DTE Energy's Your Energy Savings[SM] Program

Policies and Procedures Manual

July 7, 2009
(2009 Program Year)

DTE Energy's Your Energy Savings Program provides incentives for business customers who upgrade their facilities with energy efficient equipment. This program is available to all customers who receive electric or natural gas delivery service from DTE Energy. This document conveys the rules, policies and procedures that govern program administration and customer participation. It is a companion document to the Incentive Application forms.

Please contact DTE Energy's Your Energy Savings Program staff with any questions.

1-866-796-0512 (phone)
Email: YourEnergySavings@kema.com

www.YourEnergySavings.com

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P.1 PROGRAM OVERVIEW

DTE Energy is offering a comprehensive set of incentives under the Your Energy Savings Program to facilitate the implementation of cost-effective energy efficiency improvements for business customers.

The various program offerings are summarized below. The following sections provide detailed information on the actual measures and specific program details related to each of the various offerings. Application forms for all programs are available on DTE Energy's Your Energy Savings website: www.YourEnergySavings.com.

P.1.1 Incentives

Prescriptive Incentives are available for energy efficiency equipment upgrades and improvements including lighting, cooling, gas water heating, and motors. Incentives are paid based on the quantity, size, and efficiency of the equipment. Incentives are provided for qualified equipment commonly installed in a retrofit or equipment replacement situation.

Custom Incentives are available to customers for less common or more complex energy saving measures installed in qualified retrofit and equipment replacement projects. Custom measure incentives are paid based on the first-year energy (kWh or MCF) savings. Projects involving measures covered by the prescriptive incentive portion of the program are not eligible for a custom incentive. Applicants have the option to apply for a custom incentive for projects that involve an integrated solution with both prescriptive and custom measures.

Other incentives may be available through the **New Construction and RFP** Programs, all of which will be added to the program in late 2009 /early 2010.

P.2 PROGRAM EFFECTIVE DATES

DTE Energy's Your Energy Savings Program offers incentives for a current program year until approved funds are exhausted or until December 31st of each program year, whichever comes first. The effective dates of DTE Energy's Your Energy Savings Program and application submittal requirements are as follows:

- Any energy efficient equipment or services purchased, installed, completed, and commissioned prior to January 1, 2009 are not eligible for an incentive.
- All 2009 DTE Energy's Your Energy Savings projects must be completed and Final Applications (described herein) received no later than December 15, 2009, to be eligible for 2009 program incentives.
- Subsequent program year budgets and plans will be made available towards the end of the existing program year.

P.3 CUSTOMER ELIGIBILITY

Customer eligibility parameters for DTE Energy's Your Energy Savings Program are as follows:

- This program is available to commercial and/or industrial customers of DTE Energy. Customers that are billed on non-residential rates are classified as business customers. Qualified measures must be installed at facilities served by DTE Energy, and projects must result in an improvement in energy efficiency as set forth in section P.12. Equipment must meet the specifications as explained in Section P.8 and also as set forth in the Program application.
- For each site there must be at least one meter that is on an eligible rate schedule.
- Common areas of multi-family or mixed-use buildings are eligible if on an eligible rate schedule.
- Customer cannot apply for nor receive incentives for the same product, equipment or service from more than one utility.

P.4 PROJECT REQUIREMENTS

DTE Energy's Your Energy Savings Program includes the following project requirements:

- Projects must involve a facility improvement that results in a permanent[1] reduction in electrical and/or gas energy usage (kWh and/or MCF)
- Project savings must be sustainable for a period of five years or for the life of the product, whichever is less
- Projects that are **NOT** eligible for an incentive include the following:
    - Fuel switching (e.g., electric to gas or gas to electric)
    - Changes in operational and/or maintenance practices or simple control modifications that do not involve capital costs
    - On-site electricity generation
    - Projects that involve peak-shifting with no kWh savings
    - Projects involving renewable energy
- Any measures installed at a facility must be sustainable and provide 100 percent of the energy benefits as stated in the Application for a period of five (5) years or for the life of the product, whichever is less. If the customer ceases to be a delivery service customer of DTE Energy, or removes the equipment or systems at any time during the 5-year period or the life of the product, the customer may be required to return a prorated amount of incentive funds to DTE Energy.
- DTE Energy reserves the right to inspect proposed projects pre- and post- equipment installation.

P.5 INCENTIVE CAPS AND LIMITS

Incentives are subject to limits to encourage equitable distribution of the funds among as many utility customers as possible.

[1] For the life of the product.

P.5.1 Facility/Customer Limits

Program incentives are limited per facility per year. Customer incentive limits are across all facilities. A facility is defined as any single meter or multiple meters on a single property for which a single customer is responsible for paying the DTE Energy electricity and/or gas bill.

Customers saving electricity may receive up to $150,000 per facility per program year; the total customer cap (across all facilities saving electricity) is $500,000 per program year. Customers saving gas may receive up to $25,000 per facility per program year; the total customer cap (across all facilities saving gas) is $100,000 per program year.

Table 5-1: Program Year Incentive Limits

Cap Level	Electricity	Gas
Facility	$150,000	$25,000
Customer	$500,000	$100,000

The incentive limits are based on actual payments per facility (or customer), and apply even if payments for some or all projects are paid to one or more contractors.

P.5.2 Project Incentive Caps

For custom projects, project incentives may not exceed 50 percent of the total custom project cost for purchasing and installing energy efficiency measures. The project cap applies to the whole custom project. Internal customer labor costs cannot be included in the total project cost. DTE Energy reserves the right to apply this cap to individual custom measures when measure costs are significantly higher than typical costs seen in this program.

P.6 PRESCRIPTIVE INCENTIVES

DTE Energy's Your Energy Savings Program offers prescriptive incentives for improvements to lighting, HVAC, motors and drives, gas water heaters, industrial processes, food service, and other miscellaneous measures.

Prescriptive – Lighting

Incentives are paid per unit or fixture as noted in the Tables 6-1 to 6-8 below. Detailed specifications are provided in Section P.8.

Table 6-1: Prescriptive Lighting Incentives – CFLs and LEDs

Equipment Type	Incentive	Unit Definition
CFL - Screw-in (≤ 31 Watts)	$1.50	Lamp
CFL - Screw-in (> 31 Watts)	$5.00	Lamp
CFL Reflector Flood Lamps	$5.00	Lamp
Compact Fluorescent Fixture	$22.00	Fixture
42W 8 Lamp High Bay Compact Fluorescent Fixture	$75.00	Fixture
ENERGY STAR® Qualified LED Recessed Down Light	$30.00	Fixture

Table 6-2: Prescriptive Lighting Incentives – Standard Linear Fluorescent Retrofit (T12 to T8 or T5)

Equipment Type	Incentive	Unit Definition
1 Lamp T5	$10.50	Fixture
2 Lamp T5	$15.00	Fixture
3 Lamp T5	$18.00	Fixture
4 Lamp T5	$21.00	Fixture
1 lamp, 4ft T8	$7.50	Fixture
2 lamp, 4ft T8	$9.00	Fixture
3 lamp, 4ft T8	$11.00	Fixture
4 lamp, 4ft T8	$13.00	Fixture
1 lamp, 8ft T8	$7.00	Fixture
2 lamp, 8ft T8	$9.00	Fixture
1 lamp, 2ft T8	$7.50	Fixture
2 lamp, 2ft T8	$9.00	Fixture
3 lamp, 2ft T8	$9.30	Fixture
4 lamp, 2ft T8	$12.00	Fixture
1 lamp, 3ft T8	$7.50	Fixture
2 lamp, 3ft T8	$9.00	Fixture
3 lamp, 3ft T8	$12.75	Fixture
4 lamp, 3ft T8	$18.00	Fixture

Table 6-3: Prescriptive Lighting Incentives – High Output (HO) Linear Fluorescents (T12 to T8 or T5)

Equipment Type	Incentive	Unit Definition
1 lamp, 8ft T8 HO	$18.00	Fixture
2 lamp, 8ft T8 HO	$24.00	Fixture
1 Lamp T5 HO	$12.00	Fixture
2 Lamp T5 HO	$16.50	Fixture
3 Lamp T5 HO	$19.50	Fixture
4 Lamp T5 HO	$22.50	Fixture

Table 6-4: Prescriptive Lighting Incentives – High Performance (HP) and Low Wattage (LW) 4-foot Linear Fluorescents

