223.3 451.3 0.0 0.0 1 KVARH 1 KWH	5,600,0000 5,600,0000 2,800,0000 2,800,0000	1,250,480.0 \$ 2,527,280.0 0.0 \$ 0.0 \$ 1,250,480.0 <b>1,250,480.0</b> <b>2,527,280.0</b>	G-KVARH S-KWH S-KVARH S-KWH
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On-peak Billing I 65% High OP Bill Rate Minimum De Highest Single Bil Current SV High	Demand Dmd June-Oct pre mand (Site) ling Demand Monthly Demand	ec 11 mths	<b>4,8</b> 3,1 4,8	52 KW 41 KW 50 KW 52 KW	ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED	06/25/2009 07/17/2008 01/22/1994 06/25/2009	12:30 13:00



### Charges for 06/10/2009 through 07/12/2009

Power Supply Charges:							
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Power Supply Energy:	7,002	1.14	e	φ	19.79	(See 1 ADOVE)	66,715.00
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Voltage Level Discount - SV	2 527 280	ICYNCI ICYNULI	w	ф ф	0030000		-5,591.12
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Enhanced Security Surcharge	2 527 280		~	æ	00000000		
Power Supply Cost Recovery Factor	2,027,200		g	<b></b>	.0000770	Per Total KWH	194.60
(1)	2,021,200	NUM	œ	\$	0036000	Per Total KWH	-9,098.21
Sut	) Total:						151 100 04
Delivery Charges:							101,130.01
Service Charge							075 00
Distribution							275.00
Distribution Demand - SV	4.852	кw	ത	\$	9400000	(Soo D Ahava)	1.500.00
Distribution Energy - SV	2,527,280	KWH	<u>a</u>	¢.	0062000	Dee D ADUVe)	4,560.88
Surcharges:	_, <b>,</b>		<b>1</b> 25	Ψ	.0002000	FOLIOUALKVVM	15,669,14
Nuclear Decommissioning	2,527,280	кwн	ത	\$	0012340	Dor Totol KMU	~
Securitization Bond Charge	2 527 280	KWH	8	č	0047300		3,118.66
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Energy Optimization Surcharge	2,427,200	MTD	w A	e e	.0005000	Periotal KWM	1,263.64
Ŷ	2	WIT & X	<u>w</u>	Ψ	203.32		566.64
Sub	Total						
Special Service Charge							42,310.91
Invoice Subtotal		·····					9,792.27
No Power Eactor Penalty Porod on 0 206 Dever	- <b>F</b> 4						203,241,19
Michinan State Salar Tay On Tayable Device	Factor						0.00
monigun Giale Sales Tax On Taxable Portion							0.00
invoice Total							\$202 246 40
							#ZV3,Z41.19





67:30 6002-22-7NL

Page 5 of 6

Statement Mailing 07/17/2009

Account No: 0000-0270-9 Summary ID:1566739 ( .17072009 INDUS 942 HI- )

S1∕8:90€d

UA ANN ARBOR (734) 845-3223

From: 7348453223

Payment Coupon



**DTE Energy** 

	Account Number 0000-02	70-9
	Due Date:July 7, 2Total Due:\$162,95	2009 8.53
US GOVT GS00\$28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303 "I <sup>II</sup> III <sup>II</sup> II <sup>I</sup> II <sup>I</sup> II <sup>I</sup> II <sup>I</sup> II <sup>I</sup> I	Meil Payments To. DTE Energy P.O. Box 630795 Cincinnati, OH 45263-0795	1.2
JUCC 450+		
Please detach and return couport with account number on check. A	gencies are not authorized to accept payment of this bill.	
Please detach and return coupon with account number on check. An <b>ccount Information</b> JS Govt GS00528677 Chief Fiscal Services Veterans Admin Hosp AA	gencies are not authorized to accept payment of this bill.	-9
JS Govt GS00528677 Chief Fiscal Services /eterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105	gencies are not authorized to accept payment of this bill.           Account Number         0000-0270           DTE-Energy Federal ID No.         38-321775	- <b>9</b> 52
Dec 250+ Please detach and return couper with account number on check. A <b>ccount Information</b> US Govt GS00528677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105 Programs you are enrolled in:	gencies are not authorized to accept payment of this bill.           Account Number         0000-0270           DTE-Energy Federal ID No.         38-32177           How to contact us:         10000-0270	- <b>9</b> 52

DTE Enorgy is regulated by the Michigan Public Service Commission, Lansing, Michigan

# Important Information

On January 13, 2009, the MPSC approved the reconciliation of Detroit Edison's 2007 Choice Incentive Mechanism in case U-14838 and authorized a Regulatory Asset Recovery Surcharge (RARS) refund. A RARS credit of -0.317 cents per kWh for service greater than 15 kW has been applied to your June bill.

On June 2, 2009, in Case No. U-15806, the MPSC authorized the implementation of an Energy Efficiency Surcharge (EES) for electric customers in accordance with the Clean, Renewable, and Energy Efficiency Act, PA295 of 2008. The EES will be used to fund energy efficiency programs for Detroit Edison customers. The EES for primary voltage customers is a per meter per month charge which is based on your monthly energy consumption. The EES for customers without self directed plans is \$28.32 per meter for 0-11,500kWh or \$283.32 per meter if above 11,500kWh. For customers with self directed plans the EES is \$4.63 per meter for 0-11,500kWh or \$42.35 per meter if above 11,500kWh. The EES is effective for bills rendered on and after June 3, 2009.



# **Summary Of Charges**

	· · · · · · · · · · · · · · · · · · ·		1			<u></u>
Account Number	0000-0270-9					
Previous Balance as of 05/ Payment(s) and Credit(s)	/28/2009	-				154,355.93 -154,355.93
Remaining Balance						\$0.00
Current Charges						
Service Location	ltern	Service Type		Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	·····	220	05/12 - 06/09/09	) 162,958.53
		Taxes				0.00
		Miscellaneous Charges				0.00
		Current Bill				\$162,958.53
Amount Due on or befor	re Due Date of 07/0	7/2009				\$162,958.53
Late Payment Charge if p	aid after Due Date					3,259.17
Total Amount Due if paid	after 07/07/2009					166,217.70



Detail Charges										
-12 <sup>2</sup>				- 100, MA		as "v .				
ror Servic	ce at: 22	215 Fuller Rd, A	Ann Arbor, M	AI 48105		Q	utage Contact Nu	mber: 1-313-2	235-1300	
Invoice: 5547605 Billing Period: 05				iod: 05/12/200	9 thr	ough 06/09	/2009 Days	ys Billed: 29		
Metering	Informat	tion								
Meter Number	Start Date	Start Read	Stop Date	Stop Read	R	ead Afference	Units Multiplier	Usage Used	Туре	
8989698 8989698 8989335 8989335	05/12 05/12 05/12 05/12	2,087.7A 4,197.7A 0.0A 0.0A	06/09 06/09 06/09 06/09	2,255.2A 4,541.4A 0.0A 0.0A		167.5 343.7 0.0 0.0	5,600,0000 5,600,0000 2,800,0000 2,800,0000	938,000.0 1,924,720.0 0.0 0.0	S-KVARH S-KWH S-KVARH S-KWH	
				Tot Tot	Total KVARH Total KWH		<u>938,000.0</u> (1,924,720.0			
nvoice: 5	547605	Service Nam	e: VAMC A	4		·····				
item: 1	0037	Cycle: 07					Primary Supply f	Rate D6 - Ra	ite 220	
Billing Sta	tus Inforn	nation						4		
<ul> <li>On-pea</li> <li>65% Highest</li> <li>Highest</li> <li>Current</li> <li>50% of s</li> <li>Subtrar</li> <li>V Coincide</li> <li>Highest</li> <li>KWh per</li> <li>Avg Kilc</li> <li>Power F</li> <li>Total nu</li> <li>Excess</li> </ul>	k Billing De gh OP Bill C nimum Den Single Billin SV High M the Contrac Is Voltage antal Max C Maximum ( rcentage ch walthours t actor (ratio imber of day KVAR for P	emand and June Oct pre- nand (Site) ng Demand onthly Demand Capacity for SV Maximum Dema Dank KW Drnd at DnPeak Demand lange from a yea Jsed Per Day A ) for all voltages ys in the Billing P F fess than .8	ec 11 mths <b>end</b> Site Reactive De rago Year Ago Year Ago	4,4 3,3 4,4 4,4 2,9 4,4 4,4 1,9 68,8	455 232 50 455 926 973 455 929 -4 936 89 29 0	KW KW KW KW KW KW KVAR PCT CT DAYS KVAR	ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED	05/27/200 06/26/200 01/22/199 05/27/200 05/27/200 07/22/200 08/26/200 05/27/200 05/27/200	9       13:00         3       17:00         4       00:00         9       13:00         2       11:30         8       17:00         9       13:00         2       11:30         8       17:00         9       13:00         9       13:00	
Contrac Avg Kilc (KVAR)	t Capacity f watthours l Coincident	or Location Jsed Per Day Th al Max Demand a	is Períod at Site	5,6 66,3 1,9	853 370 929	kw kwh kvar	ESTABLISHED	07/22/200:	2 11:30	



ł

VA ANN ARBOR (734) 845-3223

From: 7348453223
## **Detail Charges**

			i al anno a			
Charges for 05/12/2009 through 06/09/2009						
Power Supply Charges:						
Power Supply Demand	4,455	кw	@ \$	13,75	(See 1 Above)	61,256,25
Power Supply Energy:			-		. ,	•
Power Supply Energy	1,924,720	KWH	@\$	.0401400	Per Total KWH	77,258,26
Off-Peak Discount	1,388,750	KWH	@\$	- 0030000		-4,166.25
Vollage Level Discount - SV	1,924,720	KWH	œ\$	0010000		-1,924.73
Surcharges:			-			
Enhanced Security Surcharge	1,924,720	KWH	Q2 \$	.0000770	Per Total KWH	148.20
Regulatory Asset Recovery Surcharge	1,924,720	KWH	@\$	- 0031700	Per Total KWH	-6,101.36
Power Supply Cost Recovery Factor	1,924,720	KWH	@\$	0036000	Per Total KWH	-6,928.98
Sub	Total:					119,541.3
Delivery Charges:						,
Service Charge						275.00
Distribution						
Distribution Demand - SV	4,973	KW	@\$	.9400000	(See F Above)	4,674.6
Distribution Energy - SV	1,924,720	KWH	@\$	.0062000	Per Total KWH	11,933.20
Surcharges:			_			-
Nuclear Decommissioning	1,924,720	KWH	@\$	.0012340	Per Total KWH	2,375,10
Securitization Bond Charge	1,924,720	KWH	ā s	.0047300	Per Total KWH	9,103.9
Securitization Bond Tax Charge	1,924,720	KWH	ā s	.0019400	Per Total KWH	3,733 9
Choice Implementation Surcharge	1,924,720	KWH	ās.	.0005000	Per Total KWH	962.3(
Energy Efficiency Surcharge	2	MTR	œ\$	283.32		566.64
Sub	Yotal.					33 624 8
Special Service Charge						9,792.2
involce Subtotal						162,958.5
No Power Factor Penalty Based on 0.898 Power	Factor					00
Michigan State Sales Tax On Taxable Portion						0.0
Invoice Total						\$162,958.5

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Statement Mailing 06/16/2009

Page 5 of 6

Account No: 0000-0270-9

From: 7348453223

Summary ID:1555039 [ 16062009 INDUS 903 RE.]

000002709 0001.5435593	E
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### **Payment Coupon**



Account Number

- -----

Power Outage

Billing Inquiry

Analyst Code

How to contact us:

DTE-Energy Federal ID No.

• -----

.. .

**T2** 

DTE Energy

0000-0270-9

See Detail Charges

65:80 6005-20-NUL

1-313 235 5120

38-3217752

	Account Number	0000-0270
	Due Date: Total Due:	June 19, 200 \$154,355.9
US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303	Mail Paymar	AND TO PAUL
ոլիքիներըըները հերկերին է հետոներին է հայրենները հետոներին է հետոներին է հետոներին է հետոներին է հետոներին է հ	DTE Energy P.O. Box 63	y 30795
506C95072.	Cincinnati. (	OH 45263-0795
Fighte neight and return compon with account number on check. Agen:	ies are not authorized to accept payment	t of this bill.

200

US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105

Programs you are enrolled in:

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan





UA ANN ARBOR (734) 845-3223

## Summary Of Charges

			<u>.</u>		
Account Number	0000-0270-9		and a second	<u></u>	- Andrew Contraction
Previous Balance as of 04/1 Payment(s) and Credit(s) Remaining Balance	8/2009	]		•	141,694.11 141,694.11
Current Charges					\$0.00
Service Location	item	Service Type	Rate	Bill Period	<b>A</b>
2215 Fuller Rd	10037	Primary Supply Rate	220	04/13 - 05/11/09	Amoun 154,355.93
		Taxes Miscellaneous Charges			0.00
		Current Bill			\$154,355.93
Amount Due on or before	Due Date of 06/1	9/2009			\$154,355.93
Late Fayment Charge if paid Fotal Amount Due if paid af	d after Due Date ler 06/19/2009				3,087.12 157,443.05



Account No: 0000-0270-9 Summary ID:1548425 [ 29052009 INDUS 440 RF ]