Equipment Type	Incentive	Unit Definition
LW T8 (Lamps Only)	$0.75	Lamp
1 lamp HP T8, replacing T8	$6.00	Fixture
2 lamp HP T8, replacing T8	$7.50	Fixture
3 lamp HP T8, replacing T8	$12.00	Fixture
4 lamp HP T8, replacing T8	$16.00	Fixture
1 lamp LW HP T8, replacing T8	$6.00	Fixture
2 lamp LW HP T8, replacing T8	$9.00	Fixture
3 lamp LW HP T8, replacing T8	$15.00	Fixture
4 lamp LW HP T8, replacing T8	$18.00	Fixture
1 lamp HP T8, replacing T12	$15.00	Fixture
2 lamp HP T8, replacing T12	$22.50	Fixture
3 lamp HP T8, replacing T12	$20.00	Fixture
4 lamp HP T8, replacing T12	$30.00	Fixture
2 lamp HP T8, replacing T12 8ft 1 lamp	$15.00	Fixture
4 lamp HP T8, replacing T12 8ft 2 lamp	$22.50	Fixture
2 lamp HP T8, replacing T12 HO 8ft 1 lamp	$20.00	Fixture
4 lamp HP T8, replacing T12 HO 8ft 2 lamp	$30.00	Fixture

Table 6-5: Prescriptive Lighting Incentives – Interior HID Conversion to Fluorescent Fixtures

Equipment Type	Incentive	Unit Definition
3 Lamp T5 HO, replacing 250W HID	$80.00	Fixture
4 Lamp T5 HO, replacing 400W HID	$96.00	Fixture
6 Lamp T5 HO, replacing 400W HID	$60.00	Fixture
Two 6 Lamp T5 HO, replacing 1000W HID	$150.00	Fixture
4 Lamp 32W T8, replacing 250W HID	$75.00	Fixture
6 Lamp 32W T8, replacing 400W HID	$80.00	Fixture
8 Lamp 32W T8, replacing 400W HID	$80.00	Fixture
Two 8 lamp 32W T8, replacing 1000W HID	$200.00	Fixture
Pulse Start Metal Halide (retrofit only)	$75.00	Fixture

Table 6-6: Prescriptive Lighting Incentives **–** Exterior and Garage HID Conversions to LED or Induction

Equipment Type	Incentive	Unit Definition
Exterior ≤175W HID	$100.00	Fixture
Exterior 175W to 250W HID	$150.00	Fixture
Exterior 250W to 400W HID	$180.00	Fixture
Garage ≤175W HID	$120.00	Fixture
Garage 175W to 250W HID	$150.00	Fixture
Garage 250W to 400W HID	$180.00	Fixture

Table 6-7: Prescriptive Lighting Incentives – Exit Signs and LED Traffic Signals

Equipment Type	Incentive	Unit Definition
LED Exit Signs Electronic Fixtures (Retrofit Only)	$12.50	Fixture
Auto Traffic Signals	$25.00	Signal
Pedestrian Signals	$50.00	Signal

Table 6-8: Prescriptive Lighting Incentives – Controls and Light Tubes

Equipment Type	Incentive	Unit Definition
Occupancy Sensors (≤ 500 Watts Controlled)	$30.00	Sensor
Occupancy Sensors (> 500 Watts Controlled)	$50.00	Sensor
Central Lighting Control	$600.00	10,000 SF
Switching Controls for Multilevel Lighting	$600.00	10,000 SF
Daylight Sensor Controls	$900.00	10,000 SF
Exterior Lighting Bi-level Control w/Override, 150W to 1000W HID	$125.00	Fixture
Light Tube	$187.50	Tube

Prescriptive – HVAC (Electric)

Detailed product specifications are discussed in Section P.8. Cooling equipment must meet the minimum qualifying efficiency levels as shown in Qualifying Efficiency column of the tables below.

Table 6-9: Prescriptive HVAC (Electric) Incentives

Equipment Type	Size Category	Qualifying Efficiency	Incentive (per ton)
Unitary and Split Air Conditioning Systems	≤ 65,000 Btuh (5.4 tons) 1 Phase	14.0 SEER	$30.00
	≤ 65,000 Btuh (5.4 tons) 3 Phase	13.0 SEER	$30.00
	> 65,000 Btuh (5.4 tons), ≤ 135,000 Btuh (11.3 tons)	11.0 EER	$40.00
	> 135,000 Btuh (11.3 tons), ≤ 240,000 Btuh (20 tons)	11.0 EER	$40.00
	> 240,000 Btuh (20 tons), ≤ 760,000 Btuh (63.3 tons)	10.0 EER	$40.00
	> 760,000 Btuh (63.3 tons)	10.0 EER	$30.00
Air Source Heat Pumps	≤ 65,000 Btuh (5.4 tons) 1 Phase	14.0 SEER	$26.00
	≤ 65,000 Btuh (5.4 tons) 3 Phase	13.0 SEER	$26.00
	> 65,000 Btuh (5.4 tons), ≤ 135,000 Btuh (11.3 tons)	11.0 EER	$40.00
	> 135,000 Btuh (11.3 tons), ≤ 240,000 Btuh (20 tons)	10.0 EER	$35.00
	>240,000 Btuh (20 tons)	10.0 EER	$36.00
Water Loop Heat Pump	≤ 17,000 Btuh (1.4 tons)	11.5 EER	$20.00
	> 17,000 Btuh (1.4 tons), ≤ 65,000 Btuh (5.4 tons)	12.3 EER	$15.00
	> 65,000 Btuh (5.4 tons), ≤ 135,000 Btuh (11.3 tons)	12.3 EER	$13.00
Room Air Conditioners	≤14,000 Btuh (1.17 tons)	ENERGY STAR®	$75.00
	>14,000 Btuh (1.17 tons)	ENERGY STAR®	$50.00
Package Terminal Air Conditioner	All	9.2 EER	$25.00
Package Terminal Heat Pump	All	9.0 EER	$30.00
Ground-Source Heat Pump	≤ 135,000 Btuh (11.3 tons)	EER = 17	$22.50
		EER = 19	$30.00
Ground Source Heat Pump - Air Source Base	> 135,000 Btuh (11.3 tons)	EER = 17	$150.00
		EER = 19	$175.00
Air-cooled Chiller	ALL	Full Load Efficiency ≤ 1.16 kW/ton	$40.00

Table 6-10: Other Prescriptive HVAC (Electric) Incentives

Measure Name	Unit Definition	Size Category	Incentive Per Unit
Programmable Thermostat (Air Conditioning)*	Unit	ALL	$20.00
Energy Management System*	1,000 SF of Conditioned Floor Area	ALL	$2.86
Hotel Guestroom Energy Management Control (Air Conditioning)*	Unit	ALL	$30.00
Chilled Water Reset - Air Cooled	Ton	≤ 100 tons	$2.00
		> 100 tons, ≤ 200 tons	$1.33
		> 200 tons, ≤ 300 tons	$1.20
		> 300 tons, ≤ 400 tons	$1.14
		> 400 tons, ≤ 500 tons	$1.11
Chilled Water Reset - Water Cooled	Ton	≤ 1,000 tons	$1.00
		> 1,000 tons, ≤ 2,000 tons	$0.50
		> 2,000 tons, ≤ 3,000 tons	$0.35
Variable Frequency Drive - VAV Fan	Fan HP	ALL	$60.00
Variable Frequency Drive - Secondary Chilled Water Pump*	Pump HP	ALL	$60.00
Economizer	Ton	ALL	$8.00
Cool Roof	1,000 SF Roof Area	ALL	$50.00
High Performance Glazing	100 SF of Glazing	ALL	$100.00
Window Film	100 SF of Glazing	ALL	$70.00

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Table 6-11: Water-cooled Centrifugal Chiller Prescriptive HVAC (Electric) Incentives

Equipment Type and Capacity Range (tons)	Qualifying Full Load Efficiency (kW/ton)	Qualifying IPLV (kW/ton)	Incentive ($ per ton)
Centrifugal Chiller ≤ 150 tons	0.56	0.34	45.00
		0.40	40.00
		0.43	35.00
		0.46	30.00
		0.53	25.00
	0.63	0.38	30.00
		0.45	25.00
		0.48	20.00
		0.51	15.00
		0.60	10.00
	0.70	0.42	20.00
		0.50	15.00
		0.53	10.00
		0.57	5.00
Centrifugal Chiller >150 tons, ≤ 300 tons	0.51	0.30	45.00
		0.36	40.00
		0.39	35.00
		0.41	30.00
		0.48	25.00
	0.57	0.34	30.00
		0.40	25.00
		0.43	20.00
		0.46	15.00
		0.54	10.00
	0.63	0.38	20.00
		0.45	15.00
		0.48	10.00
		0.51	5.00
Centrifugal Chiller > 300 tons	0.46	0.28	45.00
		0.33	40.00
		0.35	35.00
		0.37	30.00
		0.44	25.00
	0.52	0.31	30.00
		0.37	25.00
		0.39	20.00
		0.42	15.00
		0.49	10.00
	0.58	0.35	20.00
		0.41	15.00
		0.44	10.00
		0.47	5.00