£∿δ:∋eeЯ

For Service	e at: 22	15 Fuller Rd, Ar	in Arbor, Ml	48105		O	utage Contact	Number: 1-313	3-235-1300
Invo	ice: 55	35255 B	illing Perio	d: 04/13/200	)9 throug	h 05/11/	2009 0	ays Billed: 29	
Metering I	nformat	ion							
Neter Number	Start Date	Start Read	Stop Date	Stop Read	Read Diff <u>e</u> r	ence	Units Multiplier	Usage Used	Туре
8989698	04/13	1,933.6A	05/11	2,087.7A		154.1	5,600.0000	862,960.0	S-KVARH
8989335	04/13	3,874.5A 0.0A	05/11 05/11	4,197.7A 0.0A	:	323.2	5,600,0000	1,809,920.0	S-KWH
8989335	04/13	0.0A	05/11	0.0A		0.0	2,800,0000	0.0	S-KWH
				το Το	tal KVARI tal KWH	H		<b>862,960,0</b> (1,809,920,0	5
Invoice: 55	35255	Service Name						Construction	
item: 10	037	Cvcle: 07					Primary Sup	niv Rate D6 🔐	Rata 220
Rilling State		option					T Timory oup		
t On-peak	Billing De	emand		3	,824 KV	1	ESTABLISH	IED 04/27/20	009 14:00
3 65% Higt 6 Rate Min	) OP Bill D imum Den	and June-Oct prec	:11 mths	3	,258 KV	1	ESTABLISH	ED 06/09/20	008 14:00
8 Highest S	Bingle Billir	ng Demand		з	,824 KV	, /	ESTABLISH	ED 01/22/18	009 14:00
D Current S	V High M	onthly Demand		3	,824 KV	!	ESTABLISH	ED 04/27/20	009 14:00
F Subtrant	s Voltage	Maximum Demar	nd	ے ج	,926 KV ,013 KV	,	ESTABLISH	ED 07/22/20 IED 06/09/20	002 11:30 008 14:00
W Coincide	ntal Max C	onpk KW Drnd at S	Sile	3	824 KV	1	ESTABLISH	ED 04/27/2	009 14:00
kWh perc	aximum ( centade ch	UnPeak Demand   lange from a vear	Reactive Den aco	nand 1	,680 KV 2 PC	AR T	ESTABLISH	ED 04/27/20	009 14:30
Avg Kilov	vatthours l	Used Per Day A Y	ear Ago	61	.075 KV	лн			
Power Fa	actor (ratio	) for all voltages	viad		90 PC	T VC			
Excess K	VAR for P	F less than .8	100		29 DA 0 KV	AR			
Contract	Capacity f	or Location		5	,853 KV	/	ESTABLISH	ED 07/22/2	002 11:30
AVQ KIIOV (KVAR) (	vatinours i Coincident	Used Per Day This al Max Demand al	5 Period t Sila	62	.411 KV 666 KV	/H			
Charges for	r 04/13/20	009 through 05/	/11/2009		,000 1.0	~~~			
Power Suppl	y Charge	5: and		2.0	0.0.000		40.75		
Power St	pply Ener	gy:		3,0	24 KVV	(Q) >	13 /5	(See 1 Above)	52,580.0
Powe	r Supply E	inergy		1,809,9	20 KWH	@\$	.0401400	Per Total KWH	72,650.1
Voltaj Surchard	eak Discol ge Level D es:	unt Piscount - SV		1,299,8 1,809,9	48 KWH 20 KWH	@\$ @\$	- 0030000 - 0010000		-3,899.5 -1,809.9
Enha Powe	nced Secu r Supply C	irity Surcharge Cost Recovery Fac	tor	1,809,9 1,809,9	20 КWH 20 КWH	@\$ @\$	.0000770 0036000	Per Total KWH Per Total KWH	139.3 -6 515 7
			Sub	Total:		-			113,144.3
Jélivery Cha Service C Distributio	rges: harge								275.0
Distril	bulion Der	nand - SV		5.0	13 KW	@\$	9400000	(See F Above)	4 712 2
Distril	bution Ene	ngy - SV		1,809,9	20 KWH	@\$	.0062000	Per Total KWH	11,221.5
Suicharg	⊎s. ar Decom	missioning		1 809 Q	20 KW/H	a ¢	0012340	Par Total KMU	0 000 4
Secu	ritization B	ond Charge		1,809,9	20 KWH	@\$	.0047300	Per Total KWH	8,560.9
Secu Choic	ritization B e Impleme	ond Tax Charge Intation Surcharge	÷	1,809,9 1,809,9	20 KWH 20 KWH	@\$ @\$	.0019400 .0005000	Per Total KWH Per Total KWH	3,511 2/ 904,9(
Special Servic	e Charge		Sub	Total:					31,419.20 9,792.2
Page 4 of 6	Statem	ont Mailing 05/29/2009	Accourt	NO. 0000-0270-9	Summ	uy ID 1548	425	S. DT	'E Energ
-		-				,			-

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Invoice Subtotal No Power Factor Penalty Based on 0.902 Power Factor Michigan State Sales Tax On Taxable Portion	1 <b>54,355.9</b> 3 0.00 0.00
Invoice Total	\$154,355.93



AH HAN HEBOK (734) 845-3223

0008027	09 00019525600 B	-3 <b>-1</b> 4	DTE Energy
Payment Coupo	on		
***		- 	
/*** ·/~ /		Account Numb	er 0000-0270-9
5060950	72	Due Date: Total Due;	September 8, 2009 \$182,526.00
US GOVT G\$00\$28677 CHIEF	FISCAL SERVICES		
VETERANS ADMIN HOSP AA 2215 FULLER RD			
ANN ARBOR, MI.48105-2303	TL- 116 2 4 2000 +	Mail Pay	yments To.
، يۇۋى ئارلىكى ئارلىكى ئەركى ئەر		DTE En	nergy
		P.O. Bo	x 630795 \/ \
	and the second s	Circoinn	いじ バロ オミンタン パンハニシノ ノー
		Cincinn	ali, OH 45263-0795
		Cincinn	ali, OH 45263-0795
Please detach and return cour	pon with account number on check. Agencies a	Ciricinn <u>re.not.authorized to accept pay</u>	ali, OH 45263-0795
Please detach and return cour CCOUNT Information	port with account number on check. Agencies a	Ciricinn <u>re, not authorized to accept pay</u>	ali, OH 45263-0795
Please detach and return cour CCOUNT Information	BELLEVELUE AUG 2	Ciricinn	ali, OH 45263-0795
Please detach and return cour <b>CCOUNT Information</b> IS Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 215 Fuller Rd	Pon with account number on check. Agencies a	Ciricinn re not authorized to accept pay Account Number	ali, OH 45263-0795
Please detach and return cour <b>CCOUNT Information</b> S Govt GS00S28677 Chief Fiscal Services eterans Admin Hosp AA 215 Fuller Rd NN ARBOR, MI 48105	BECCHER OF CHER A MERCIES A	Ciricinn <u>re not authorized to accept pay</u> Account Number DTE-Energy Federal I	ali, OH 45263-0795
Please detach and return cour CCOUNT Information S Govt GS00S28677 Chief Fiscal Services eterans Admin Hosp AA 215 Fuller Rd NN ARBOR, MI 48105 ograms you are enrolled in:	Received and the second number on check. Agencies a	Ciricinn <u>re not authorized to accept pay</u> Account Number DTE-Energy Federal I How to contact u	ali, OH 45263-0795

## Important Information

Beginning with the August 2009 billing cycle, the Power Supply Cost Recovery (PSCR) factor will decrease from -0.360 cents/kWh to -1.046 cents/kWh. The PSCR factor allows Detroit Edison to recover its fuel and purchased power expense.

. p. ji k

On July 16, 2009, the MPSC authorized the U-15768 Implementation Surcharge. This surcharge is effective for service rendered on and after July 26, 2009. Beginning in August the PSCR will be lowered. As a result of these two actions, the average primary bill will decrease by approximately 3.2 percent.





## Summary Of Charges

Account Number	0000-0270-9				
Previous Balance as of 07/16 Payment(s) and Credit(s)	/2009				203,241.19
Remaining Balance		· · · · · · · · · · · · · · · · · · ·			-203,241.19 \$0.00
Current Charges					<b>4</b> 0.00
Service Location	ltem	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037 10037	Primary Supply Rate Primary Supply Rate	220 220	07/13 - 07/25/09 07/26 - 08/11/09	71,359.47 111,166.53
		Taxes <u>Miscellaneous Charges</u>			0.00
		Current Bill			\$182,526.00
Amount Due on or before	Due Date of 09/0	8/2009			\$182,526.00
Late Payment Charge if paid Total Amount Due if paid aft	t after Due Date er 09/08/2009				3,650.52 186,176.52



### **Detail Charges**

• ••••••

Outage Contact Number: 1-313-235-1300

For Service at: 2215 Fuller Rd, Ann Arbor, MI 48105

Invoice: 5590475 Billing Period: 07/13/2009 through 08/11/2009

Days Billed: 30

#### **Metering Information**

Mete Num	r ber	Start Date	Start Read	Stop Date	Stop Read	R D	ead ifference	Units Multiplier	Usage Used	Туре
8989	698	07/13	2 478 5A	07/25	2.567 8A		89 3	5,600,0000	500,080.0	S-KVARH
8989	698	07/26	2 567.8A	08/11	2,692.0A		124.2	5,600,0000	695,520.0	S-KVARH
8989	698	07/13	4 992 7A	07/25	5.171.5A		178.8	5,600.0000	1,001,280.0	S-KWH
8989	698	07/26	5,171 5A	08/11	5,420.8A		249.3	5,600.0000	1,396,080.0	S-KWH
8989	335	07/13	0.0A	07/25	0.0A		0.0	2,800,0000	0.0	S-KVARH
8989	335	07/26	0 0A	08/11	0.0A		0.0	2,800.0000	0.0	S-KVARH
8989	335	07/13	0 0A	07/25	0.0A		0.0	2,800.0000	0.0	5-KWH
8989	335	07/26	0 0A	08/11	0.0A		0.0	2,800.0000	0.0	S-KWH
						Total KN	ARH	00000000000000000000000000000000000000	1,195,600.0	
					C	Total KV	VH		2,397,360.0	
Ιπνα	oice: 55	90475	Service Name	: VAMC AA		- SUBALITAN				
1	t <b>em:</b> 10	037	<b>Cycle</b> : 07					Primary Supply F	Rate D6 - R	ate 220
Billi	ng Stati	us Inforr	nation							
1 (	On-peak	Billing D	emand			4,650	ĸw	ESTABLISHED	08/10/200	9 12:30
3 (	65% Higl	h OP Bill (	Omd June-Oct pre	c 11 mths		3,154	ĸw	ESTABLISHED	06/25/200	9 12:30
6	Rate Min	imum Der	mand (Site)			50	ĸw	ESTABLISHED	01/22/198	4 00.00
8	Highest S	Single Billi	ing Demand			4,650	ĸw	ESTABLISHED	08/10/200	09 12:30
D	Current≶	3V Ĥigh M	Ionthly Demand			4,650	ĸw	ESTABLISHED	08/10/200	)9 12·30
E f	50% of <b>t</b>	ie Contra	ct Capacity for SV			2,926	KW	ESTABLISHED	07/22/200	02 11:30
F	Subtran	s Voltage	Maximum Dema	ind		4,852	KW	ESTABLISHED	06/25/200	09 12:30
W	Coincide	ntel Max (	Onpk KW Dmd af	Site		4,650	KW	ESTABLISHED	08/10/200	09 12:30
	Highest I	Maximum	<b>OnPeak Demand</b>	Reactive Der	nand	2,157	KVAR	ESTABLISHED	08/04/200	09 16:00
	kŴh per	centage c	hange from a year	r ago		-5	PCT			
	Avg Kilo	watthours	Used Per Day A	Year Ago		83,825	KWH			
	Power Fa	actor (ratio	o) for all voitages			89	PCT			
	Total nur	nber of da	ays in the Billing P	eriod		30	DAYS			
	Excess H	VAR for	PF less than .8			0	KVAR			
	Contract	Capacity	for Location			5,853	ĸw	ESTABLISHED	07/22/20	02 11.30
	Avg Kilo	watthours	Used Per Day Th	is Period		79,912	KWH			
	(KVAR)	Coinciden	ital Max Demand a	at Site		2,144	KVAR			





50:80 6002-72-9NU

## Charges for 07/26/2009 through 08/11/2009

Power Supply Charges:	-							
Power Supply Demand		4.650	кw	Ø	\$	13 75	(See 1 Abova)	36 231 46
Power Supply Energy:		-,		\$	•	10.10	(000 1 700/0)	30,231.40
Power Supply Energy		1,396,080	КWH	æ	\$	.0401400	Per Total KWH	56 038 65
Off-Peak Discount		1,013,863	KWH	ă	Ś	0030000		-3 041 59
Voltage Level Discount - SV		1,396,080	KWH	ā	\$	0010000		-1 396 08
Surcharges:				-				1,000.00
Enhanced Security Surcharge		1,396,080	KWH	Q	\$	.0000770	Per Total KWH	107 50
Power Supply Cost Recovery Factor		1,396,080	KWH	ā	\$	0104600	Per Total KWH	-14,803.00
	Sub Total:							73,336,94
Delivery Charges:								
Service Charge								155.83
Distribution.								
Distribution Demand - SV		4,852	ĸw	0	\$	.9400000	(See F Above)	2,584.51
Surcharges:		1,396,080	KWH	@	\$	.0062000	Per Total KWH	8,655.70
Nuclear Decommissioning		1,396,080	кwн	ര	\$	0012340	Per Total KWH	1 700 76
Securitization Bond Charge		1,396,080	KWH	ã	Ś	0047300	Per Total KWH	6 603 46
Securitization Bond Tax Charge		1,396,080	KWH	ă	ŝ	.0019400	Per Total KWH	270840
Choice Implementation Surcharge		1,396,080	KWH	ă	\$	.0005000	Per Total KWH	698.04
Energy Optimization Surcharge		2	MTR	ā	\$	283.32		321.10
U-15768 Implementation Surcharge		1,396,080	KWH	ð	\$	.0032860	Per Total KWH	4,587.52
	Sub Total:							28 037 32
Special Service Charge								9,792 27
Period Subtotal								111,166.53
Involce Subtotal								182 526 00
No Power Factor Penalty Based on 0.894	Power Factor							0.00
Michigan State Sales Tax On Taxaple Po	ruon			- · · · · · · · · · · · · · · · · · · ·		•	the second s	0.00
INVOICE FOTAL								\$182,526.00



#### Listed below are explanations of the codes used elsewhere in this bill.

#### **Power Factor Code**

Power factor and penalty are determined as follows:

- (A) Divide the reactive kilovolt ampere hours by the kilowatthours.
- (B) Find the ratio determined in (A) in the left column of the table below.
- (C) The amount in the corresponding row of the middle column is the power factor.
- (D) The amount in the corresponding row of the right column is the penalty, if any, which will be applied to the total amount of the monthly billing.

## Ratio of Registration of Reactive

Component merer to registration							
of Kilowatthour Meter	Power Factor	Penalty					
1.021 and higher	0.699 and lower	See Below					
1.020 to 0.883	0.700 to 0.749	3%					
0.882 to 0.752	0.750 to 0.799	2%					
0.750 to 0.622	0.800 to 0.849	1%					
0.621 to 0.000	0.850 to 1.000	None					

Below .700 is not permitted. A 25% penalty will be applied to any billing after two consecutive months below .700 power factor.