Table 6-12: Water-cooled Screw Chiller Prescriptive HVAC (Electric) Incentives

Equipment Type and Capacity Range (tons)	Qualifying Efficiency(kW/ton)	Qualifying IPLV(kW/ton)	Incentive ($ per ton)
Screw Chiller < 150 tons	0.63	0.38	50.00
		0.41	45.00
		0.44	40.00
		0.47	35.00
		0.50	30.00
		0.56	25.00
	0.71	0.43	40.00
		0.46	35.00
		0.50	30.00
		0.53	25.00
		0.56	20.00
		0.63	15.00
	0.79	0.47	30.00
		0.51	25.00
		0.55	20.00
		0.59	15.00
		0.62	10.00
Screw Chiller 150-300 tons	0.57	0.34	50.00
		0.37	45.00
		0.40	40.00
		0.43	35.00
		0.45	30.00
		0.51	25.00
	0.65	0.39	40.00
		0.42	35.00
		0.45	30.00
		0.48	25.00
		0.51	20.00
		0.57	15.00
	0.72	0.43	30.00
		0.47	25.00
		0.50	20.00
		0.54	15.00
		0.57	10.00

Table 6-12 con't: Water-cooled Screw Chiller Prescriptive HVAC (Electric) Incentives

Equipment Type and Capacity Range (tons)	Qualifying Efficiency(kW/ton)	Qualifying IPLV(kW/ton)	Incentive ($ per ton)
Screw Chiller > 300 tons	0.51	0.31	50.00
		0.33	45.00
		0.36	40.00
		0.38	35.00
		0.40	30.00
		0.46	25.00
	0.58	0.35	40.00
		0.37	35.00
		0.40	30.00
		0.43	25.00
		0.45	20.00
		0.51	15.00
	0.64	0.38	30.00
		0.42	25.00
		0.45	20.00
		0.48	15.00
		0.51	10.00

Prescriptive – HVAC (gas)

Incentives are paid per unit except as noted in Table 6-13 below. Detailed product specifications are discussed in Section P.8.

Table 6-13: Prescriptive HVAC (Gas) Incentives

Equipment Type	Incentive	Unit
Steam Traps		
Leaking Steam Trap Repair or Replacement	$50.00	Unit
Space Heating Boilers		
High Efficiency Boilers	$3.00	kBtuh
Boiler Controls		
Boiler Tune-Up	$250.00	Unit
Boiler Modulating Burner Control Retrofit (5:1 or 10:1 turn-down)	$1,250.00	Unit
Boiler Reset Control	$300.00	Unit
Other		
Pipe Wrap - Steam Boiler	$4.00	Linear Feet
High Efficiency Furnace or Rooftop Unit	$350.00	Unit
Infrared Heaters*	$1.50	kBtuh
Chiller Water Reset*	$1.00	Ton
Variable Frequency Drive on Secondary Chilled Water Pump*	$20.00	Pump HP
Roof Insulation*	$200.00	1,000 SF Roof Area
Programmable Thermostat (Gas Heat)*	$50.00	Unit
Energy Management System*	$3.00	1,000 SF of Conditioned Floor Area
Demand Control Ventilation*	$35.00	1,000 SF
Hotel Guestroom Energy Management Control (Gas Heat)*	$35.00	Unit

***** Customer acknowledges and agrees that customer cannot apply for nor receive incentives for the same product, equipment or service from more than one utility.

Prescriptive – Gas Water Heaters

Incentives are paid on a per unit basis, except as noted in Table 6-14 below. Detailed product specifications are discussed in Section P.8.

Table 6-14: Prescriptive Gas Water Heater Incentives

Equipment Type	Incentive	Unit
Pipe Wrap - Hot Water Boiler	$4.00	Linear feet
Gas Water Heater (< 75 gal, < 75,000 Btuh)	$35.00	Unit
Gas Tankless Water Heater	$150.00	Unit
High Efficiency Pool Heater (gas heat)	$2.00	MBtu
Pool Covers	$0.15	SF surface area
High Efficiency Clothes Washer (Gas Water Heat, Electric Dryer)*	$50.00	Unit
High Efficiency Clothes Washer (Gas Water Heat, Gas Dryer)*	$50.00	Unit

*Customer acknowledges and agrees that customer cannot apply for nor receive incentives for the same product, equipment or service from more than one utility.

Prescriptive – Premium Efficiency Motors

The incentives are available for premium efficiency motors ranging in size from 1 to 250 horsepower that meet or exceed the efficiency standard listed in Table 6-15.

Table 6-15: Prescriptive Motors Qualifying Efficiencies / Incentives

Horse Power	3600 RPM		1800 RPM		1200 RPM		Incentive per HP
	Open	Closed	Open	Closed	Open	Closed	
1	77.0%	77.0%	85.5%	85.5%	82.5%	82.5%	$10.00
1.5	84.0%	84.0%	86.5%	86.5%	86.5%	87.5%	$10.00
2	85.5%	85.5%	86.5%	86.5%	87.5%	88.5%	$10.00
3	85.5%	86.5%	89.5%	89.5%	88.5%	89.5%	$10.00
5	86.5%	88.5%	89.5%	89.5%	89.5%	89.5%	$10.00
7.5	88.5%	89.5%	91.0%	91.7%	90.2%	91.0%	$8.00
10	89.5%	90.2%	91.7%	91.7%	91.0%	91.0%	$8.00
15	90.2%	91.0%	93.0%	92.4%	91.7%	91.7%	$8.00
20	91.0%	91.0%	93.0%	93.0%	92.4%	91.7%	$8.00
25	91.7%	91.7%	93.6%	93.6%	93.0%	93.0%	$6.00
30	91.7%	91.7%	94.1%	93.6%	93.6%	93.0%	$6.00
40	92.4%	92.4%	94.1%	94.1%	94.1%	94.1%	$6.00
50	93.0%	93.0%	94.5%	94.5%	94.1%	94.1%	$6.00
60	93.6%	93.6%	95.0%	95.0%	94.5%	94.5%	$6.00
75	93.6%	93.6%	95.0%	95.4%	94.5%	94.5%	$6.00
100	93.6%	94.1%	95.4%	95.4%	95.0%	95.0%	$6.00
125	94.1%	95.0%	95.4%	95.4%	95.0%	95.0%	$4.00
150	94.1%	95.0%	95.8%	95.8%	95.4%	95.8%	$4.00
200	95.0%	95.4%	95.8%	96.2%	95.4%	95.8%	$4.00
250	95.0%	95.8%	95.8%	96.2%	95.4%	95.8%	$4.00

Prescriptive – Miscellaneous (Electric)

Incentives for applicable electric measures that were not listed in the lighting, HVAC, motors, industrial process, or food service sections are available on a per unit basis, as noted in the table below. Detailed product specifications are discussed in Section P.8.

Table 6-16: Prescriptive Miscellaneous (Electric) Incentives

Equipment Type	Incentive	Unit
Occupancy Sensors and Controls		
Beverage Vending Machine Controllers	$50.00	Unit
Plug Load Occupancy Sensor	$37.50	Unit
Intelligent Surge Protector	$10.00	Unit
High Efficiency Heat Pump Water Heater		
10 to 50 MBH	$2,000.00	Unit
50 to 100 MBH	$3,500.00	Unit
100 to 300 MBH	$5,000.00	Unit
300 to 500 MBH	$7,000.00	Unit
> 500 MBH	$9,000.00	Unit
Energy Efficient Ice Machines		
< 500 lbs	$300.00	Unit
500 to 1000 lbs	$450.00	Unit
1000 to 1500 lbs	$1,000.00	Unit
Clothes Washers		
High Efficiency Clothes Washer (Electric Water Heat, Electric Dryer)*	$50.00	Unit
High Efficiency Clothes Washer (Electric Water Heat, Gas Dryer)*	$50.00	Unit

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Prescriptive – Industrial Process (Electric)

Incentives for applicable industrial process measures, including high efficiency pumps and variable frequency drives on pumps, are available as noted in the tables below. Detailed product specifications are discussed in Section P.8.

Table 6-17: Prescriptive Industrial Process Incentives – Pumps and VFDs

Equipment Type	Incentive	Unit
High Efficiency Pumps		
1.5 HP	$50.00	HP
2 HP	$40.00	HP
3 HP	$30.00	HP
5 HP	$30.00	HP
7.5 HP	$25.00	HP
10 HP	$25.00	HP
15 HP	$20.00	HP
20 HP	$20.00	HP
Variable Frequency Drive on Pumps		
1.5 HP	$60.00	HP
2 HP	$60.00	HP
3 HP	$60.00	HP
5 HP	$60.00	HP
7.5 HP	$60.00	HP
10 HP	$60.00	HP
15 HP	$60.00	HP
20 HP	$60.00	HP
25 HP	$60.00	HP
30 HP	$60.00	HP
40 HP	$60.00	HP
50 HP	$60.00	HP

Table 6-18: Prescriptive Industrial Process Incentives – Other

Equipment Type	Incentive	Unit
Compressed Air Engineered Nozzle	$30.00	Unit
Barrel Wraps for Injection Molders & Extruders	$1.00	Machine Ton
Insulated Pellet Dryer Ducts - 3" diameter	$15.00	Linear Foot
Insulated Pellet Dryer Ducts - 4" diameter	$20.00	Linear Foot
Insulated Pellet Dryer Ducts - 5" diameter	$25.00	Linear Foot
Insulated Pellet Dryer Ducts - 6" diameter	$30.00	Linear Foot
Insulated Pellet Dryer Ducts - 8" diameter	$40.00	Linear Foot

Prescriptive – Food Service (Electric)

Incentives for applicable electric food service measures are available as noted in Table 6-19 below. Detailed product specifications are discussed in Section P.8.

Table 6-19: Prescriptive Food Service (Electric) Incentives

Equipment Type	Incentive	Unit
New or Replacement Refrigerators and Freezers		
ENERGY STAR® Commercial Solid Door Refrigerators (< 20 cu ft)	$125.00	Unit
ENERGY STAR® Commercial Solid Door Refrigerators (20 - 48 cu ft)	$250.00	Unit
ENERGY STAR® Commercial Solid Door Refrigerators (> 48 cu ft)	$450.00	Unit
ENERGY STAR® Commercial Solid Door Freezers (< 20 cu ft)	$150.00	Unit
ENERGY STAR® Commercial Solid Door Freezers (20 - 48 cu ft)	$150.00	Unit
ENERGY STAR® Commercial Solid Door Freezers (> 48 cu ft)	$150.00	Unit
New or Replacement Steam Cookers*		
ENERGY STAR® Steam Cookers (3 Pan, Electric)	$450.00	Unit
ENERGY STAR® Steam Cookers (4 Pan, Electric)	$600.00	Unit
ENERGY STAR® Steam Cookers (5 Pan, Electric)	$750.00	Unit
ENERGY STAR® Steam Cookers (6 Pan, Electric)	$900.00	Unit
New or Replacement Hot Holding Cabinets		
ENERGY STAR® Hot Holding Cabinets (Half Size)	$350.00	Unit
ENERGY STAR® Hot Holding Cabinets (Three Quarter Size)	$400.00	Unit
ENERGY STAR® Hot Holding Cabinets (Full Size)	$600.00	Unit
Other		
Anti-Sweat Heater Controls	$100.00	Door
Night Covers	$5.00	Linear Foot
Efficient Refrigeration Condenser	$275.00	Ton
Floating Head Pressure Controls	$7.00	Ton

* Customer acknowledges and agrees that customer cannot apply for nor receive incentives for the same product, equipment or service from more than one utility.

Prescriptive – Food Service (Gas) and Miscellaneous

Incentives for applicable gas food service measures are available as noted in the table below. Detailed product specifications are discussed in Section P.8.

Table 6-20: Prescriptive Food Service (Gas) & Miscellaneous Incentives

Equipment Type	Incentive	Unit
New or Replacement Steam Cookers*		
ENERGY STAR® Steam Cookers (5 Pan, Gas)	$750.00	Unit
ENERGY STAR® Steam Cookers (6 Pan, Gas)	$900.00	Unit
New or Replacement Ovens		
Convection Ovens	$300.00	Unit
Combination Ovens	$1,250.00	Unit
Rack Oven Single	$400.00	Unit
Rack Oven Double	$800.00	Unit
New or Replacement Fryers/Griddles		
ENERGY STAR® Fryer	$225.00	Unit
Large Vat Fryer	$300.00	Unit
Griddles	$250.00	Unit
Miscellaneous		
Furnace Tube Inserts (Gas)	$75.00	Unit
Pre-Rinse Sprayers (gas water heat)	$25.00	Unit

* Customer acknowledges and agrees that customer cannot apply for nor receive incentives for the same product, equipment or service from more than one utility.

P.7 CUSTOM INCENTIVES

DTE Energy's *Your Energy Savings* Program offers custom incentives for those eligible improvements not included in the prescriptive measure list. Custom measures include measures that result in a reduction in electric and/or gas energy due to an improvement in system efficiency, i.e. a net decrease in energy use without a reduction in the level of service. For example, installing a lower wattage LAMP in place of a higher wattage lamp OF THE SAME TYPE will not qualify for an incentive. However should the lighting *system* (i.e., lamp, ballast and fixture) demonstrably improve the total lumens per watt delivered, an incentive will be considered. The decision as to whether or not an improvement is eligible for a custom incentive is within the sole discretion of DTE Energy.

Examples of custom measures include, but are not limited to, the following:

- Exhaust heat recovery
- Constant volume to variable volume water or air distribution
- Process improvements
- Upgrade of a refrigeration compressor
- Air compressor improvements

Projects that are **NOT** eligible for an incentive include, but are not limited to, the following:

- Fuel switching (e.g. electric to gas or gas to electric)
- Changes in operational and/or maintenance practices or simple control modifications not involving capital costs
- On-site electricity generation
- Projects that involve peak-shifting (and not kWh savings)
- Projects involving renewable energy

Incentives for custom measures are based on the electrical and/or gas energy savings that result from the energy efficiency measure installation and are calculated from the first year's kWh or MCF savings. The customer applicant must provide sufficient back-up descriptive information, equipment performance data, operating assumptions, measurements and calculations to support the energy savings estimates. Guidelines for calculating custom measure energy savings are in Section P.12.

The gas and electric incentives are shown in Table 7-1, and the payback period has to be between one and eight years. The total calculated incentives may not exceed half of the measure cost, as described in Section P5.2 above (Project Incentive Caps).

Table 7-1: Custom Incentives

Incentive	$0.08/kWh or $4.00/MCF
Minimum Payback Period	One Year
Maximum Payback Period	Eight Years

Payback period is calculated with the following equation[2]:

$$\text{Payback Period} = \frac{\text{Incremental Measure Cost}}{(\text{Annual kWh Saved} \times \$/\text{kWh}) + (\text{Annual MCF Saved} \times \$/\text{MCF})}$$

[2] The $/kWh and $/MCF is the customer cost of energy.

P.8 EQUIPMENT SPECIFICATIONS

The following provides the equipment specifications for the eligible measures. Note: All equipment must be recycled/disposed of according to state, federal and local regulations. Information about the requirements for the State of Michigan can be found at the Michigan Department of Environmental Quality website: http://www.michigan.gov/deq/.

LIGHTING

P.8.1 Compact Fluorescent Lamps, Screw-In (≤ 31 Watts)

Incentives are available to install screw-in CFLs that are ENERGY STAR® rated lamps or meet ENERGY STAR criteria. The lamps must have ≥ 50 lumens per watt (LPW).

P.8.2 Compact Fluorescent Lamps, Screw-In (> 31 Watts)

Incentives are available to install high wattage CFLs. The new lamps must replace existing incandescent lamps. The lamp should have a minimum luminous efficacy of 65 LPW.

P.8.3 Compact Fluorescent Fixtures

Incentives are available to install interior hardwired compact fluorescent fixtures. They must be complete new fixtures or modular hardwired retrofits with hardwired electronic ballasts to qualify. The compact fluorescent ballast must be programmed start or programmed rapid start with a power factor (PF) ≥ 90 and a total harmonic distortion (THD) ≤ 20%.

P.8.4 Compact Fluorescent Reflector Flood Lamps

Incentives are available to install CFL reflector flood lamps to replace incandescent reflector flood lamps. The CFL reflector flood lamps should have a minimum luminous efficacy of 33 LPW.

P.8.5 42W 8- Lamp Compact Fluorescent High Bay Fixture

Incentives are available in high-bay applications (ceiling heights over 15 feet) for replacing any lighting fixtures greater than or equal to 350W with 42 Watt 8 lamp compact fluorescent fixtures. Fixtures should contain high power-factor electronic ballasts, specular reflectors, and a fixture efficacy greater than 90 percent.

P.8.6 ENERGY STAR® Qualified LED Recessed Down Light

Incentives are available to install ENERGY STAR qualified LED recessed downlights. They must have a minimum efficacy of 35 lumens per watt. The allowable color correlated temperatures (CCTs) are 2700K, 3000K, and 3500K.

P.8.7 Standard Linear Fluorescent Retrofit

Incentives are available for replacing existing T12 lamps and magnetic ballasts with T8 or T5 lamps and electronic ballasts. The new fixture lamps must have a color rendering index (CRI) ≥ 80. The electronic ballast must be high frequency (≥20 kHz), UL listed, and warranted against defects for a minimum of 5 years. Ballasts must have a power factor (PF) ≥ 0.90. Ballasts for 4-foot lamps must have total harmonic discharge (THD) ≤ 20 percent at full power output. For 2

and 3-foot lamps, ballasts must have THD ≤ 32 percent at full light output. A manufacturer's specification sheet must accompany the application.