#### **Billing Demand Codes**

- 1 Highest on-peak demand(kw) value
- 2 50% of the highest monthly billing demand of the preceding eleven months
- 3 65% of the high monthly bill demand occurring June October of the preceding 11 months
- 4 50% of the high monthly bill demand occurring June October of the preceding 11 months
- 5 50% of the contract capacity for the site
- 6 Minimum demand as prescribed by the rate
- 7 65% of the Product Protection Demand
- 8 Highest Single Billing Demand
  - 9 65% of high monthly bill demand occurring June October of the preceding 11 months

#### **Demand Codes**

- A Maximum (metered) domand value at primary voltage for the location
- B 50% of the contract capacity at primary voltage
- C Highest Demand in latest 12 month period at primary voltage
- D Maximum (metered) demand value at subtransmission voltage for the location
- E 50% of contract capacity at subtransmission voltage
- F Highest Demand in latest 12 month period at subtransmission voltage
- G Maximum (metered) demand value at transmission voltage for the location
- H 50% of contract capacity at transmission voltage
- I Highest Demand in the latest 12 month period at transmission voltage
- J Maximum (metered) customer substation demand at subtransmission voltage
- K 50% of contract capacity for customer substation at subtransmission voltage
- L Highest Demand in the latest 12 month period for customer substation subtransmission voltage
- M Maximum (metered) customer substation demand at transmission voltage
- N 50% of contract capacity for customer substation at transmission voltage
- P Highest demand in the latest 12 month period for customer substation at transmission voltage
- R Valley hours
- W Coincidental Maximum On Peak kilowatt demand at site



From: 7348453223



#### **Payment Coupon**

Account Number	0000-0270-9
Due Date:	October 27, 2009
Total Due:	\$204,321.96

US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2216 FULLER RD ANN ARBOR, MI 48105-2303

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506C 9507,7-

Resaring

Mail Payments To

DTE Energy P.O. Box 630795 Cincinnati, OH 45263-0795

Please detach and return coupon with account number on check. Agencies are not authorized to accept payment of this bill

## Account Information

US Govt GS00S28677 Chief Fiscal Services	Δ	Account Number	er 0000-0270-9
2215 Fuller Rd ANN ARBOR, MI 48105	as RECEIVED	DTE-Energy Federa	I ID No. 38-321775
Programs you are enrolled in:	OCT 15 200	How to contact	us:
	e Alvaria de Carro Alvaria de Carro Alvaria de Carro de Carro	Power Outage Billing Inquiry Analyst Code	See Detail Charge: 1-313-235-5120 T2

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

## Important Information

On June 2, 2009, in Case No. U-15806, the MPSC authorized a Renewable Energy Plan Surcharge (REPS). This surcharge is to fund the renewable energy investments required by the Clean, Renewable, Efficient Energy Act of 2008 (PA295). For primary voltage service the REPS is a per meter per month charge which is based on your current monthly energy consumption. The REPS is \$16.58 per meter for 0 - 11,500 kWh, \$140.00 per meter for 11,501 - 41,500 kWh, or \$187.50 per meter if above 41,500 kWh. The REPS does not apply to additional meters at a single site installed to support net metering. The REPS is effective for bills rendered on and after September 1, 2009.





From: 7348453223

# Summary Of Charges

· · · · · · · · · · · · · · · · · · ·	2,07,5			
Account Number	0000-0270-9			
Previous Balance as of 08/ Payment(s) and Credit(s) Remaining Balance	7/2009			182,526.00 -182,526.00
Current Charges				\$0.00
Service Location	ltem Serv	ісе Туре	Rate Bill Period	* Amount
2215 Fuller Rd	10037 Prima	ary Supply Rate	220 08/12 - 09/10/09	204,321.96
	Taxe: <u>Misce</u>	s ellaneous Charges		0.00 0.00
	Curre	ant Bill		\$204,321.96
Amount Due on or before	Due Date of 10/27/200	9	•	\$284 321 96
Late Payment Charge if pa Total Amount Due if paid a	id after Due Date fter 10/27/2009	nere allevenes con a con estat	· · · · · · · · · · · · · · · · · · ·	4,086.44



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From: 7348453223

## **Detail Charges**

For Service at: 2215 Fuller Rd, Ann Arbor, MI 48105

Metering Information           Meter         Start         Start         Stop         Read         Difference         Multipiler         Usage           Number         Date         Read         Date         Read         Difference         Multipiler         Used         1           8989698         08/12         2,692.0A         09/10         2,807.1A         115 1         5,600.0000         644,560.0         S-KV/           8989698         08/12         5,420 8A         09/10         5,652.0A         231 2         5,600.0000         1,294,720.0         S-K           8989335         08/12         0.0A         09/10         184.9A         164.9         2,800.0000         517,720.0         S-K           8989335         08/12         0.0A         09/10         357 0A         357.0         2,800.0000         999,600.0         S-K           Total KVARH         1,162,280.9           7,294,320.0         2,294,320.0         2,294,320.0         2,294,320.0		Invoice: 5	627297	Billing Perio	d: 08/12/2	2009 th	ough 09/10	0/2009 Days	s Billed; 30	
Meter Number         Start Date         Start Read         Stop Date         Stop Read         Read         Units         Usage           8989698         08/12         2,692.0A         09/10         2,807.1A         115 1         5,600.0000         644.560.0         S-KV/           8989698         08/12         5,420 8A         09/10         5,652.0A         231 2         5,600.0000         1,294,720.0         S-H           8989335         08/12         0.0A         09/10         184.9A         164.9         2,800.0000         517,720.0         S-KV/           8989335         08/12         0.0A         09/10         357 0A         357.0         2,800.0000         999,600.0         S-H           Total KVARH Total KWH         1,162,280.9	Meteri	ing Informa	tion	10 Marca	110					
8989698         08/12         2,692.0A         09/10         2,807.1A         115.1         5,600.0000         644,560.0         S-KV.           8989698         08/12         5,420.8A         09/10         5,652.0A         231.2         5,600.0000         1,294,720.0         S-HV.           89898335         08/12         0.0A         09/10         184.9A         164.9         2,800.0000         517,720.0         S-KV.           8989335         08/12         0.0A         09/10         357.0A         357.0         2,800.0000         999,600.0         S-KV.           8989335         08/12         0.0A         09/10         357.0A         357.0         2,800.0000         999,600.0         S-HV.           Total KVARH           Total KWH	Meter Numbe	Start r Date	Start Read	Stop Date	Stop Read	F	lead Difference	Units Multiplier	Usage Used	Туре
8989698         08/12         5,420 8A         09/10         5,652.0A         231 2         5,600.0000         1,294,720.0         S-H           8989335         08/12         0.0A         09/10         184.9A         164.9         2,800.0000         517,720.0         S-KV/           8989335         08/12         0.0A         09/10         357 0A         357.0         2,800.0000         999,600.0         S-KV/           Total KVARH Total KWH	898969	8 08/12	2,692.0A	09/10	2,807.1A		115 1	5,600.0000	644,560.0	S-KVARH
8989335 08/12 0.0A 09/10 184.9A 164.9 2,800.0000 517,720.0 S-KV. 8989335 08/12 0.0A 09/10 357.0A 357.0 2,800.0000 999,600.0 S-H Total KVARH Total KWH 2,294,320.0	898969	8 08/12	5,420 8A	09/10	5,652.0A		231 2	5,600.0000	1,294,720.0	S-KWH
8989335 08/12 0 0A 09/10 357 0A 357.0 2,800.0000 999,600.0 S-1 Total KVARH Total KWH  2,294,320.0	898933	5 08/12	0.0A	09/10	184.9A		184.9	2,800.0000	517,720.0	S-KVARH
Total KVARH         1,162,280.0           Total KWH         2,294,320.0	898933	5 08/12	0 0A	09/10	357 OA		357.0	2,800.0000	999,600.0	S-KWH
Total KWH 2,294,320.0						Total K	VARH		1,162,280.0	
						Total K	WH	4	2,294,320.0	>
Invoice: 5627297 Service Name: VAMC AA	Invoic	e: 5627297	Service Nam	e: VAMC AA						
Item: 10037 Cycle: 07 Primary Supply Rate D6 - Rate 22	iten	n: 10037	<b>Cycle:</b> 07					Primary Supply	Rate D6 - R	ate 220
Billing Status Information	Billing	Status Infor	mation							
1 On-peak Billing Demand 6,213 KW ESTABLISHED 08/27/2009 1	1 On	peak Billing I	Demand			6,213	ĸw	ESTABLISHED	08/27/200	9 19:00
3 65% High OP Bill Dmd June-Oct prec 11 mths 3 154 KW ESTABLISHED 06/25/2009 1	3 65%	6 High OP Bill	Dmd June-Oct pro	ac 11 mths		3,154	KW	ESTABLISHED	06/25/200	9 12:30
6 Rate Minimum Demand (Site) 50 KW ESTABLISHED 01/22/1994 00	6 Rat	e Minimum De	mand (Site)			50	K₩	ESTABLISHED	01/22/199	94 00:00
8 Highest Single Billing Demand 6,213 KW ESTABLISHED 08/27/2009 1	8 Hia	hest Single Bil	ling Demand			6,213	ĸw	ESTABLISHED	08/27/200	9 19.00
D Current SV High Monthly Demand 6,213 KW ESTABLISHED 08/27/2009 1	D Cui	rrent SV High	Monthly Demand	t		6,213	KW	ESTABLISHED	08/27/200	9 19:00
E 50% of the Contract Capacity for SV 3,106 KW ESTABLISHED 08/27/2009 1	E 50%	6 of the Contra	ct Capacity for SV	/		3,106	ĸw	ESTABLISHED	08/27/200	09 19:00
F Subtrans Voltage Maximum Demand 6,213 KW ESTABLISHED 08/27/2009 1	F Sut	otrans Voltage	Maximum Deman	d		6,213	KW	ESTABLISHED	08/27/200	09 19:00

F	Subtrans Voltage Maximum Demand	6,213	KW	ESTABLISHED	08/27/2009	19:00
W	Coincidental Max Onpk KW Dmd at Site	6,213	KW	ESTABLISHED	08/27/2009	19:00
	Highest Maximum OnPeak Demand Reactive Demand	3,182	KVAR	ESTABLISHED	08/27/2009	19:00
	kWh percentage change from a year ago	0	PCT			
	Avg Kilowatthours Used Per Day A Year Ago	76,739	KWH			
	Power Factor (ratio) for all voltages	89	PCT			
	Total number of days in the Billing Period	30	DAYS			
	Excess KVAR for PF less than .8	0	KVAR			
	Contract Capacity for Location	6,213	KW	ESTABLISHED	08/27/2009	19:00
	Avg Kilowatthours Used Per Day This Period	76,477	KWH			
	(KVAR) Coincidental Max Demand at Site	3,182	KVAR			

05/01:9069



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Outage Contact Number: 1-313-235-1300

#### Charges for 08/12/2009 through 09/10/2009

Power Supply Charges:		0.040	12101	A	¢	13 75	(See 1 Above)	85,428,75
Power Supply Demand		6,213	KVV	æ	Φ	1070	(000 () 0010)	
Power Supply Energy:		2 204 320	KMH	ര	\$	0401400	Per Total KWH	92,094.00
Power Supply Energy		4 660 682		 ⊘n	ŝ	- 0030000		-4,979.05
Off-Peak Discount		2 204 320	KWH	ക	ŝ	0010000		-2,294.32
Voltage Level Discount - SV		2,204,020		9	•			
Surcharges		2 294 320	кwн	ര	\$	.0000770	Per Total KWH	176.66
Ennanced Security Surcharge		2 294 320	KWH	ര്	Ś	0104600	Per Total KWH	-23,998.59
Power Supply Cost Recovery Factor		2,201,020	MTR	ă	\$	187.50		375.00
Renewable Energy Plan Surcharge								
	Sub Total:							146,802.45
Delivery Charges:								275.00
Service Charge								
Distribution:		6 213	KW	ര	\$	.9400000	(See D Above)	5,840.22
Distribution Demand - SV		2 204 320	KWH	Ø	ŝ	.0062000	Per Tolal KWH	14,224 78
Distribution Energy - 5V		2,204,520	1	6	•			
Surcharges:		2 294 320	кwн	a	\$	.0012340	Per Total KWH	2,831.19
Nuclear Decommissioning		2 294 320	KWH	ď	S	.0047300	Per Total KWH	10,852.13
Securitization Bond Charge		2 294 320	KWH	ă	\$	0019400	Per Total KWH	4,450.98
Securization Bond Tax Charge		2 294 320	KWH	ă	\$	.0005000	Per Total KWH	1,147.16
Choice Implementation Surcharge		2	MTR	ā	\$	283.32		566.64
U-15768 Implementation Surcharge		2,294,320	KWH	ē	\$	.0032860	Per Total KWH	7,539.14
	Pub Total							47,727.24
Special Service Charge	Sup rotat.							9,792.27
Special Service Charge				,		<u></u>		204,321.96
invoice Subtotal	Power Fector							0.00
No Power Factor Penalty Based on 0.092	tion							0.00
Michigan State Sales Tax On Taxable For	<u></u>					and the second s		\$20.4 324 9P

Invoice Total



00:60 6002-22-100

Page 5 of 6

Aration No: 0000-0270-9 Summary ID:1597134 ( .06102009. INDUS\_229\_RE...]

#### 000002709 00041607034 B





## Payment Coupon



US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303

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Mail Payments To

Τ2

DTE Energy P.O. Box 630795 Cincinnati, OH 45263-0795

Please detach and return coupon with account number on check. Agencies are not authorized to accept payment of this bill.