P.8.8 High Output T8/T5 Lamp and Ballast replacing T12 Fluorescent Lamp

Incentives are available for replacing existing T12 lamps and magnetic ballasts with high output T5 or T8 lamps and electronic ballasts. The lamp must have a CRI ≥ 80. A manufacturer's specification sheet must accompany the application.

P.8.9 Low Wattage 4-foot T8 Lamps (Lamps Only)

Incentives are available when replacing 32 Watt T8 lamps with reduced (low) wattage T8 lamps when electronic ballast is already present. The lamps must be reduced wattage in accordance with the Consortium for Energy Efficiency (CEE) specification (www.cee1.org) and summarized in Table 8-2. Low wattage lamps must be either 25W or 28W and listed on the CEE approved list. Qualified products can be found at http://www.cee1.org/com/com-lt/com-lt-main.php3.

P.8.10 High Performance 4-foot T8 Lamp and Ballast

Incentives are available for replacing existing T12 or T12HO lamps and magnetic ballasts or standard T8 lamps and electronic ballasts with high performance T8 lamps and electronic ballasts. This measure is based on the Consortium for Energy Efficiency (CEE) high performance T8 specification (www.cee1.org) and is summarized in Table 8-1 on the following page. A list of qualified lamps and ballasts can be found at: http://www.cee1.org/com/com-lt/com-lt-main.php3. Both the lamp and ballast must meet the specification in order to qualify for an incentive. A manufacturer's specification sheet must accompany the application

Table 8-1: High Performance T8 Specifications

High Performance T8 Characteristics				
Mean System Efficiency	≥ 90 Mean Lumens per Watt (MLPW) for Instant Start Ballasts			
	≥ 88 MLPW for Programmed Rapid Start Ballasts			
Performance Characteristics for Lamps				
Color Rendering Index (CRI)	≥ 80			
Minimum Initial Lamp Lumens	≥ 3100 Lumens[3]			
Lamp Life	≥ 24,000 Hours			
Lumen Maintenance or Minimum Mean Lumens	≥ 94% or ≥ 2900 Mean Lumens			
Performance Characteristics for Ballasts				
	Lamps	**Low BF ≤ 0.85**	**Norm 0.85 < BF ≤ 1.0**	**High BF ≥ 1.01**
	Instant Start Ballast (BEF)			
	1	> 3.08	> 3.11	NA
	2	> 1.60	> 1.58	> 1.55
	3	≥ 1.04	≥ 1.05	≥ 1.04
	4	≥ 0.79	≥ 0.80	≥ 0.77
	Programmed Rapid Start Ballast (BEF)			
	1	≥ 2.84	≥ 2.84	NA
	2	≥ 1.48	≥ 1.47	≥ 1.51
	3	≥ 0.97	≥ 1.00	≥ 1.00
	4	≥ 0.76	≥ 0.75	≥ 0.75
Ballast Frequency	20 to 33 kHz or ≥ 40 kHz			
Power Factor	≥ 0.90			
Total Harmonic Distortion	≤ 20%			

P.8.11 Low Wattage 4-foot T8 Lamp and Ballast

Incentives are available for replacing T12 systems with reduced (low) wattage lamp and electronic ballast systems. The lamps and ballasts must meet the Consortium for Energy Efficiency (CEE) specification (www.cee1.org) and summarized in Table 8-2 on the following page. Qualified lamp and ballast products can be found at http://www.cee1.org/com/com-lt/com-lt-main.php3. Both the lamp and ballast must qualify in order to receive an incentive for the system. A manufacturer's specification sheet must accompany the application.

[3] For lamp with color temperatures ≥ 4500k. 2950 minimum initial lamp lumens are allowed.

Table 8-2: Reduced (Low) Wattage 4-foot Lamps and Ballasts

Performance Characteristics for Lamps[4]		
Mean System Efficacy	≥ 90 MLPW	
Color Rendering Index (CRI)	≥ 80	
Minimum Initial Lamp Lumens	≥ 2585 Lumens for 28 W	
	≥ 2400 Lumens for 25 W	
Lamp Life[5]	≥ 18,000 hrs at three hours per start	
Lumen Maintenance –or- Minimum Mean Lumens[6]	≥ 94% -or- ≥ 2430 Lumens for 28 W ≥ 2256 Lumens for 25 W	
Performance Characteristics for 28 and 25 W Ballasts		
Ballast Frequency	20 to 33 Hz or ≥ 40 kHz	
Power Factor	≥ 0.90	
Total Harmonic Distortion	≤ 20%	
Performance Characteristics for Ballasts[7], 28 W systems		
Ballast Efficiency Factor (BEF)	Instant Start Ballast (BEF)	
BEF = [BF x 100]/Ballast Input Watts Based on: (1) Type of ballast (2) No. of lamps driven by ballast (3) Ballast Factor	Lamps	All BEF Ranges
	1	≥ 3.52
	2	≥ 1.76
	3	≥ 1.16
	4	≥ 0.88
Performance Characteristics for Ballasts[8], 25 W systems		
Ballast Efficiency Factor (BEF)	Instant Start Ballast (BEF)	
BEF = [BF x 100]/Ballast Input Watts Based on: (1) Type of ballast (2) No. of lamps driven by ballast (3) Ballast Factor	Lamps	All BEF Ranges
	1	≥ 3.95
	2	≥ 1.98
	3	≥ 1.32
	4	≥ 0.99

P.8.12 High Output T5 and 4-foot T8 New Fixture Replacing HID

This measure consists of a one for one replacement of fixtures containing T8 or T5HO lamps and electronic ballasts. The T8 or T5HO lamps must have a color rendering index (CRI) ≥ 80. The electronic ballast must be high frequency (≥ 20 kHz), UL listed, and warranted against defects for 5 years. Ballasts must have a power factor (PF) ≥ 0.90. Ballasts for 4-foot lamps must have total harmonic distortion (THD) ≤ 20% at full light output. This incentive can be used in highbay and lowbay fluorescent applications.

[4] Lamps ≥4500 K and/or 24,000 hours have a system efficiency specified ≥ 88 MLPW. Minimum initial and mean lumen levels are specified as follows: for 28 W lamps, limits are 2600/2340. For 25 W lamps, limits are 2300/2185.
[5] Life rating is based on an instant Start Ballast tested in accordance with ANSI protocols. When used for Program Start Ballast, life may be increased depending upon the operating hours per start.
[6] Mean lumens measures at 7,200 hours
[7] Multi-Voltage Ballasts must meet or exceed the listed Ballast Efficiency Factor when operated on at least one of the intended operating voltages.
[8] Multi-Voltage Ballasts must meet or exceed the listed Ballast Efficiency Factor when operated on at least one of the intended operating voltages.

P.8.13 Pulse Start Metal Halide (retrofit only)

Incentives are available in high-bay applications for replacing existing HID with pulse start metal halides. Total replacement wattage must be lower than existing wattage to insure energy savings.

P.8.14 Exterior or Garage HID to LED/Induction Lighting Retrofit

Incentives are available in exterior or garage applications for replacing existing high intensity discharge fixtures with LED or Induction fixtures. Fixture replacement must result in at least a 40% power reduction. LED fixtures should have a minimum efficacy of 35 lumens per watt. Applications include canopy lighting and wallpacks. This measure is applicable to exterior fixtures that are typically on about 12 hours a night. Photocells or time clocks should be utilized at facilities that do not control exterior fixtures during daylight hours.

P.8.15 Exit Signs

Incentives for high-efficiency exit signs are available and must replace or retrofit an existing incandescent exit sign. Electroluminescent, T1, and light-emitting diode (LED) exit signs are eligible under this category. Non-electrified and remote exit signs are not eligible. All new exit signs or retrofit exit signs must be UL or ETL listed, have a minimum lifetime of 10 years, and have an input wattage ≤ 5 Watts per face or be ENERGY STAR® qualified.

P.8.16 LED Traffic and Pedestrian Lights

Incentives are available for LED traffic lights on a per-signal basis (including arrows) that replace or retrofit an existing incandescent traffic signal. At minimum, red and green lamps must be retrofitted to qualify for the signal incentive. Signals shall have a maximum LED module wattage of 25. Incentives are not available for spare lights. Lights must be hardwired, with the exception of pedestrian hand signals.

P.8.17 Occupancy Sensors

Incentives are available for occupancy sensors for low occupancy interior areas, which automatically turn lights on when movement is detected. The minimum amount of time for the lights to stay on when no movement is sensed (delay set time) should be 10 minutes. The sensors can be passive infrared (PIR) or ultrasonic. All sensors should be hard-wired and control interior lighting fixtures. PIR sensors should not be placed in areas with many partitions. Ultrasonic sensors should not be placed in areas with constant air movement (ex. near HVAC diffusers). To assist in rebate processing, please provide the inventory of the controlled fixtures with the Final Application.