## **Account Information**

US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA	Account Number 000			
2215 Fuller Rd ANN ARBOR, MI 48105	DTE-Energy Federal ID No.	38-3217752		
Programs you are enrolled in:	How to contact us:			
	Power Outage See Billing Inquiry 1-31	Detail Charges 3-235-5120		

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan



Analyst Code

## **Detail Charges**

Charges f	or 09/1	1/2009	through	10/12/2009
-----------	---------	--------	---------	------------

						\$211,748.38
y Based on 0.886 Power I x On Taxable Portion	actor					<b>211,748.38</b> 0.00 0.00
Sub 1	fotal:					45,572.21 9,792.27
			¥27 •			
tion Surcharge	2,119,320	KWH	@\$	.0032860	Per Total KWH	6,964.09
on ourcharge Surcharge	∠,119,320	MTR	ୟୁ ୬ ଜୁନ	283 32		566 64
ax unarge	2,119,320		ക്ക	0019400	Per Total KWP	4,111.40 1 //50.66
narge	2,119,320	KWH	03	.0047300	Per Total KWH	10,024.38
oning	2,119,320	KWH	@\$	.0012340	Per Total KWH	2,615 24
SV	2,119,320	KWH	@\$	.0062000	Per Total KWH	13,139.78
- SV	7,251	ĸw	@\$	.9400000	(See D Above)	6,815.94
						275.00
	* ***					.00,000.00
Sub J	otal <sup>.</sup>					156 383 90
lan Surcharge	2	MTR	@\$	187.50		375.00
ecovery Factor	2,119,320	KWH	@\$	0104600	Per Total KWH	-22,168.09
urcharge	2,119,320	KWH	@\$	.0000770	Per Total KWH	163.19
nt - 5V	2,119,320	KWH	@\$	0010000		-2,119.32
	1,545,876	KWH	@\$	- 0030000		-4,637.63
1	2,119,320	KWH	@\$	.0401400	Per Total KWH	85,069 50
	1,401		<b>₩</b> *		(000	00,701.20
	/ 251	K VM	60 5	1375	(See 1 Ahove)	99 701 25
	/ nt - SV urcharge lecovery Factor lan Surcharge Sub T - SV SV oning charge fax Charge on Surcharge Surcharge tion Surcharge Sub T Sub T Sub T Sub T	7,251         7       2,119,320         1,645,676         nt - SV       2,119,320         urcharge       2,119,320         tecovery Factor       2,119,320         lan Surcharge       2         Sub Total:       -         - SV       7,251         SV       2,119,320         pointing       2,119,320         charge       2,119,320         charge       2,119,320         charge       2,119,320         charge       2,119,320         charge       2,119,320         charge       2,119,320         Sucharge       2,119,320         Sucharge       2,119,320         Sucharge       2,119,320         Sub Total:       -         y Based on 0.886 Power Factor       -         x On Taxable Portion       -	<ul> <li>7,251 KW</li> <li>2,119,320 KWH</li> <li>1,645,876 KWH</li> <li>1,645,876 KWH</li> <li>1,645,876 KWH</li> <li>1,645,876 KWH</li> <li>2,119,320 KWH</li> <li>2,119,320 KWH</li> <li>2 MTR</li> <li>Sub Total:</li> <li>SV</li> <li>7,251 KW</li> <li>SV</li> <li>7,251 KW</li> <li>SV</li> <li>7,251 KW</li> <li>SV</li> <li>7,251 KW</li> <li>SV</li> <li>2,119,320 KWH</li> <li>Sub Total:</li> <li>Sub Total:</li> <li>Sub Total:</li> </ul>	7,251       KW       @ \$         1,545,876       KWH       @ \$         1,19,320       KWH       @ \$         1an Surcharge       2,119,320       KWH       @ \$         Sub Total:       2       MTR       @ \$         - SV       7,251       KW       @ \$         Sub Total:       -       2       MTR       @ \$         - SV       7,251       KWH       @ \$       \$         - SV       7,251       KWH       @ \$       \$         - SV       2,119,320       KWH       @ \$       \$         - SV       2,119,320       KWH       @ \$       \$         - Sucharge       2,119,320       KWH       @ \$       \$         - Sub Total:	7,251       KW       (2) \$ 1379         7       2,119,320       KWH       (2) \$ .0401400         1,545,876       KWH       (2) \$ .003000       .0030000         nt - SV       2,119,320       KWH       (2) \$ .0010000         urcharge       2,119,320       KWH       (2) \$ .0000770         tecovery Factor       2,119,320       KWH       (2) \$ .000000         lan Surcharge       2       MTR       (2) \$ .0005000         Svb Total:       .0012340       .0012340         charge       2,119,320       KWH       (2) \$ .0012340         charge       2,119,320       KWH       (2) \$ .0019400         on Surcharge       2,119,320       KWH       (2) \$ .0032860         Sub Total:       2       MTR       (2) \$ .0032860         Sub Total:       .0032860       .0032860         Sub Total:       .0032860       .0032860	7,251       KW       (2,3)       1375       (See 1 Above)         7       2,119,320       KWH       (2,3)       .0401400       Per Total KWH         1,545,876       KWH       (2,3)       .0030000       .0010000         nt - SV       2,119,320       KWH       (2,3)       .0000770       Per Total KWH         urcharge       2,119,320       KWH       (2,3)       .0000770       Per Total KWH         i.ecovery Factor       2,119,320       KWH       (2,3)       .0104600       Per Total KWH         lan Surcharge       2       MTR       (2,3)       .0002000       Per Total KWH         lan Surcharge       2       MTR       (2,3)       .0002000       Per Total KWH         sub Total       Sub Total       .0002000       Per Total KWH       .0002340       Per Total KWH         Sv       2,119,320       KWH       (2,3)       .0012340       Per Total KWH         narge       2,119,320       KWH       (2,3)       .00047300       Per Total KWH         Surcharge       2,119,320       KWH       (2,3)       .0005000       Per Total KWH         Surcharge       2,119,320       KWH       (2,3)       .0032860       Per Total KWH

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## Payment Coupon



 Account Number
 0000-0270-9

 Due Date:
 November 6, 2009

 Total Due:
 \$416,070.34

US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303

Mail Payments To:

DTE Energy P.O. Box 630795 Cincinnati, OH 45263-0795

Please detach and return coupon with account number on check. Agencies are not authorized to accept payment of this bill.

## Account Information

US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105

### Account Number 0000-0270-9

DTE-Energy Federal ID No. 38-3217752

#### Programs you are enrolled in:

#### How to contact us:

Power Outage	See Detail Charges
Billing Inquiry	1-313-235-5120
Analyst Code	T2

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

Page 1 of 6





## Summary Of Charges

Account Number	0000-0270-9	7	506(9)	5072	
Previous Balance as of 10/0 Payment(s) and Credit(s)	95/2009				204,321.96 0.00
Remaining Balance				· · · · · · · · · · · · · · · · · · ·	\$204,321.96
Current Charges					
Service Location	ltem	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	220	09/11 - 10/12/09	211,748.38
		Taxes			0.00
		Miscellaneous Charges			0.00
		Current Bill		7	\$211,748.38
Amount Due on or before	e Due Date of 11/0	6/2009			\$416,070.34
Late Payment Charge if pa	id after Due Date				8,321.41
Total Amount Due if paid a	fter 11/06/2009				424,391.75





## Charges for 09/11/2009 through 10/12/2009

Power Supply Charges:							
Power Supply Demand		7,251	KW	@\$	13.75	(See 1 Above)	99,701.25
Power Supply Energy:		0 110 200			0404400		05 000 50
Off-Peak Discount		1 545 876	KWH	@ \$ @ \$	- 0030000	Per Total KWH	85,069.50
Voltage Level Discount - SV		2,119,320	KWH	@\$	0010000		-2.119.32
Surcharges:				0			_,
Enhanced Security Surcharge		2,119,320	KWH	@\$	.0000770	Per Total KWH	163.19
Power Supply Cost Recovery Factor		2,119,320	KWH	@\$	0104600	Per Total KWH	-22,168.09
Renewable chergy Flatt Surcharge		2	MIK	@\$	187.50		375.00
	Sub Total:						156,383,90
Delivery Charges:							,
Service Charge							275.00
Distribution:		7.054		e (	0400000		0.045.04
Distribution Energy - SV		2 119 320	KWH	@ \$ @ \$	.9400000	(See D Above)	6,815.94
Surcharges:		2,110,020		ΨΨ	.0002000	Fel Total RWIT	15,159.70
Nuclear Decommissioning		2,119,320	KWH	@`\$	.0012340	Per Total KWH	2,615.24
Securitization Bond Charge		2,119,320	KWH	@\$	.0047300	Per Total KWH	10,024.38
Securitization Bond Tax Charge		2,119,320	KWH	@\$	.0019400	Per Total KWH	4,111.48
Enorgy Optimization Surcharge		2,119,320		@\$ @\$	.0005000	Per Total KWH	1,059.66
U-15768 Implementation Surcharge		2 119 320	KWH	@ \$ @ \$	203.32	Per Total KWH	000.04 6 064 00
e teree implementation ourcharge		2,110,020		ΨΨ	.0002000		
	Sub Total:						45,572.21
Special Service Charge							9,792.27
Invoice Subtotal							211,748.38
No Power Factor Penalty Based on 0.886	Power Factor						0.00
Michigan State Sales Tax On Taxable Po	rtion						0.00
Invoice Total							\$211,748.38



Payment Coupon

DTE Energy

OL J02709 00014050298 B



نسسم	>	Account Number	0000-0270-9
20	06 C 05045	Due Date: Total Due:	February 10, 2010 \$180,502.98
US GOVT GS00S28677 CHIEF FISCAL S VETERANS ADMIN HOSP AA 2215 FULLER RD	BERVICES		PD. 2.1
ANN ARBOR, MI 48105-2303		Mail Paymo	
-լ«ֆիլիդորդերիկթիկերութուրը	nfo.041419.	DTE Energ P O Box 6 Cincinnati	y 30795 \∂` OH 45263-0795
		Cintorintadi,	\

## Account Information

US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA	Account Number	0000-0270-9	
2215 Fuller Rd	· · · · · · · · · · · · · · · · · · ·		
ANN ARBOR, MI 48105	DTE-Energy Federal ID No 38-32		
Programs you are enrolled in:	How to contact u	5:	
Programs you are enrolled in:	<u>How to contact u</u> Power Outage	s: See Detail Charges	
Programs you are enrolled in:	<u>How to contact u</u> Power Outage Billing Inquiry	s: See Detail Charges 1-313-235-5120	

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

## Important Information

Beginning with the January 2010 billing cycle, the Power Supply Cost Recovery (PSCR) factor will increase from -1.062 cents per kWh to -0.780 cents per kWh. The PSCR factor allows Detroit Edison to recover its fuel and purchased power expense.



### **Summary Of Charges**

Account Number	0000-0270-9				
Previous Balance as of 12/1 Bayment(s) and Cradit(s)	5/2009	-			158,858.10
Remaining Balance				energia internetia interneti	<u>-158,858.10</u> \$0.00
Current Charges	•				
Service Location	item	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	220	12/10 - 01/11/10	180,502.98
		Taxes			0.00
		Miscellaneous Charges			0.00
		Current BIII			\$180,502.98
Amount Due on or before	Due Date of 02/1	0/2010			\$180,502.98
Late Payment Charge if pai	id after Due Date				3,610.06
Total Amount Due if paid at	fter 02/10/2010				184.113.04

Page 3 of 6



## **Detail Charges**

#### Charges for 12/10/2009 through 01/11/2010

Power Supply Charges:							
Power Supply Demand		5,181	ĸw	@\$	13 75	(See 1 Above)	71 238 75
Power Supply Energy:		•		<u> </u>		(=30 () (0046)	11,200.10
Power Supply Energy		1.944,320	KWH	@\$	.0401400	Per Total KWH	78 045 00
Off-Peak Discount		1,476,396	KWH	@\$	0030000		-4 429 19
Voltage Level Discount - SV		1,944,320	KWH	@.\$	0010000		-1 944 32
Surcharges:							101100
Enhanced Security Surcharge		1,944,320	KWH	@\$	.0000770	Per Total KWH	149 <b>71</b>
Power Supply Cost Recovery Factor		1,944,320	KWH	@\$	0078000	Per Total KWH	-15,165 70
Renewable Energy Plan Surcharge		2	MTR	@\$	187.50		375.00
	Sub Total.						128 269 26
Delivery Charges:							120,200.20
Service Charge							275 00
Distribution							210.00
Distribution Demand - SV		7,251	ĸw	@\$	9400000	(See F Above)	6 815 94
Distribution Energy - SV		1,944,320	KWH	ã\$	0062000	Per Total KWH	12 054 78
Surcharges:				ф ·			12,001.10
Nuclear Decommissioning		1,944,320	KWH	@\$	.0012340	Per Total KWH	2,399,29
Securitization Bond Charge		1, <b>944</b> ,320	KWH	@\$\$	.0047300	Per Total KWH	9 196 63
Securitization Bond Tax Charge		1,944,320	KWH	@\$	0019400	Per Total KWH	3,771,98
Choice Implementation Surcharge		1,944,320	KWH	@\$	0005000	Per Total KWH	972.16
Energy Optimization Surcharge		2	MTR	@\$	283.32		566.64
U-15768 implementation Surcharge		1, <del>9</del> 44,320	KWH	@\$	.0032860	Per Total KWH	6,389.04
	Sub Total:						42 441 48
Special Service Charge							9,792.27
Invoice Subtotal							180,502.98
No Power Factor Penalty Based on 0.895 F	Power Factor						0.00
Michigan State Sales Tax On Taxable Port	ion		_				0.00
Invoice Total							\$180,502,98

Page 5 of 6



DTE Energy

000002709 00015885810 B





 Account Number
 0000-0270-9

 Due Date:
 January 6, 2010

 Total Due:
 7

US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105 2303

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Mail Payments To:

DTE Energy P O Box 630795 Cincinnati, OH 45263-0795



Please detach and roturn coupon will; account number on check. Agencies are not authorized to accopt payment of this bill

## Account Information

US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd ANN ARBOR, MI 48105

Programs you are enrolled in:

Account Number 0000-0270-9

DTE-Energy Federal ID No 38-3217752

How to contact us:

Power OutageSetBilling Inquiry1-Analyst CodeT2

See Detail Charges 1-313-235-5120 T2

Please make any inquiry or complaint about this bill to DI'E Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

### Important Information

Beginning with the December 2009 billing cycle, the Power Supply Cost Recovery (PSCR) factor will docroase from 1.06 cents per kWh to -1.062 cents per kWh. The PSCR factor allows Detroit Edison to recover its fuel and purchased power expense.



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## Summary Of Charges

Account Number	0000-0270-9				
Previous Balance as of 11	/13/2009				381,485.08
Payment(s) and Credit(s)					-301,403.00 \$0.00
Remaining Balance					\$0.00
Current Charges					
Service Location	ltem	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	220	11/10 - 12/09/09	158,858.10
		Taxes			0.00
		Miscellaneous Charges			0,00
		Current Bill			\$158,858,10
Amount Due on or befo	re Due Date of 01/0	)6/2010			\$158,858.10
Late Revment Charge if paid after Due Date					3,177.16
	0-04/02/0040				162.035.26

Total Amount Due if paid after 01/06/2010





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## **Detail Charges**

#### Charges for 11/10/2009 through 12/09/2009

Power Supply Charges:						
Power Supply Demand	4,713	KW	@\$	13 <b>7</b> 5	(See 3 Above)	64,803.75
Power Supply Energy						
Power Supply Energy	1,722.000	KWH	Q \$	0401400	Per Total KWH	69,121.08
Off-Peak Discount	1,273,702	KWH	@\$	- 0030000		-3,821.11
Voltage Level Discount - SV	1,722,000	KWH	@\$	0010000		-1,722.00
Surcharges.						
Enhanced Security Surcharge	1,722,000	KWH	@\$	.0000770	Per Total KWH	132.59
Power Supply Cost Recovery Factor	1,722,000	KWH	@\$	- 0106200	Per Total KWH	-18,287.64
Renewable Energy Plan Surcharge	2	MTR	@\$	187 50		375 00
Su	b Total					110,601.67
Delivery Charges:						
Service Charge						275.00
Distribution.						
Distribution Demand - SV	7,251	кw	@\$	9400000	(See F Above)	6,815,94
Distribution Energy - SV	1,722,000	KWH	@\$	.0062000	Per Total KWH	10,676.40
Surcharges			-			
Nuclear Decommissioning	1,722,000	KWH	@\$	.0012340	Per Total KWH	2,124.95
Securitization Bond Charge	1,722,000	KWH	@\$	.0047300	Per Total KWH	8,145.06
Securitization Bond Tax Charge	1,722,000	KWH	@\$	0019400	Per Total KWH	3,340 68
Choice Implementation Surcharge	1,722,000	KWH	@\$	0005000	Per Total KWH	861 00
Energy Optimization Surcharge	2	MTR	@\$	283.32		566.64
U-15768 Implementation Surcharge	1,722,000	KWH	@\$	0032860	Per Total KWH	5,658.49
Su	ıb Total					38,464 16
Special Service Charge						9,792 27
Invoice Subtotal						158,858.10
No Power Factor Penalty Based on 0 885 Pow	er Factor					0 00
Power Factor Penalty Charge Based On Non-F	Ratcheted Amount Of	127581	.69			0 00
Michigan State Sales Tax On Taxable Portion						0.00
Invoice Total						\$158,858.10





000002709 00038148508 B





Account Number	0000-0270-9
Due Date:	December 7, 2009
Total Due:	\$381,485.08

US COVT GS00S28677 CHIEF HISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303

Mail Payments To.

DTE Energy P.O. Box 630795 Cincinnati, OH 45263-0795

Please detach and rotum coupon with account number on check. Agencies are not authorized to accept payment of this bill.

### Account Information

Veterans Admin Hosp AA	Account Numbe	er 0000-0270-9
ANN ARBOR, MI 48105	DTE-Energy Fedoral	ID No 38-3217752
Programs you are enrolled in:	How to contact	us:
	Power Outage Billing Inquiry Analyst Code	See Detail Charges 1-313-235-5120 T2

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

### Important Information

Beginning with the November 2009 billing cycle, the Power Supply Cost Recovery (PSCR) factor will decrease from -1.046 cents per kWh to -1.06 cents per kWh. The PSCR factor allows Detroit Edison to recover its fuel and purchased power expense



VA ANN ARBOR (734) F

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-3223

# Detail Charges

Charges for 10/13/2009 through 11/09/2009							
Power Supply Charges:					<b>den</b> anno 2000 - 10000 - 10000 - 1000 - 1000 - 1000 - 1000 - 1000 - 100		
Power Supply Demand	5 732	ĸw	Ø	¢	10 76	(Dat 1 Ab	70.015.05
Power Supply Energy:	0,102	1.44	C.S	Ψ	1575	(See I ADOVA)	78,815.00
Power Supply Energy	1.648.640	кwн	ക	\$	0401400	Par Total KMU	00 170 11
Off-Peak Discount	1.192.154	KWH	e e	ŝ	- 0030000		00,176.41
Voltage Level Discount - SV	1.648.640	KWH	ă	ŝ	- 0010000		-3,576.46
Surcharges:	i i i i i i i i i i i i i i i i i i i		9	¥	0010000		-1,048.64
Enhanced Security Surcharge	1.648.640	KWH	ത	\$	0000770	Par Total KWH	102.05
Power Supply Cost Recovery Factor	1,648,640	KWH	ି ଜି	Š	- 0106000	Per Total KWH	120 HJ 17 /75 ED
Renewable Energy Plan Surcharge	2	MTR	õ	\$	187.50		-17,473 30 375 QQ
Su Su	ıb Total:						100 700 68
Delivery Charges:							124,792.00
Service Charge							275.00
Distribution.							270.00
Distribution Demand - SV	7,251	KW	@	\$	9400000	(See F Above)	6 815 94
Distribution Energy - SV	1,648,640	KWH	Ō	\$	.0062000	Per Total KWH	10 221 57
Surcharges			_				
Nuclear Decommissioning	1,648,640	KWH	Q	\$	.0012340	Per Total KWH	2 034 42
Securitization Bond Charge	1.648.640	KWH	0	\$	.0047300	Per Total KWH	7 798 07
Securitization Bond Lax Charge	1,648,640	KWH	@	\$	.0019400	Per Total KWH	3 198 36
Choice Implementation Surcharge	1,648,640	KWH	Ō.	\$	.0005000	Per Total KWH	824 32
Energy Optimization Surcharge	2	MTR	0	\$	283 32		566 64
U-15768 Implementation Surcharge	1,648,640	KWH	0	\$	.0032860	Per Total KWH	5,417,43
Su	b Total.						37 151 75
Special Service Charge							9,792.27
Invoice Subtotal							169 736 70
No Power Factor Penalty Based on 0.883 Powe	er Factor						0.00
Michigan State Sales Tax On Taxable Portion							0.00
Invoice Total							\$460 72¢ 70
							φ100,700,70

DTE Energy

## **Summary Of Charges**

Previous Balance as of 10/15/2009 Payment(s) and Credit(s)		416,0	70.34
Remaining Balance		-204,3	<u>21.96</u> 48.38
Current Charges	S06C0504	17	
Service Location	Item Service Type	Rate Bill Period An	nount
2215 Fuller Rd	10037 Primary Supply Rate	220 10/13 - 11/09/09 169,7	36.70
	Тахев		0.00
	Miscellaneous Charges Current Bill		0.00
			<b></b>
Amount Due on or before Due L	Due Dete	\$381,4	35.08
Total Amount Due if paid after 12/	07/2009	7,62 389,1	29 70 14.78
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			IND
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DTE Energy

## INVOICE



Terms:	Applied unless an exemption certificate is NET PAYABLE UPON RECEIPT	subtot on tile Tax Invoice	al Amount	6,061.00 0.00 <b>\$6,061.00</b>
	Service Location VA MED CENTER (ML) 2215 FULLER RD ANN ARBOR MI 48105-2335	Contra	ct Price	6,061.00
Service Contract	PO BOX 149971 AUSTIN TX 78714-8971 4200011676 Service Monthly Billing Period 04/01/2010 - 04/30/2010	Federal Tax ID DUNS Number Service Type	34 127 0056 09 480 9993 Preventive Maint	
Bill 60	DEPARTMENT OF VETERANS AFFAIRS FINANCIAL SERVICES CENTER	Sales Contact Field Contact Telephone Fax	Thomas Dziadosz Mark Pawlowski 734-971-8242 734-971-1545	M
Local Office	Schindler Elevator Corporation 28451 Schoolcraft Rd LIVONIA MI 48150-2238	Invoice Number Invoice Date Billing ID Purchase Order No	8102608302 ·04/30/2010 5000032209 506·C01015	Schindl

#### DELIVERY ORDER 506-C91241 CONTRACT NUMBER GS-06F-0079M

## REMITTANCE

Please return this portion with your payment

Payer	DEPARTMENT OF VETERANS A FINANCIAL SERVICES CENTER PO BOX 149971 AUSTIN TX 78714-8971	FFAIRS	Invoice Number Invoice Date Billing ID Service Contract	8102608302 04/30/2010 5000032209 4200011676
Remit to	Schindler Elevator Corporation P.O.Box 93050 Chicago, IL 60673-3050	Use this address for payments only Direct calls and correspondence to our Local Office above. Please check applicable payment enclosed	INVOICE AMO	0UNT \$6,061.00

\* Invoices not paid within 30 days are subject to a sarvice charge of 1.5% per month, or the maximum permitted by law. Seller represents that with respect to the production of the articles and/or the performance of the

services covered by this invoice, it has fully complied with the Fair Labor Standards Act of 1938, as amended.

MODD11 perf

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Account Number 0000-	-0270-9	506095012	- and the second of the second s
Previous Balance as of 10/05/2009 Payment(s) and Credit(s)	ch	date oct. 28, 2009	204,321.96
Remaining Balance			\$204,321.96
Service Location	Itam Sabita Tuna		
2215 Fuller Rd	10037 Primary Supply Re		Amount 09 211 748 38
	Taxes Miscellaneous Ch	narges	0.00
	Current Bill	7	\$211,748.38
Amount Due on or before Due Dat	te of 11/06/2009		\$416,070.34
ate Payment Charge if paid after Du Fotal Amount Due if paid after 11/06	ue Date /2009		8,321.41 424,391.75
		IN FICT	
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APR-29-2010 10:07 From:734 3223 VA ANN AR	BOR (734) -3223 Page:3/5
000002709 00017653905 B	DTE Energy
Payment Coupon	
506C05045	Account Number         0000-0270-9           Due Date:         May 11, 2010           Total Due:         \$176,539.05
US GOVT GS00528677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2915 FULLER RD ANN ARBOR, MI 48105-2303	Mail Payments To. DTE Energy P.O. Box 630795 Cincinnati, OH 45263-0795
Please detach and return coupon with account number un check. Age	encies are not authorized to accept payment of this bill.
US Govt GS00S28677 Chief Fiscal Services Veterans Admin Hosp AA 2215 Fuller Rd	Account Number 0000-0270-9

Programs you are enrolled in:

ANN ARBOR, MI 48105

How to contact us:

DTE-Energy Federal ID No

Power Outage	See Detail Charges
Billing Inquiry	1-313-235-5120
Analyst Code	T2

38-3217752

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date. DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

### Important Information

Beginning with the April 2010 billing cycle, the Power Supply Cost Recovery (PSCR) factor will increase from (0 780) cents/kWh to (0.600) cents/kWh. The PSCR factor allows Detroit Edison to recover its fuel and purchased power expense.

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-3223

## Summary Of Charges

		1			
Account Number	0000-0270-9				
Previous Balance as of 03/1 Payment(s) and Credit(s)	17/2010	_			161,218.97 -161,218.97
Remaining Balance					\$0.00
Current Charges					
Service Location	ltem	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	220	03/11 - 04/12/10	176,539.05
		Тахөз			0.00
		Miscellaneous Charges			0.00
		Current Bill			\$176,539.05
Amount Due on or before	e Due Date of 05/1	1/2010			\$176,539.05
Late Payment Charge if pa	aid after Due Date				3,530 78
Total Amount Due if paid a	after 05/11/2010				180,069.83



-3223

# Detail Charges

Charges for	03/11/2010	through	04/12/2010

					_			
Power Supply Charges:								
Power Supply Demand		4,713	ĸw	@	\$	13.61	(See 3 Above)	64,143,93
Power Supply Energy.		•		0	•		()	01,110.00
Power Supply Energy	1.94	6,560	KWH	a,	\$	0397300	Per Total KWH	77,336 83
Off-Peak Discount	1,44	4,825	KWH	ā	\$	- 0030000		-4,334 48
Voltage Level Discount - SV	1,94	6,560	KWH	ā	\$	0010000		-1.946.56
Surcharges								.,
Enhanced Security Surcharge	1,94	6,560	KWH	@	\$	.0000770	Per Total KWH	149.89
Power Supply Cost Recovery Factor	1,94	6,560	KWH	0	\$	- 0060000	Per Total KWH	-11,679.36
Renewable Energy Plan Surcharge		2	MTR	0	\$	187.50		375.00
	Sub Total							124.045.25
Delivery Charges:								121,010.20
Service Charge								275 00
Distribution.								
Distribution Demand - SV		7,251	KW	Q	\$	1.38	(See F Above)	10.006.38
Distribution Energy - SV	1,94	6,560	KWH	ā	\$	0076200	Per lotal KWH	14,832.79
Surcharges:				_				·
Nuclear Decommissioning	1,94	6,560	KWH	0	\$	.0012340	Per Total KWH	2,402.06
Securitization Bond Charge	1,94	6,560	KWH	Q.	\$	.0049300	Per Total KWH	9,596 54
Securitization Bond Tax Charge	1,94	6,560	KWH	0	\$	.0020800	Per Total KWH	4,048 84
Choice Implementation Surcharge	1,94	6,560	KWH	0	\$	.0005000	Per Total KWH	973.28
Energy Optimization Surcharge		2	MTR	0	\$	283.32		566.64
	Sub Total:							42 701 53
Special Service Charge								9,792 27
Invoice Subtotal					•			176,539.05
No Power Factor Penalty Based on 0 889 P	ower Factor							0.00
Power Factor Penalty Charge Based On No	n-Ratcheted Amo	unt Of	150137	23				0.00
Michigan State Sales Tax On Taxable Portic	on							0.00
Invoice Total								\$176,539.05



Mail Payments To

Cincinnati, OH 45263-0795

DTE Energy P.O. Box 630795

о. J02709 00016121897 в ne <i>nt Coupon</i>		)TE Energy <sup>,</sup>
	Account Number	0000-0270-9
· · · · · · · · · · · · · · · · · · ·	Due Date: Total Due:	April 8, 2010 \$161,218.97

US GOVT GS00S28677 CHIEF FISCAL SERVICES VETERANS ADMIN HOSP AA 2215 FULLER RD ANN ARBOR, MI 48105-2303

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Please detach and roturn coupon with account number on chock. Agencies are not authorized to accopt payment of this bill.

### Account Information

Veterans Admin Hosp AA	Account Number 0000-0			
2215 Fuller Rd ANN ARBOR, MI 48105	DTE-Energy Federal IC	No. 38-3217752		
Programs you are enrolled in:	How to contact us:			
	Power Outage Billing Inquine	See Detail Charges		

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

## Important Information

Effective with the March 2010 billing cycle, the Securitization Bond Charge was increased from \$0.00473 to \$0.00493 per kWh and the Securitization Bond Tax Charge was increased from \$0.00194 to \$0.00208 per kWh.

Page 1 of 6

Account No. 0000-0270-9 Summary ID:165/833

[ 17032010 INDUS 580 RE.]



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### Summary Of Charges

Account Number	0000-0270-9				
Previous Balance as of 02/ Payment(s) and Credit(s)	16/2010				151,751.84 -151,751.84
Romaining Balance					\$0,00
Current Charges					
Service Location	ltem	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037	Primary Supply Rate	220	02/10 - 03/10/10	161,218 97
		Taxes			0.00
		Miscellaneous Charges			0.00
		Current Bill			\$161,218.97
Amount Due on or befor	e Due Date of 04/0	8/2010			\$161,218.97
Late Payment Charge if p	aid after Due Date		<del>n</del>		3,224.38
Total Amount Due if paid a	after 04/08/2010				164 443 35



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**Detail Charges** 

Charges for 02/10/2010 through 03/10/201	0							
Power Supply Charges:								
Power Supply Demand		4,713	KW	@	\$	13 61	(See 3 Above)	64,143 93
Power Supply Energy:							· ·	
Power Supply Energy		1,683,360	KWH	@	\$	0397300	Per Total KWH	66,879.89
Off-Peak Discount		1,227,563	KWH	0	\$	- 0030000		-3,682.69
Voltage Level Discount - SV		1,683,360	KWH	0	5	0010000		-1,683.36
Surcharges:								
Enhanced Security Surcharge		1,683,360	KWH	Q	\$	.0000770	Per Total KWH	129.62
Power Supply Cost Recovery Factor		1,683,360	KWH	ā	\$	0078000	Per Total KWH	-13,130 21
Renewable Energy Plan Surcharge		2	MTR	ā	\$	187.50		375.00
	Sub Total							113.032.18
Delivery Charges:								
Service Charge								275.00
Distribution:								
Distribution Demand - SV		7,251	KW	Ô.	\$	1.38	(See F Above)	10 006 38
Distribution Energy - SV		1,683,360	күн	ă	Ś	.0076200	Per Total KWH	12 827 20
Surcharges:		• •		1. A.	•			12,021.20
Nuclear Decommissioning		1.683.360	KWH	Ø	\$	0012340	Per Total KWH	2 077 27
Securitization Bond Charge		1.683.360	KWH	ð	\$	0049300	Per Total KWH	8 298 96
Securitization Bond Tax Charge	-	1,683,360	KWH	ă	\$	.0020800	Per Total KWH	3 501 39
Choice Implementation Surcharge	-	1.683.360	KWH	ā	Ś	0005000	Per Total KWH	841 68
Energy Optimization Surcharge		2	MTR	ð	\$	283.3 <u>2</u>		566.64
:	Sub Total.							38 394 52
Special Service Charge								9,792.27
Involce Subtotal								161,218,97
No Power Factor Penalty Based on 0 893 Po	wer Factor							0.00
Power Factor Penalty Charge Based On Non	-Ratcheted A	mount Of	129686.	18				0.00
Michigan State Sales Tax On Taxable Portion	1							0.00
Invoice Total								\$161,218,97

Account No: 0000-0270-9 Summary ID 1657833 [.17032010 INDUS 682 RE ]




bill. The credit was part of the Pension Equalization Mechanism (PEM) in Case No. U-15002-R.