P.8.18 Central Lighting Control

Incentives are available for automated central lighting control systems with override capabilities. The occupants' schedule of operation must be taken into consideration when programming the system. This measure includes time clocks, package programmable relay panels, and complete building automation controls. Photosensors may also be incorporated into the central lighting control system. Rebate is calculated per 10,000 square feet of lighting controlled.

P.8.19 Switching Controls for Multilevel Lighting

Incentives are available to install switching controls for multilevel lighting and should be used with daylight or occupancy sensors and is applicable to spaces that require various lighting schemes (ex. classrooms, auditoriums, conference rooms). Multilevel lighting switching controls are also applicable to warehouse settings with skylights, where they can be combined with occupancy sensors and/or daylight controls. When combined with daylight or occupancy sensors, commissioning is highly recommended to ensure proper performance of the switching controls. Rebate is calculated per 10,000 square feet of lighting controlled.

P.8.20 Daylight Sensor Controls

Incentives are available for daylight sensor controls in spaces with reasonable amounts of sunlight exposure and areas where task lighting is not critical. The controls can be on/off, stepped, or continuous (dimming). The on/off controller should turn off artificial lighting when the interior illuminance meets the desired indoor lighting level. The stepped controller generally dims the artificial lighting 50% when the interior illuminance levels reach 50% of the desired lighting levels. Continuous or dimming controllers dim artificial lighting proportional to the available daylight. All types of daylight sensor controls are required to be commissioned in order to ensure proper sensor calibration and energy savings.

P.8.21 Exterior Lighting, Bi-Level Control with Override

Incentives are available for installing exterior bi-level controls to HID lighting that reduce lighting levels by at least 50% when the space is unoccupied. The HID lighting must have an electronic ballast capable of reduced power levels, and be coupled with motion sensors to bring the light back to full lumen output for security reasons. The controls include on-off controls, dimmers, and hi-lo ballast controls. This measure is applicable to exterior fixtures that are on during the night.

P.8.22 Light Tube

Incentives are available for light tubes (“tubular skylights”) 10 inch to 12 inch in diameter. The light tube uses a translucent or prismatic lens to reflect light captured from the roof into the interior space. This measure is applicable to spaces that normally require electric lighting during peak hours (1-4PM weekdays during the summer). The light tube must still allow an adequate amount of light during overcast conditions, and require coupling with daylight sensing controls.

HVAC (ELECTRIC)

P.8.23 Unitary and Split Air Conditioning Systems and Air Source Heat Pumps

Incentives are available to install new unitary air conditioning units or air source heat pumps that meet or exceed the qualifying cooling efficiency shown in Table 8-3 below. They can be either split systems or single package units. The efficiency of split systems is based on an ARI reference number. Water-cooled systems, evaporative coolers, and water source heat pumps do not qualify under prescriptive, but may qualify for a custom incentive. All packaged and split system cooling equipment must meet Air Conditioning and Refrigeration Institute (ARI) standards (210/240, 320 or 340/360), be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). A manufacturer’s specification sheet indicating the system

efficiency must accompany the application. Disposal of the existing unit must comply with local codes and ordinances.

Table 8-3: Efficiencies for Unitary and Split A/C Systems and Air Source Heat Pumps

Equipment Type	Size Category	Qualifying Efficiency
Unitary and Split Air Conditioning Systems	≤ 65,000 Btuh (5.4 tons) 1 Phase	14.0 SEER
	≤ 65,000 Btuh (5.4 tons) 3 Phase	13.0 SEER
	> 65,000 Btuh (5.4 tons), ≤ 135,000 Btuh (11.3 tons)	11.0 EER
	> 135,000 Btuh (11.3 tons), ≤ 240,000 Btuh (20 tons)	11.0 EER
	> 240,000 Btuh (20 tons) ≤ 760,000 Btuh (63.3 tons)	10.0 EER
	> 760,000 Btuh (63.3 tons)	10.0 EER
Air Source Heat Pumps	≤ 65,000 Btuh (5.4 tons) - 1 Phase	14.0 SEER
	≤ 65,000 Btuh (5.4 tons) - 3 Phase	13.0 SEER
	> 65,000 Btuh (5.4 tons), ≤ 135,000 Btuh (11.3 tons)	11.0 EER
	> 135,000 Btuh (11.3 tons)	10.0 EER

P.8.24 Water Loop Heat Pumps

Incentives are available to install new water loop heat pumps that meet or exceed the qualifying cooling efficiency shown in Table 8-4 below. All packaged cooling equipment must meet Air Conditioning and Refrigeration Institute (ARI) standards (210/240, 320 or 340/360), be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). A manufacturer's specification sheet indicating the system efficiency must accompany the application. Disposal of the existing unit must comply with local codes ordinances.

Table 8-4: Efficiencies for Water Loop Heat Pumps

Size Category	Qualifying Efficiency
≤ 17,000 Btuh (1.4 tons)	11.5 EER
> 17,000 Btuh (1.4 tons)	12.3 EER

P.8.25 Room Air Conditioners

Incentives are available to install room air conditioning units that are through-the-wall (or built-in) self-contained units that are 2 tons or less. A unit must qualify under ENERGY STAR®

standards. These units are with and without louvered sides, without reverse cycle (i.e., heating), and casement. Disposal of existing unit must comply with local codes and ordinances.

P.8.26 Package Terminal AC and Heat Pump Units (PTAC/PTHP)

Incentives are available to install package terminal air conditioners and heat pumps are through-the-wall self contained units that are 2 tons (24,000 Btuh) or less. The qualifying efficiencies are provided in Table 8-5 below. All EER values must be rated at 95°F outdoor dry-bulb temperature. Disposal of existing unit must comply with local codes and ordinances.

Table 8-5: Qualifying Package Terminal Unit Efficiencies

Equipment Type	Qualifying Efficiency
Packaged Terminal Air Conditioner	9.2 EER
Packaged Terminal Heat Pump	9.0 EER

P.8.27 Ground-Source Heat Pumps

Incentives are available to install new ground source heat pumps with a capacity less than or equal to 135,000 Btuh that meet or exceed the qualifying Energy Efficiency Ratio (EER) of 17. Additionally, new ground source heat pumps that replace an air source heat pump, have a capacity greater than 135,000 Btuh, and meet or exceed the qualifying Energy Efficiency Ratio (EER) of 17 are also eligible for an incentive. All equipment must meet Air Conditioning and Refrigeration Institute (ARI) standards (325 or 330) and be UL listed. EER is the efficiency at standard (ARI/ISO) conditions of 77°F entering water for closed-loop models and 59°F entering water for open-loop systems. A manufacturer's specification sheet indicating the system efficiency for cooling and heating must accompany the application. Disposal of the existing unit must comply with local codes and ordinances.

P.8.28 Air-cooled Chillers

Chillers are eligible for an incentive if they have a rated kW/ton for the full load efficiency that is less than or equal to the qualifying efficiency of 1.16. The chiller efficiency rating must be based on ARI Standard 550/590-2003 for full-load conditions. The chillers must meet ARI standards 550/590-2003, be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). The ARI net capacity value should be used to determine the chiller tons. A manufacturer's specification sheet with the rated full load kW/Ton or COP must accompany the application.

P.8.29 Water-cooled Chillers

Chillers are eligible for an incentive if they have a rated kW/ton for the Integrated full load and Part Load Value (IPLV) that is less than or equal to the qualifying efficiency shown in Table 6-11 and 6-12. The chiller efficiency rating must be based on ARI Standard 550/590-2003 for IPLV and/or based on full-load conditions. The chillers must meet ARI standards 550/590-2003, be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). The ARI net capacity value should be used to determine the chiller tons. A manufacturer's specification sheet with the rated full load kW/Ton or COP and kW/Ton-IPLV or COP-IPLV must accompany the application.

P.8.30 Programmable Thermostat Setback/Setup (Air Conditioning)

Programmable thermostats must meet ENERGY STAR® criteria and replace any non-programmable thermostat to automatically adjust the temperature at pre-selected times. To meet ENERGY STAR standards, they must be capable of maintaining two separate programs (to address the different comfort needs of weekdays and weekends) and up to four temperature settings for each program. The minimum setback period duration must be 25% of the weekly hours, with a minimum temperature differential of at least five degrees for the setback period. A current list of ENERGY STAR qualified thermostats may be found at http://downloads.energystar.gov/bi/qplist/prog_thermostat_prod_list.pdf.

P.8.31 Energy Management System

Certain energy management system (EMS) upgrades are eligible for an incentive. The upgrade must include combining chilled water reset controls with hydronic hot water, chilled water and condenser water pump on/off controls to turn the pumps off when heating and/or cooling are not needed in a system that previously operated with a constant chilled water set point and constant pump flow rates operating 24/7. Upgrade must include hardware installation for new controls. This incentive is per 1,000 square feet of the conditioned floor area affected by the EMS upgrade.