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## **Summary Of Charges**

Account Number	0000-0270-9	]			
Previous Balance as of 01/1 Payment(s) and Credit(s) Remaining Balance	19/2010				180,502.98 -180,502.98 \$0.00
Current Charges					
Service Location	ltem	Service Type	Rate	Bill Period	Amount
2215 Fuller Rd	10037 10037	Primary Supply Rate Primary Supply Rate	220 220	01/12 - 01/25/10 01/26 - 02/09/10	68,481.90 83,269 94
		Taxes Miscellaneous Charges			0,00 0.00
		Current Bill		7	\$151,751.84
Amount Due on or before	Due Date of 03/1	0/2010		,	\$151,751.84
Late Payment Charge if pa Total Amount Due if paid a	iid after Due Date ifter 03/10/2010		- · · · ·		3,035.04 154,786.88



### Charges for 01/12/2010 through 01/25/2010

P	ower Supply Charges:			,			
	Power Supply Demand	4,713	KW	0	\$ 13.75	(See 3 Above)	31,284,66
	Power Supply Energy	924 500	123 A 21 1	~	•		-
	Off-Peak Discount	602 095	KWH	œ	\$ .0401400 \$ 0000000	Per Total KWH	32,975.81
	Voltage Level Discount - SV	821 520	INVERT KNA/M	<u>a</u>	Φ0030000 \$ 0010000		-1,806.29
	Surcharges:	021,020	124411	G	φ0010000		<b>-8</b> 21.52
	Enhanced Security Surcharge	821 520	кwн	ത	\$ 0000770	Dor Total KML	
	Power Supply Cost Recovery Factor	821,520	KWH	ดื	\$ - 0078000		63.25
	Renewable Energy Plan Surcharge	2	MTR	ð	\$ 187.50		-0,407.86 181.04
_	Sub Total					-	EE 400 40
De	elivery Charges:						55,469.10
	Service Charge						130 70
	Distribution						102.70
	Distribution Demand - SV	7,251	KW	Q	\$ .9400000	(See F Above)	3 290 46
	Distribution Energy - SV	821,520	KWH	@	\$ 0062000	Por Total KWH	5 093 42
	Nuclear Decommission						0,000.04
	Securitization Bood Charge	821,520	KWH	@	\$ .0012340	Per Total KWH	1,013.76
	Securitization Bond Tay Charge	821,520	KWH	@	\$ .0047300	Per Total KWH	3,885.79
	Choice Implementation Surpharpo	821,520	KWH	Q	\$ .0019400	Per Total KWH	1,593.75
	PEM Credit	021,020 801,520	KVVH	õ.	\$ .0005000	Per Total KWH	410.76
	Energy Optimization Surcharge	021,520		e e	Φ0065500	Per Total KWH	-5,380.96
	U-15768 Implementation Surcharge	821,520	KWH	@	\$	Per Total KWH	273.55 2,699.51
	Sub Total:					-	13 012 80
Pe	riod Subtotal						13,012.00
Bil	ling Status Information						68,481.90
1	On peak Pilling Depend						
3	65% High OP Bill Dend, June Octave 44 with a	3,138	KW		ESTABLISH	ED 01/12/2010	11:30
6	Rate Minimum Demand (Site)	4,713	KW		ESTABLISH	ED 09/25/2009	12:30
8	Highest Single Billing Demand	00			ESTABLISH	ED 01/22/1994	00:00
Ď	Current SV High Monthly Demand	3,120	KVV		ESTABLISH	ED 01/12/2010	11:30
Е	50% of the Contract Canacity for SV	3,100	E 15.00		ESTABLISH	ED 01/12/2010	11:30
F	Subtrans Voltage Maximum Demand	3,020	- INVV MOAL		ESTABLISH	ED 09/25/2009	12:30
W	Coincidental Max Onpk KW Dmd at Site	1,201 3,138	K'M			ED 09/25/2009	12:30
	Highest Maximum OnPeak Demand Reactive Demand	1 431					11:30
	kWh percentage change from a year ago	روب. 1	PCT	•	EGIADLISH	ED 01/14/2010	12.00
	Avg Kilowatthours Used Per Day A Year App	59 225	KWH				
	Power Factor (ratio) for all voltages	89	PCT				
	Total number of days in the Billing Period	29	DAYS				
	Excess KVAR for PF less than .8	-0	KVAR				
	Contract Capacity for Location	7.251	KW	•	ESTABLISH	ED 09/25/2000	12 30
	Avg Kilowatthours Used Per Day This Period	59,379	KWH				16.00
	(KVAR) Coincidental Max Demand at Site	1.404	KVAR				





## **Billing Explanation Codes**

Listed below are explanations of the codes used elsewhere in this bill.

#### **Power Factor Code**

- Power factor and penalty are determined as follows.
- (A) Divide the reactive kilovolt ampere hours by the kilowatthours.
- (B) Find the ratio determined in (A) in the left column of the table below.
- (C) The amount in the corresponding row of the middle column is the power factor.
- (D) The amount in the corresponding row of the right column is the penalty, if any, which will be applied to the total amount of the monthly billing.

#### Ratio of Registration of Reactive Component Meter to Registration

of Kilowatthour Meter	Power Factor	Penalty
1.021 and higher	0.699 and lower	See Below
1.020 to 0.883	0.700 to 0.749	3%
0.882 to 0.752	0.750 to 0.799	2%
0.750 to 0.622	0.800 to 0.849	1%
0.621 to 0.000	0.850 to 1.000	None

Below .700 is not permitted. A 25% penalty will be applied to any billing after two consecutive months below .700 power factor.

#### **Billing Demand Codes**

- 1 Highest on-peak demand(kw) value
- 2 50% of the highest monthly billing demand of the preceding eleven months
- 3 65% of the high monthly bill demand occurring June October of the preceding 11 months
- 4 50% of the high monthly bill demand occurring June October of the preceding 11 months
- 5 50% of the contract capacity for the site
- 6 Minimum demand as prescribed by the rate
- 7 65% of the Product Protection Domand
- 8 Highest Single Billing Demand
- 9 65% of high monthly bill demand occurring June October of the preceding 11 months

#### Demand Codes

- A Maximum (metered) demand value at primary voltage for the location
- B 50% of the contract capacity at primary voltage
- C Highest Demand in latest 12 month period at primary voltage
  - D Maximum (metered) demand value at subtransmission voltage for the location
  - E 50% of contract capacity at subtransmission voltage
  - F Highest Demand in latest 12 month period at subtransmission voltage
  - G Maximum (metered) demand value at transmission voltage for the location
  - H 50% of contract capacity at transmission voltage
  - 1 Highest Demand in the latest 12 month period at transmission voltage
  - J Maximum (metered) customer substation demand at subtransmission voltage
  - K 50% of contract capacity for customer substation at subtransmission voltage
  - L Highest Demand in the latest 12 month period for customer substation subtransmission voltage
  - M Maximum (metered) customer substation demand at transmission voltage
  - N 50% of contract capacity for customer substation at transmission voltage
  - P Highest demand in the latest 12 month period for customer substation at transmission voltage
  - R Valley hours
  - W Coincidental Maximum On Peak kilowatt demand at site



# **APPENDIX C**

## NET PRESENT WORTH CALCULATIONS

#### ARGO AND GEDDES DAMS NET PRESENT VALUE ANALYSIS - GEDDES DAM - Sell Directly to DTE Energy

Evaluation Period: Value of Energy (2010)(\$/MWh): Average Annual Generation (MWh): Annual Revenue (2010): Annual Escallation Rate (%): Discount Rate (%): Present Worth Rate (%): Hydro Construction Costs (2010)(\$1,000):	2012-2036 \$52.00 3,358 \$174,626 3.00 4.50 4.50 \$5,342	=	\$0.0520 kW-hrs
Construction Escallation Rate (%):	3.00		

			Со	nstructio	n Es	scallatio	n Rate (%)		3.00										C	Total D&M &
	Year	Present Worth Factor	4 R (\$	Annual evenue \$1,000)	A (\$	nnual O&M 61,000)	Other (\$1,000)	An R (۱	nual Net evenue \$1,000)	Present Worth Factor	F (\$	Net Present Value \$1,000)	Hydro Construct Cost (\$1,000)	Net Present Value (\$1,000)	F (\$	Net Present Value \$1,000)	E P \ (\$	nergy enefit resent /alue (1,000)	( P (\$	Constr Cost resent Value (1,000)
	2010	1.00			\$	110.0	\$ -													
	2011	1.03											\$ 5,502	1.05	\$	5,750			\$	5,750
1	2012	1.06	\$	185	\$	117		\$	69	1.00	\$	69					\$	185	\$	117
2	2013	1.09	\$	191	\$	120		\$	71	0.96	\$	68					\$	183	\$	115
3	2014	1.13	\$	197	\$	124		\$	73	0.92	\$	67					\$	180	\$	113
4	2015	1.16	\$	202	\$	128		\$	75	0.88	\$	66					\$	177	\$	112
5	2016	1.19	\$	209	\$	131		\$	77	0.84	\$	65					\$	175	\$	110
6	2017	1.23	\$	215	\$	135		\$	79	0.80	\$	64					\$	172	\$	109
7	2018	1.27	\$	221	\$	139		\$	82	0.77	\$	63					\$	170	\$	107
8	2019	1.30	\$	228	\$	144		\$	84	0.73	\$	62					\$	167	\$	105
9	2020	1.34	\$	235	\$	148		\$	87	0.70	\$	61					\$	165	\$	104
10	2021	1.38	\$	242	\$	152		\$	89	0.67	\$	60					\$	163	\$	102
11	2022	1.43	\$	249	\$	157		\$	92	0.64	\$	59					\$	160	\$	101
12	2023	1.47	\$	256	\$	162		\$	95	0.62	\$	58					\$	158	\$	100
13	2024	1.51	\$	264	\$	166		\$	98	0.59	\$	58					\$	156	\$	98
14	2025	1.56	\$	272	\$	171		\$	101	0.56	\$	57					\$	154	\$	97
15	2026	1.60	\$	280	\$	177		\$	104	0.54	\$	56					\$	151	\$	95
16	2027	1.65	\$	289	\$	182		\$	107	0.52	\$	55					\$	149	\$	94
17	2028	1.70	\$	297	\$	187		\$	110	0.49	\$	54					\$	147	\$	93
18	2029	1./5	\$	306	\$	193		\$	113	0.47	\$	54					\$	145	\$	91
19	2030	1.81	\$	315	\$	199		\$	11/	0.45	\$	53					\$	143	\$	90
20	2031	1.86	\$	325	\$	205		\$	120	0.43	\$	52					\$	141	\$	89
21	2032	1.92	\$	335	\$ \$	211		\$	124	0.41	\$	51					\$	139	\$	8/
22	2033	1.97	\$	345	\$	217		\$	128	0.40	\$	51					\$	137	\$	86
23	2034	2.03	\$	355	\$	224		\$	131	0.38	\$	50					\$	135	\$	85
24	2035	2.09	\$	366	\$	230	<b>•</b>	\$	135	0.36	\$ ¢	49					\$	133	\$	84
25	2036	2.16	\$	377	\$	237	<b>ъ</b> -	\$	139	0.35	\$	48					\$	131	\$	82
											\$	1,449			\$	5,750	\$	3,915	\$	8,216
	AVG:		Be	enefit Cos	st =	NPV Re	evenue / NF	۷ C	onstructio	on Costs =		0.25				Benefit/C	Cost	Ratio =		0.48

Evaluation Period: Average Annual Revenue from Hydro Offset (2010):	2012-2036 \$276,272	
Discount Rate (%). Present Worth Rate (%):	3.00 4.50 4.50	
Hydro Construction Costs (2010)(\$1,000): Construction Escalation Rate (%):	\$5,342 3.00	
Dedicated Power Line Costs (2010)(\$1,000):	\$587	

		Power								Hydro & Dedicated								norav	J&IVI &		
		Present			ŀ	Hydro	'	Line			Present		Net	Power	Net		Not	B	enefit	``	Cost
		Worth	Δ	nnual	Δ	nnual	Δ	Annual	Ani	nual Net	Worth	F	Present	Construct	Present	F	Present	Р	resent	P	Present
		Factor	Re	venue		O&M	'	O&M	R	evenue	Factor		Value	Cost	Value	•	Value		/alue		Value
	Year	1 40101	(\$	1.000)	(\$	1.000)	(\$	51.000)	(\$	1.000)	1 40101	(5	51.000)	(\$1.000)	(\$1.000)	(5	\$1.000)	(\$	1.000)	(9	S1.000)
			(4	.,,	(Ψ	.,)	(4	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(4	.,,		(	,,	(\$1,000)	(\$1,000)	(	¢.,000)	(Ψ	.,,	(4	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	2010	1.00			\$	110.0	\$	25.0													
	2011	1.03												\$ 6,107	1.05	\$	6,382			\$	6,382
1	2012	1.06	\$	293	\$	117	\$	27	\$	150	1.00	\$	150					\$	293	\$	143
2	2013	1.09	\$	302	\$	120	\$	27	\$	154	0.96	\$	148					\$	289	\$	141
3	2014	1.13	\$	311	\$	124	\$	28	\$	159	0.92	\$	146					\$	285	\$	139
4	2015	1.16	\$	320	\$	128	\$	29	\$	164	0.88	\$	144					\$	281	\$	137
5	2016	1.19	\$	330	\$	131	\$	30	\$	169	0.84	\$	141					\$	277	\$	135
6	2017	1.23	\$	340	\$	135	\$	31	\$	174	0.80	\$	139					\$	273	\$	133
7	2018	1.27	\$	350	\$	139	\$	32	\$	179	0.77	\$	137					\$	269	\$	131
8	2019	1.30	\$	360	\$	144	\$	33	\$	184	0.73	\$	135					\$	265	\$	129
9	2020	1.34	\$	371	\$	148	\$	34	\$	190	0.70	\$	134					\$	261	\$	128
10	2021	1.38	\$	382	\$	152	\$	35	\$	196	0.67	\$	132					\$	257	\$	126
11	2022	1.43	\$	394	\$	157	\$	36	\$	201	0.64	\$	130					\$	254	\$	124
12	2023	1.47	\$	406	\$	162	\$	37	\$	207	0.62	\$	128					\$	250	\$	122
13	2024	1.51	\$	418	\$	166	\$	38	\$	214	0.59	\$	126					\$	246	\$	120
14	2025	1.56	\$	430	\$	171	\$	39	\$	220	0.56	\$	124					\$	243	\$	119
15	2026	1.60	\$	443	\$	177	\$	40	\$	227	0.54	\$	122					\$	239	\$	117
16	2027	1.65	\$	457	\$	182	\$	41	\$	234	0.52	\$	121					\$	236	\$	115
17	2028	1.70	\$	470	\$	187	\$	43	\$	241	0.49	\$	119					\$	233	\$	114
18	2029	1.75	\$	484	\$	193	\$	44	\$	248	0.47	\$	117					\$	229	\$	112
19	2030	1.81	\$	499	\$	199	\$	45	\$	255	0.45	\$	116					\$	226	\$	110
20	2031	1.86	\$	514	\$	205	\$	47	\$	263	0.43	\$	114					\$	223	\$	109
21	2032	1.92	\$	529	\$	211	\$	48	\$	271	0.41	\$	112					\$	219	\$	107
22	2033	1.97	\$	545	\$	217	\$	49	\$	279	0.40	\$	111					\$	216	\$	106
23	2034	2.03	\$	562	\$	224	\$	51	\$	287	0.38	\$	109					\$	213	\$	104
24	2035	2.09	\$	578	\$	230	\$	52	\$	296	0.36	\$	107					\$	210	\$	103
25	2036	2.16	\$	596	\$	237	\$	54	\$	305	0.35	\$	106					\$	207	\$	101
												\$	3,167			\$	6,382	\$	6,194	\$	9,408
	AVG:		Be	nefit Cos	st =	NPV Re	ever	nue / NF	v c	onstructio	on Costs =		0.50				Benefit/C	ost	Ratio =		0.66

Total

2012-2036 \$52.00 <b>2,002</b>	=	\$0.0520 kW-hrs
\$104,122		
3.00		
4.50		
4.50		
\$5,482		
3.00		
	2012-2036 \$52.00 2,002 \$104,122 3.00 4.50 4.50 \$5,482 3.00	2012-2036 \$52.00 = 2,002 \$104,122 3.00 4.50 \$5,482 3.00

			Со	nstructio	n E	scallatio	n Rate (%):		3.00								_		C	Total D&M &
	Year	Present Worth Factor	4 R (\$	Annual evenue 61,000)	A (\$	Annual O&M 61,000)	Other (\$1,000)	Anı Re (\$	nual Net evenue 1,000)	Present Worth Factor	F (1	Net Present Value \$1,000)	Hydro Construct Cost (\$1,000)	Net Present Value (\$1,000)	F (;	Net Present Value \$1,000)	۲ В Р ۱	Benefit resent Value 1,000)	P (\$	Cost Cost Present Value S1,000)
	2010	1.00			\$	110.0	\$-													
	2011	1.03											\$ 5,646	1.05	\$	5,901			\$	5,901
1	2012	1.06	\$	110	\$	117		\$	(6)	1.00	\$	(6)					\$	110	\$	117
2	2013	1.09	\$	114	\$	120		\$	(6)	0.96	\$	(6)					\$	109	\$	115
3	2014	1.13	\$	117	\$	124		\$	(7)	0.92	\$	(6)					\$	107	\$	113
4	2015	1.16	\$	121	\$	128		\$	(7)	0.88	\$	(6)					\$	106	\$	112
5	2016	1.19	\$	124	\$	131		\$	(7)	0.84	\$	(6)					\$	104	\$	110
6	2017	1.23	\$	128	\$	135		\$	(7)	0.80	\$	(6)					\$	103	\$	109
7	2018	1.27	\$	132	\$	139		\$	(7)	0.77	\$	(6)					\$	101	\$	107
8	2019	1.30	\$	136	\$	144		\$	(8)	0.73	\$	(6)					\$	100	\$	105
9	2020	1.34	\$	140	\$	148		\$	(8)	0.70	\$	(6)					\$	98	\$	104
10	2021	1.38	\$	144	\$	152		\$	(8)	0.67	\$	(5)					\$	97	\$	102
11	2022	1.43	\$	148	\$	157		\$	(8)	0.64	\$	(5)					\$	96	\$	101
12	2023	1.47	\$	153	\$	162		\$	(9)	0.62	\$	(5)					\$	94	\$	100
13	2024	1.51	\$	157	\$	166		\$	(9)	0.59	\$	(5)					\$	93	\$	98
14	2025	1.56	\$	162	\$	171		\$	(9)	0.56	\$	(5)					\$	92	\$	97
15	2026	1.60	\$	167	\$	177		\$	(9)	0.54	\$	(5)					\$	90	\$	95
16	2027	1.65	\$	172	\$	182		\$	(10)	0.52	\$	(5)					\$	89	\$	94
1/	2028	1.70	\$	1//	\$	187		\$	(10)	0.49	\$	(5)					\$	88	\$	93
18	2029	1.75	\$	183	\$	193		\$	(10)	0.47	\$	(5)					\$	86	\$	91
19	2030	1.81	\$	188	\$	199		\$	(11)	0.45	\$	(5)					\$	85	\$	90
20	2031	1.86	\$	194	\$	205		\$	(11)	0.43	\$	(5)					\$	84	\$	89
21	2032	1.92	\$	200	\$ ¢	211		\$	(11)	0.41	\$	(5)					\$	83	\$ ¢	8/
22	2033	1.97	\$ ¢	205	\$ ¢	217		\$ ¢	(12)	0.40	\$	(5)					\$	82	\$ ¢	86
23	2034	2.03	\$	212	\$ ¢	224		\$ ¢	(12)	0.38	\$	(5)					\$	80	\$ ¢	85
24	2035	2.09	\$ ¢	218	\$ ¢	230	¢	¢	(12)	0.30	¢	(4)					¢	79	¢	84
20	2036	2.16	Ф	225	\$	237	ъ -	Ф	(13)	0.35	\$	(4)					\$	78	\$	82
											\$	(132)			\$	5,901	\$	2,334	\$	8,367
	AVG:		Benefit Cost = NPV Revenue / NPV Co					onstructio	on Costs =		-0.02				Benefit/C	Cost	Ratio =		0.28	

Evaluation Period: 2012-2036 Average Annual Revenue from Hydro Offset (2010): \$159,870

		Annual Escallation Rate (%)								3.00											
						Discour	nt Ra	ate (%):		4.50											
				Pi	rese	nt Wort	h Ra	ate (%):		4.50											
		Hydro	Con	structior	n Co	sts (201	10)(\$	61,000):		\$5,482											
			Cor	nstructio	n Es	scallatio	n Ra	ate (%):		3.00											
		Dedicate	d Po	wer Line	e Co	sts (201	10)(\$	61,000):		\$781											Total
	Year	Present Worth Factor	A Re (\$	nnual evenue 1,000)	     (\$	Hydro Innual O&M 1,000)	F A (	Power Line nnual D&M 1,000)	Anı Re (\$	nual Net evenue 51,000)	Present Worth Factor	F (1	Net Present Value \$1,000)	Hydro & Dedicated Power Construct Cost (\$1,000)	Net Present Value (\$1,000)	F	Net Present Value \$1,000)	E B Pi \ (\$	nergy enefit resent /alue 1,000)	(\$	)&M & Constr Cost resent Value \$1,000)
	2010	1 00			\$	110.0	\$	25.0													
	2011	1.00			×		Ť	20.0						\$ 6451	1.05	\$	6 741			\$	6 741
1	2012	1.00	\$	170	\$	117	\$	27	\$	26	1 00	\$	26	φ 0,401	1.00	Ψ	0,741	\$	170	ŝ	143
2	2013	1.00	ŝ	175	\$	120	ŝ	27	ŝ	27	0.96	ŝ	26					ŝ	167	ŝ	141
3	2014	1 13	ŝ	180	\$	124	ŝ	28	ŝ	28	0.92	\$	26					ŝ	165	ŝ	139
4	2015	1 16	ŝ	185	\$	128	ŝ	29	ŝ	29	0.88	ŝ	25					ŝ	162	ŝ	137
5	2016	1.19	\$	191	\$	131	\$	30	\$	30	0.84	\$	25					\$	160	\$	135
6	2017	1.23	\$	197	\$	135	\$	31	\$	31	0.80	\$	25					\$	158	\$	133
7	2018	1.27	\$	203	\$	139	\$	32	\$	32	0.77	\$	24					\$	156	\$	131
8	2019	1.30	\$	209	\$	144	\$	33	\$	32	0.73	\$	24					\$	153	\$	129
9	2020	1.34	\$	215	\$	148	\$	34	\$	33	0.70	\$	24					\$	151	\$	128
10	2021	1.38	\$	221	\$	152	\$	35	\$	34	0.67	\$	23					\$	149	\$	126
11	2022	1.43	\$	228	\$	157	\$	36	\$	35	0.64	\$	23					\$	147	\$	124
12	2023	1.47	\$	235	\$	162	\$	37	\$	37	0.62	\$	23					\$	145	\$	122
13	2024	1.51	\$	242	\$	166	\$	38	\$	38	0.59	\$	22					\$	143	\$	120
14	2025	1.56	\$	249	\$	171	\$	39	\$	39	0.56	\$	22					\$	141	\$	119
15	2026	1.60	\$	257	\$	177	\$	40	\$	40	0.54	\$	22					\$	139	\$	117
16	2027	1.65	\$	264	\$	182	\$	41	\$	41	0.52	\$	21					\$	137	\$	115
17	2028	1.70	\$	272	\$	187	\$	43	\$	42	0.49	\$	21					\$	135	\$	114
18	2029	1.75	\$	280	\$	193	\$	44	\$	44	0.47	\$	21					\$	133	\$	112
19	2030	1.81	\$	289	\$	199	\$	45	\$	45	0.45	\$	20					\$	131	\$	110
20	2031	1.86	\$	297	\$	205	\$	47	\$	46	0.43	\$	20					\$	129	\$	109
21	2032	1.92	\$	306	\$	211	\$	48	\$	48	0.41	\$	20					\$	127	\$	107
22	2033	1.97	\$	316	\$	217	\$	49	\$	49	0.40	\$	19					\$	125	\$	106
23	2034	2.03	\$	325	\$	224	\$	51	\$	51	0.38	\$	19					\$	123	\$	104
24	2035	2.09	\$	335	\$	230	\$	52	\$	52	0.36	\$	19					\$	122	\$	103
25	2036	2.16	\$	345	\$	237	\$	54	\$	54	0.35	\$	19					\$	120	\$	101
												\$	558			\$	6,741	\$	3,584	\$	9,768
	AVG:		Ber	nefit Cos	st =	NPV Re	even	ue / NF	v c	onstructio	on Costs =		0.08				Benefit/C	;ost	Ratio =		0.37

#### ARGO AND GEDDES DAMS NET PRESENT VALUE ANALYSIS - ARGO DAM (Option 2) - Sell Directly to DTE Energy

Evaluation Period: Value of Energy (2010)(\$/MWh): Average Annual Generation (MWh): Annual Revenue (2010): Annual Escallation Rate (%): Discount Rate (%): Present Worth Rate (%):	2012-2036 \$52.00 <b>2,504</b> \$130,215 3.00 4.50 4.50	=	\$0.0520 kW-hrs
Hydro Construction Costs (2010)(\$1,000): Construction Escallation Rate (%):	<b>\$9,326</b> 3.00		

			Co	onstruction	n E	scallatio	n Rate (%)	:	3.00									F	nerav	C	Total 0&M & Constr
		Present								Present		Net		Hvdro	Net		Net	E	Benefit		Cost
		Worth		Annual	A	Annual		Anr	nual Net	Worth	I	Present	C	Construct	Present		Present	Р	resent	Р	resent
		Factor	F	Revenue		O&M	Other	Re	evenue	Factor		Value		Cost	Value		Value	١	/alue	,	Value
	Year		(	\$1,000)	(\$	61,000)	(\$1,000)	(\$	1,000)		(	\$1,000)	(	(\$1,000)	(\$1,000)	(	(\$1,000)	(\$	1,000)	(\$	61,000)
	2010	1.00			\$	110.0	\$-														
	2011	1.03											\$	\$ 9,606	1.05	\$	10,038			\$	10,038
1	2012	1.06	\$	138	\$	117		\$	21	1.00	\$	21						\$	138	\$	117
2	2013	1.09	\$	142	\$	120		\$	22	0.96	\$	21						\$	136	\$	115
3	2014	1.13	\$	147	\$	124		\$	23	0.92	\$	21						\$	134	\$	113
4	2015	1.16	\$	151	\$	128		\$	23	0.88	\$	21						\$	132	\$	112
5	2016	1.19	\$	155	\$	131		\$	24	0.84	\$	20						\$	130	\$	110
6	2017	1.23	\$	160	\$	135		\$	25	0.80	\$	20						\$	129	\$	109
7	2018	1.27	\$	165	\$	139		\$	26	0.77	\$	20						\$	127	\$	107
8	2019	1.30	\$	170	\$	144		\$	26	0.73	\$	19						\$	125	\$	105
9	2020	1.34	\$	175	\$	148		\$	27	0.70	\$	19						\$	123	\$	104
10	2021	1.38	\$	180	\$	152		\$	28	0.67	\$	19						\$	121	\$	102
11	2022	1.43	\$	186	\$	157		\$	29	0.64	\$	19						\$	120	\$	101
12	2023	1.47	\$	191	\$	162		\$	30	0.62	\$	18						\$	118	\$	100
13	2024	1.51	\$	197	\$	166		\$	31	0.59	\$	18						\$	116	\$	98
14	2025	1.56	\$	203	\$	171		\$	31	0.56	\$	18						\$	114	\$	97
15	2026	1.60	\$	209	\$	177		\$	32	0.54	\$	18						\$	113	\$	95
16	2027	1.65	\$	215	\$	182		\$	33	0.52	\$	17						\$	111	\$	94
17	2028	1.70	\$	222	\$	187		\$	34	0.49	\$	17						\$	110	\$	93
18	2029	1.75	\$	228	\$	193		\$	35	0.47	\$	17						\$	108	\$	91
19	2030	1.81	\$	235	\$	199		\$	37	0.45	\$	17						\$	106	\$	90
20	2031	1.86	\$	242	\$	205		\$	38	0.43	\$	16						\$	105	\$	89
21	2032	1.92	\$	250	\$	211		\$	39	0.41	\$	16						\$	103	\$	87
22	2033	1.97	\$	257	\$	217		\$	40	0.40	\$	16						\$	102	\$	86
23	2034	2.03	\$	265	\$	224		\$	41	0.38	\$	16						\$	101	\$	85
24	2035	2.09	\$	273	\$	230		\$	42	0.36	\$	15						\$	99	\$	84
25	2036	2.16	\$	281	\$	237	\$-	\$	44	0.35	\$	15						\$	98	\$	82
											\$	453				\$	10,038	\$	2,919	\$	12,504
AVG: Benefit Cost = NPV Revenue				evenue / NF	PV Co	onstructio	on Costs =		0.05	5				Benefit/C	Cost	Ratio =		0.23			