P.8.32 Hotel Guest Room Energy Management Control (Air Conditioning)

Incentives are available for sensors that control PTAC, heat pump, and other HVAC units for individual hotel rooms. Sensors controlled by a front desk system are not eligible. Sensors must be controlled by automatic occupancy detectors, and it is recommended that during unoccupied periods, the default setting for controlled units differ by at least 8 degrees from the operating setpoint. The incentive is per guest room controlled, not per sensor; for multi-room suites the incentive is available per room controlled, if a sensor is installed in each room. Replacement or upgrades of existing occupancy-based controls are not eligible as a prescriptive incentive.

P.8.33 Chilled Water Reset – Air and Water Cooled Chillers

Chilled water reset controls are eligible for an incentive on systems with fixed chilled water temperature set points by allowing the chilled water temperature to increase by at least 5°F during periods of low-flow (low load). The incentive is based on the tonnage of the chiller capacity affected by the control upgrade with varying rates based on the size categories listed in Table 8-6 below. Upgrade must include hardware installation for new controls.

Table 8-6: Chilled Water Reset – Incentive Size Categories

Measure Name	Size Category
Chilled Water Reset - Air Cooled	≤ 100 tons
	> 100 tons, ≤ 200 tons
	> 200 tons, ≤ 300 tons
	> 300 tons, ≤ 400 tons
	> 400 tons, ≤ 500 tons
Chilled Water Reset - Water Cooled	≤ 1,000 tons
	> 1,000 tons, ≤ 2,000 tons
	> 2,000 tons, ≤ 3,000 tons

P.8.34 Variable Frequency Drives – VAV Fans and Chilled Water Pumps

Variable frequency drives (VFD) installed on existing HVAC variable air volume (VAV) fans and secondary chilled water pumps are eligible for this incentive. New chillers with integrated VFDs are eligible under the chiller incentive, installing VFDs on existing chillers and package unit compressors, or installing VFDs on other HVAC fans and pumps (such as cooling tower fan) may be eligible under the custom incentive. VFDs on new equipment are not eligible. The installation of a VFD must accompany the permanent removal or disabling of any throttling devices such as inlet vanes, bypass dampers, and throttling valves. The fan incentive is only allowed when a VFD is installed on a supply or return fan of a built up VAV air handler system. The pump incentive is only allowed when a VFD is installed to the secondary pump of a constant volume primary/secondary pumping system (in most cases the three-way chilled water coil control valves must be retrofitted to two-way control valves). This incentive is based on the controlled horsepower (hp) of the fan or pump.

P.8.35 Economizer

Air-side economizers are eligible for an incentive when they are added as a dual temperature (return air and outside air) controlled upgrade to a HVAC system that previously operated with a fixed outside air setting (and no economizer). This incentive is based on the capacity (tons) of the system upgraded with the economizer.

P.8.36 Cool Roofs

Cool roofs are eligible for an incentive as a building upgrade when they have a solar absorptance of 0.3 or less and are installed over an area being cooled by vapor-compression air conditioners (evaporative-cooled spaces are not eligible). The incentive is calculated per 1,000 square feet of roof area.

P.8.37 High Performance Glazing

High performance glazing is eligible for an incentive when it has a minimum five-year manufacturer's warranty and replaces clear double-pane glass or lesser performing glazing. The new glazing must have a Solar Heat Gain Coefficient (SHGC) value of 0.39 or less and a U-value of 0.57 or less. The space upgraded with the glazing must be cooled by vapor-compression air conditioners (evaporative-cooled spaces are not eligible). The glazing specification must be documented on the invoice, as well as square footage installed. To convert Shading Coefficient (SC) to SHGC, multiply SC x 0.87. If SC is given in percent form, convert it to decimal form before multiplying. Windows with northern exposure (± 45 degrees of due North) do not qualify for this rebate. This incentive is calculated per 100 square feet of glazing replaced.

P.8.38 Window Film

Window film is eligible for an incentive when it has a minimum five-year manufacturer's warranty and is applied to clear double-pane glass or lesser performing glazing. The installed window film must have a Solar Heat Gain Coefficient (SHGC) value of 0.39 or less and a U-value of 0.72 or less. The space upgraded with the window film must be cooled by vapor-compression air conditioners (evaporative-cooled spaces are not eligible). The film specification must be documented on the invoice, as well as square footage installed. To convert Shading Coefficient (SC) to SHGC, multiply SC x 0.87. If SC is given in percent form, convert it to decimal form before multiplying. Windows with northern exposure (± 45 degrees of due North) and/or dual-

pane glass do not qualify for this rebate. This incentive is calculated per 100 square feet of glazing upgraded with the film.

GAS

General Clause for Heating Measures

The incentive is eligible only for retrofit projects using natural gas as the primary fuel source. If a dual-fuel system is used, or if natural gas is the back-up or redundant fuel, the custom incentive application should be used. The incentives for boilers are only available for equipment used in space heating conditions, except for steam traps. Equipment for process load qualifies under the custom program.

P.8.39 Steam Trap Repair/Replacement

The incentive is only available for repair or replacement of traps that have malfunctioned and are leaking steam. It is not available for traps which have failed closed or are plugged. The incentive is available once in a 24 month period per facility. Replacement with an orifice trap is not eligible for incentive. Steam trap repair work must be recorded and attached to the incentive application by the vendor. A spreadsheet with repair/replacement results must be provided. The spreadsheet at a minimum must contain:

- System nominal steam pressure
- Annual hours of operation
- Number of steam traps serviced
- Per steam trap:
    - ID tag number
    - Location type of trap
    - Type of trap
    - Orifice size (if repair or replaced)
    - Condition:
        - Functioning
        - Malfunctioning, not leaking steam
        - Malfunctioning, leaking steam
    - Survey/repair date
    - Survey/repair technician

P.8.40 High Efficiency Space Heating Boiler

Boiler incentives are only available for equipment used in space heating conditions. Equipment for process loads do not qualify. Boilers purchased for backup or redundancy are not eligible. Boilers must modulate their firing rate and have a sealed combustion unit. Applicant must submit boiler specifications with steady state boiler input and output ratings. The ratings will be defined per ANSI Standard Z21.13. Note that high efficiency condensing boilers will provide the rated efficiency only if return water is cold enough to condense the flue gases. If the heating system cannot meet the requirement, a non-condensing boiler may be a better choice. Qualifying efficiencies are shown in Table 8-7 below.

Table 8-7: Minimum Efficiency Requirements for High Efficiency Space Heating Boilers

Input Rating (Btuh)	Minimum Efficiency
< 300,000	0.85 AFUE
≥ 300,000	85% Combustion Efficiency

P.8.41 Boiler Tune-up

This incentive is only available for natural gas space-heating boilers. The minimum burner size for measure eligibility is 110,000 Btuh. The incentive is available once in a 24 month period. The service provider must perform before and after combustion efficiency tests and record the results on the boiler tune-up incentive application. Burner must be adjusted to improve combustion efficiency as needed. The incentives are only available for equipment used in space heating conditions. Equipment for process load does not qualify. Please provide a document with the following information:

- Boiler annual hours of operation
- Technician performing tune-up
- The contractor or technician performing the tune-ups needs to initial that each requirement listed below has been completed to qualify for the rebate:
    - Measure pre and post combustion efficiency using an electronic flue gas analyzer.
    - Include a copy of the combustion analyzer test
    - Adjust air flow and reduce excessive stack temperatures
    - Adjust burner and gas input, manual or motorized draft control
    - Clean burners, combustion chamber and heat exchange surface, when weather or operating schedule permits
    - Seal combustion chamber
    - Clean and inspect burner nozzles
    - Check for proper venting
    - Complete visual inspection of system piping and installation
    - Check safety controls
    - Check adequacy of combustion air intake
    - Provide the following data:
        - Date of tune-up
        - Unit input capacity (MBtuh)
        - Boiler information(location, make & model #)
        - Type (hot water, low pressure steam, high pressure steam)
        - Combustion efficiency (pre and post)
        - Stack temperature (pre and post)
        - Oxygen level (pre and post)
        - Carbon dioxide (pre and post)
        - Carbon monoxide (pre and post)
        - Carbon monoxide (pre and post)

P.8.42 Boiler Modulating Burner Control

Incentives are available for boiler modulating burner controls. The control must have a minimum of 5 to 1 or 10 to 1 turn-down ratio. Boiler must operate a minimum of 4,000 hours per year to be eligible for this incentive. The incentive is eligible only for retrofit projects, not for new controls on a new boiler. The incentives are only available for equipment used in space heating conditions.

P.8.43 Boiler Water Reset Control

Incentives are available for boiler water reset controls. Outside air temperature reset or cutout control incentives are for existing space heating boilers only. A new boiler with boiler reset controls is not eligible. The system must be set so that the minimum temperature is not more than 10 degrees above manufacturer's recommended minimum return temperature. For

controls on multiple boilers to qualify, control strategy must stage the lag boiler(s) only after the first boiler stage(s) fail to maintain the boiler water temperature called for by the reset control.