	Evaluation Period: Average Annual Revenue from Hydro Offset (2010): Annual Escallation Rate (%): Discount Rate (%): Present Worth Rate (%): Hydro Construction Costs (2010)(\$1,000) Construction Escallation Rate (%): Dedicated Power Line Costs (2010)(\$1,000) Power									12-2036 3.00 4.50 <b>\$9,326</b> 3.00 <b>\$781</b>				Hydro & Dedicated				E	nergy	٦ O C	Fotal &M & constr				
		Worth		Annual		Hydro		Line	۸n	nual Not	Worth		Net	Construct	Net		Net Procont	В	enerit		JOSI				
		Factor	E			∩&M		∩&M	R		Factor	I	Value	Cost	Value		Value		/alue		/alue				
	Year	1 dotoi	(\$1,000)		(\$1.000)		(\$1.000)		(\$1.000)		T actor	(\$1,000)		(\$1.000)	(\$1.000)	(\$1,000)		(\$	1.000)	(\$	1.000)				
			``	+ ., ,	(+	.,,	(+	.,,	(	,,		`	+ ,,	(+ - , )	(+ - , )		(+ : , )	(+	.,,	(+	.,,				
	2010	1.00			\$	110.0	\$	25.0																	
	2011	1.03												\$ 10,410	1.05	\$	10,879			\$ 1	10,879				
1	2012	1.06	\$	218	\$	117	\$	27	\$	75	1.00	\$	75					\$	218	\$	143				
2	2013	1.09	\$	225	\$	120	\$	27	\$	77	0.96	\$	74					\$	215	\$	141				
3	2014	1.13	\$	231	\$	124	\$	28	\$	79	0.92	\$	73					\$	212	\$	139				
4	2015	1.16	\$	238	\$	128	\$	29	\$	82	0.88	\$	72					\$	209	\$	137				
5	2016	1.19	\$	245	\$	131	\$	30	\$	84	0.84	\$	/1					\$	206	\$	135				
6 7	2017	1.23	\$ ¢	253	\$ ¢	135	\$ ¢	31	\$ ¢	8/	0.80	\$	70					\$ ¢	203	\$	133				
0	2018	1.27	¢	200	¢	139	¢	32	¢ ¢	69	0.77	ф Ф	69 69					¢ ¢	200	¢	120				
0	2019	1.30	φ ¢	200	φ ¢	1/10	φ ¢	34	φ ¢	92	0.73	φ ¢	67					φ ¢	10/	φ Φ	129				
10	2020	1.34	φ \$	285	φ ¢	140	φ ¢	35	φ \$	95	0.70	φ \$	66					φ \$	194	φ \$	120				
11	2022	1.00	\$	293	ŝ	157	ŝ	36	\$	101	0.64	\$	65					\$	189	ŝ	120				
12	2023	1.10	\$	302	ŝ	162	ŝ	37	\$	104	0.62	ŝ	64					\$	186	\$	122				
13	2024	1.51	\$	311	\$	166	\$	38	\$	107	0.59	\$	63					\$	183	\$	120				
14	2025	1.56	\$	320	\$	171	\$	39	\$	110	0.56	\$	62					\$	181	\$	119				
15	2026	1.60	\$	330	\$	177	\$	40	\$	113	0.54	\$	61					\$	178	\$	117				
16	2027	1.65	\$	340	\$	182	\$	41	\$	117	0.52	\$	60					\$	176	\$	115				
17	2028	1.70	\$	350	\$	187	\$	43	\$	120	0.49	\$	59					\$	173	\$	114				
18	2029	1.75	\$	361	\$	193	\$	44	\$	124	0.47	\$	59					\$	171	\$	112				
19	2030	1.81	\$	371	\$	199	\$	45	\$	128	0.45	\$	58					\$	168	\$	110				
20	2031	1.86	\$	382	\$	205	\$	47	\$	131	0.43	\$	57					\$	166	\$	109				
21	2032	1.92	\$	394	\$	211	\$	48	\$	135	0.41	\$	56					\$	163	\$	107				
22	2033	1.97	\$	406	\$	217	\$	49	\$	139	0.40	\$	55					\$	161	\$	106				
23	2034	2.03	\$	418	\$	224	\$	51	\$	144	0.38	\$	54					\$	159	\$	104				
24	2035	2.09	\$	430	\$	230	\$	52	\$	148	0.36	\$	54					\$	156	\$	103				
25	2036	2.16	\$	443	\$	237	\$	54	\$	152	0.35	\$	53					\$	154	\$	101				
												\$	1,583			\$	10,879	\$	4,609	<b>\$</b> 1	13,905				
AVG: Benefit Cost = NPV Revenue / NPV										onstructio	on Costs =		0.15				Benefit/C	fit/Cost Ratio = 0.33							

#### ARGO AND GEDDES DAMS NET PRESENT VALUE ANALYSIS - GEDDES & ARGO (Option 1) DAMS - Sell Directly to DTE Energy

Evaluation Period: Value of Energy (2010)(\$/MWh): Average Annual Generation (MWh): Annual Revenue (2010): Annual Escallation Rate (%): Discount Rate (%): Present Worth Rate (%): Hydro Construction Costs (2010)(\$1,000):	2012-2036 \$52.00 <b>5,361</b> \$278,748 3.00 4.50 4.50 <b>\$10,824</b>	=	\$0.0520 kW-hrs
Construction Escallation Rate (%):	3.00		

		,	Co	onstruction	n Es	scallatio	n Rate (%)		3.00								F	nerav	0	Total &M &	
		Present Worth		Annual	A	nnual		An	nual Net	Present Worth	I	Net Present	Hydro Construct	Net Present	I	Net Present	B	enefit resent	P	Cost resent	
		Factor	F	levenue	O&M (\$1,000)		Other	Reve	evenue	Factor		Value	Cost	Value		Value	١	/alue	Value		
	Year		(	\$1,000)			(\$1,000)	(\$1,000)			(	\$1,000)	(\$1,000)	(\$1,000)	(	\$1,000)	(\$	1,000) (\$		1,000)	
	2010	1.00			\$	220.0	\$-														
	2011	1.03											\$ 11,149	1.05	\$	11,650			\$	11,650	
1	2012	1.06	\$	296	\$	233		\$	62	1.00	\$	62					\$	296	\$	233	
2	2013	1.09	\$	305	\$	240		\$	64	0.96	\$	61					\$	291	\$	230	
3	2014	1.13	\$	314	\$	248		\$	66	0.92	\$	61					\$	287	\$	227	
4	2015	1.16	\$	323	\$	255		\$	68	0.88	\$	60					\$	283	\$	223	
5	2016	1.19	\$	333	\$	263		\$	70	0.84	\$	59					\$	279	\$	220	
6	2017	1.23	\$	343	\$	271		\$	72	0.80	\$	58					\$	275	\$	217	
7	2018	1.27	\$	353	\$	279		\$	74	0.77	\$	57					\$	271	\$	214	
8	2019	1.30	\$	364	\$	287		\$	77	0.73	\$	56					\$	267	\$	211	
9	2020	1.34	\$	375	\$	296		\$	79	0.70	\$	56					\$	263	\$	208	
10	2021	1.38	\$	386	\$	305		\$	81	0.67	\$	55					\$	260	\$	205	
11	2022	1.43	\$	397	\$	314		\$	84	0.64	\$	54					\$	256	\$	202	
12	2023	1.47	\$	409	\$	323		\$	86	0.62	\$	53					\$	252	\$	199	
13	2024	1.51	\$	422	\$	333		\$	89	0.59	\$	52					\$	249	\$	196	
14	2025	1.56	\$	434	\$	343		\$	92	0.56	\$	52					\$	245	\$	193	
15	2026	1.60	\$	447	\$	353		\$	94	0.54	\$	51					\$	242	\$	191	
16	2027	1.65	\$	461	\$	364		\$	97	0.52	\$	50					\$	238	\$	188	
1/	2028	1.70	\$	475	\$	375		\$	100	0.49	\$	49					\$	235	\$	185	
18	2029	1.75	\$	489	\$	386		\$	103	0.47	\$	49					\$	231	\$	183	
19	2030	1.81	\$	503	\$	397		\$	106	0.45	\$	48					\$	228	\$	180	
20	2031	1.86	\$	519	\$	409		\$	109	0.43	\$	47					\$	225	\$	1//	
21	2032	1.92	\$	534	\$ ¢	422		\$	113	0.41	\$	47					\$	221	\$ ¢	175	
22	2033	1.97	\$	550	\$	434		\$	116	0.40	\$	46					\$	218	\$	1/2	
23	2034	2.03	\$	567	\$ ¢	447		\$	100	0.38	\$	45					\$ ¢	215	\$ ¢	1/0	
24	2035	2.09	\$	584	\$ ¢	401	¢	¢	123	0.30	¢	45					¢	212	¢	107	
25	2036	2.10	ф	601	þ	474	φ -	Ф	127	0.35	Þ	44					Ф	209	Ф	105	
											\$	1,317			\$	11,650	\$	6,249	\$	16,583	
	AVG:		В	enefit Cos	st =	NPV Re	evenue / NF	PV C	onstructio	on Costs =		0.11				Benefit/C	Cost	Ratio =		0.38	

Evaluation Period: Average Annual Revenue from Hydro Offset (2010): Annual Escallation Rate (%): Discount Rate (%): Present Worth Rate (%): Hydro Construction Costs (2010)(\$1,000): Construction Escallation Rate (%): Dedicated Power Line Costs (2010)(\$1,000):										12-2036 436,142 3.00 4.50 \$10,824 3.00 \$1,325				Hydro &						1	Fotal &M &		
	Year	Present Worth Factor	Present H Worth Annual Ar Factor Revenue C (\$1,000) (\$-		Hyo nal Anr nue O& 00) (\$1,0		Power Line Annual O&M (\$1,000)		Annual Net Revenue (\$1,000)		Present Worth Factor	Net Present Value (\$1,000)		Dedicated Power Construct Cost (\$1,000)	Net Present Value (\$1,000)	Net Present Value (\$1,000)		Energy Benefit Present Value (\$1,000)		Constr Cost Present Value (\$1,000)			
	2010	1.00			\$	220.0	\$	50.0															
	2011	1.03												\$ 12,513	1.05	\$	13,077			\$ 1	3,077		
1	2012	1.06	\$	463	\$	233	\$	53	\$	176	1.00	\$	176					\$	463	\$	286		
2	2013	1.09	\$	477	\$	240	\$	55	\$	182	0.96	\$	174					\$	456	\$	282		
3	2014	1.13	\$	491	\$	248	\$	56	\$	187	0.92	\$	171					\$	450	\$	278		
4	2015	1.16	\$	506	\$	255	\$	58	\$	193	0.88	\$	169					\$	443	\$	274		
5	2016	1.19	\$	521	\$	263	\$	60	\$	198	0.84	\$	166					\$	437	\$	270		
6	2017	1.23	\$	536	\$	2/1	\$	61	\$	204	0.80	\$	164					\$	430	\$	266		
/	2018	1.27	\$	552	\$	279	\$	63	\$	210	0.77	\$	162					\$	424	\$	263		
8	2019	1.30	\$ ¢	569	\$ ¢	287	\$	65	\$	217	0.73	\$ ¢	159					\$	418	\$	259		
10	2020	1.34	\$ ¢	586	\$ ¢	296	\$ ¢	67	\$	223	0.70	\$ ¢	15/					\$ ¢	412	\$	255		
10	2021	1.30	¢	604	¢	305	¢	09	ф Ф	230	0.67	¢	155					¢ ¢	406	¢ ¢	201		
10	2022	1.43	¢ ¢	640	¢	314	¢ ¢	71	ф Ф	237	0.04	ф ф	155					ф Ф	205	ф Ф	240		
12	2023	1.47	¢ ¢	660	φ ¢	323	ф Ф	73	ф Ф	244	0.02	φ ¢	1/0					ф ф	390	ф Ф	244		
14	2024	1.51	φ ¢	670	φ ¢	242	φ ¢	70	φ Φ	251	0.59	φ ¢	140					φ ¢	203	φ Φ	241		
14	2025	1.50	φ Φ	700	φ Φ	353	φ Φ	80	φ Φ	209	0.50	φ Φ	140					φ Φ	378	φ Φ	23/		
16	2020	1.00	Ψ \$	700	Ψ \$	364	Ψ \$	83	Ψ ¢	275	0.54	Ψ \$	149					Ψ \$	372	Ψ \$	231		
17	2028	1.00	ŝ	743	ŝ	375	ŝ	85	ŝ	283	0.02	ŝ	140					ŝ	367	ŝ	227		
18	2029	1.70	ŝ	765	\$	386	\$	88	ŝ	291	0.10	ŝ	138					\$	362	ŝ	224		
19	2030	1.81	\$	788	\$	397	\$	90	\$	300	0.45	\$	136					\$	357	\$	221		
20	2031	1.86	\$	811	\$	409	\$	93	\$	309	0.43	\$	134					\$	352	\$	218		
21	2032	1.92	\$	836	\$	422	\$	96	\$	318	0.41	\$	132					\$	347	\$	215		
22	2033	1.97	\$	861	\$	434	\$	99	\$	328	0.40	\$	130					\$	342	\$	211		
23	2034	2.03	\$	887	\$	447	\$	102	\$	338	0.38	\$	128					\$	337	\$	208		
24	2035	2.09	\$	913	\$	461	\$	105	\$	348	0.36	\$	126					\$	332	\$	205		
25	2036	2.16	\$	941	\$	474	\$	108	\$	358	0.35	\$	125					\$	327	\$	202		
												\$	3,725			\$	13,077	\$	9,778	<b>\$</b> 1	9,130		
AVG: Benefit Cost = NPV Revenue / NPV Co											on Costs =	ists = 0.28 Benefit/Cost							Ratio = 0.51				