P.8.44 Pipe Wrap – Steam Boiler

Incentives are available for pipe wrap on a steam boiler. A minimum of 1 inch of R-4 pipe insulation must be added to existing bare commercial or industrial steel pipe system applications. The bare pipe size must be at least ½ inch or larger. A minimum of 10 linear feet of pipe must be insulated. Insulation used for pipes should be high density fiberglass shaped for pipes and blankets, batts of fiberglass or mineral wool for flat sections. Applications must include the manufacturer's name, insulation material type, and the material k-value or R-value rating. All hot surfaces should be insulated.

P.8.45 High Efficiency Gas Furnace or Rooftop Unit

Incentives are available for furnaces that are 95 AFUE or greater and have a sealed combustion unit. Furnaces must vary output by using a variable speed blower motor (ECM or brushless DC) and have at least two firing stages. Two-speed or multi-speed motors are not permitted. Air handlers are not eligible for the incentive. Chimney liners must be installed where a high efficiency natural gas furnace replaces atmospherically drafted equipment that was vented through the same flue as a gas water heater. Flue closure protocol must be used when a high efficiency furnace is installed and the chimney is no longer in use. The incentives are only available for equipment used in space heating conditions. Equipment purchased for backup or redundancy is not eligible.

P.8.46 Infrared Heaters

Only building space heating applications are eligible. High-intensity and low-intensity heaters are eligible. Low-intensity heaters must use outside non-conditioned air for combustion. Heaters must have electronic ignition.

P.8.47 Chilled Water Reset – Air and Water Cooled Chillers

Chilled water reset controls are eligible for an incentive on systems with fixed chilled water temperature set points by allowing the chilled water temperature to increase by at least 5°F during periods of low-flow (low load). This incentive is based on the tonnage of the chiller capacity affected by the control upgrade. Upgrade must include hardware installation for new controls. The building must have hydronic system reheat to qualify.

P.8.48 Variable Frequency Drives – Secondary Chilled Water Pumps

Variable frequency drives (VFD) installed on existing secondary chilled water pumps are eligible for this incentive. New chillers with integrated VFDs are eligible under the chiller incentive, installing VFDs on existing chillers and package unit compressors, or installing VFDs on other HVAC fans and pumps (such as cooling tower fan) may be eligible under the custom incentive. VFDs on new equipment are not eligible. The installation of a VFD must accompany the permanent removal or disabling of any throttling devices such as inlet vanes, bypass dampers, and throttling valves. The pump incentive is only allowed when a VFD is installed to the secondary pump of a constant volume primary/secondary pumping system (in most cases the three-way chilled water coil control valves must be retrofitted to two-way control valves). This incentive is based on the controlled horsepower (hp) of the pump. The building must have hydronic system reheat to qualify.

P.8.49 Roof Insulation

Incentives are available for roof insulation. The building must have space heating or cooling source and has natural gas or electricity distributed to its installation address by DTE. All materials must be new. Materials must meet or exceed all applicable local, state and federal standards and installed according to manufacturer requirements. Attic and roof/ceiling insulation is eligible for a rebate only if the pre-retrofit insulation level is R-12 or less, and if installed between conditioned area and unconditioned space. The final insulation level must be at least R-18 unless a higher level is specified by local jurisdiction. Dropped commercial ceilings are not eligible for rebate. If purchasing insulation, remember that your rebate is based on the amount of insulation actually installed. No new construction allowed.

P.8.50 Programmable Thermostat Setback/Setup (Gas Heat)

Programmable thermostats must meet ENERGY STAR® criteria and replace any non-programmable thermostat to automatically adjust the temperature at pre-selected times. To meet ENERGY STAR standards, they must be capable of maintaining two separate programs (to address the different comfort needs of weekdays and weekends) and up to four temperature settings for each program. The minimum setback period duration must be 25% of the weekly hours, with a minimum temperature differential of at least five degrees for the setback period. A current list of ENERGY STAR qualified thermostats may be found at http://downloads.energystar.gov/bi/qplist/prog_thermostat_prod_list.pdf.

P.8.51 Energy Management System

Certain energy management system (EMS) upgrades are eligible for an incentive. The upgrade must include combining chilled water reset controls with hydronic hot water, chilled water and condenser water pump on/off controls to turn the pumps off when heating and/or cooling are not needed in a system that previously operated with a constant chilled water set point and constant pump flow rates operating 24/7. Upgrade must include hardware installation for new controls. This incentive is per 1,000 square feet of the conditioned floor area affected by the EMS upgrade. The building must have hydronic system reheat to qualify.

P.8.52 Demand Control Ventilation

Incentives are available to install ventilation controls on existing buildings that use carbon dioxide levels to measure occupancy and modify the percentage of outside air based on variable levels. Only buildings with space heating and cooling applications are eligible. Conditioned spaces must be kept between 65ºF and 75ºF during operating hours. Systems must have current fresh air requirements equal or greater to 10% of supply air requirements. Carbon dioxide sensors must be installed in conjunction with fully functioning air side economizers. Dual temperature air-side economizers with zone-level CO2 sensors for rooftop units qualify, and return system CO2 sensors are required for built up systems. Controlled space must meet the minimum requirements of the current ASHRAE 62 standard, as well as all local building code, and manufacturer’s recommendations.

P.8.53 Guestroom Energy Management Control (Gas Heat)

Incentives are available for sensors that control HVAC units for individual hotel rooms. Sensors controlled by a front desk system are not eligible. Sensors must be controlled by automatic occupancy detectors, and it is recommended that during unoccupied periods, the default setting

for controlled units differ by at least 8 degrees from the operating set point. The incentive is per guest room controlled, not per sensor; for multi-room suites the incentive is available per room controlled, if a sensor is installed in each room. Replacement or upgrades of existing occupancy-based controls are not eligible as a prescriptive incentive.

P.8.54 Pipe Wrap – Hot Water Boiler

A minimum of 1 inch of R-4 pipe insulation must be added to existing bare commercial or industrial steel pipe system applications. The bare pipe size must be at least ½ inch or larger. A minimum of 10 linear feet of pipe must be insulated. Insulation used for pipes should be high density fiberglass shaped for pipes and blankets, batts of fiberglass or mineral wool for flat sections. Applications must include the manufacturer's name, insulation material type, and the material k-value or R-value rating. All hot surfaces should be insulated.

P.8.55 Gas Storage Water Heater

To qualify for this incentive, heater must replace existing natural gas water heater < 75 gallons and <75,000 Btuh that has an Energy Factor of 0.62 or greater.

P.8.56 Gas Tankless Water Heater

To qualify for this incentive, heater must replace existing natural gas water heater. Unit must be power vented with an Energy Factor of 0.82 or greater.

P.8.57 High Efficiency Pool Heater

To qualify for this incentive, heater must be equal to or greater than 84% thermal efficiency and must replace pre-existing pool heater. Heater must be rated between 500,000 Btuh and 2,000,000 Btuh. Must have an on/off switch and have no pilot light. The pool heater cannot be used as a back-up for solar water-heating. Incentive is per rated MBtu (equals to one million Btu).

P.8.58 Pool Covers

The pool size must be between 400 – 4,000 square feet to qualify for the incentive. Equipment must be new, and the cover must be a manual, semi-automatic or automatic pool cover.

P.8.59 High Efficiency Clothes Washer (Gas Water Heater)

Incentives are available for high efficiency clothes washers that use a gas water heater. Qualified clothes washers must meet a minimum efficiency of CEE Tier 2 with a Modified Energy Factor (MEF) ≥ 2.00 and a Water Factor (WF) ≤ 6.00.

MOTORS

P.8.60 NEMA Premium Motors

Motors eligible for an incentive are three-phase AC induction motors, 1-250 HP, of open drip-proof (open) and totally enclosed fan-cooled (closed) classifications. Rewound motors do not qualify. Incentives are based on the motor's Nominal Full Load Efficiencies, tested in accordance with IEEE (Institute of Electrical and Electronics Engineers) Standard 112, method

B, that meet or exceed the NEMA Premium efficiency standards on the Motor Incentives Worksheet. The application must include the manufacturer's performance data sheet that at least shows equipment type, equipment size, model number, and efficiency rating. Customers should consider matching RPMs of the existing pump or fan when installing energy efficient motors that inherently have higher speeds (less slip), which may affect electric energy use.

Program incentives for this measure are available until new federal standards take effect which is scheduled to occur late in 2010. Per new federal efficiency standards enacted in H.R. 6, all general purpose motors (subtype I) manufactured after the standard change with a power rating between 1 and 200 horsepower are required to have nominal full-load efficiencies equal to or greater than the NEMA MG– 1 (2006) Table 12–12 (aka "NEMA Premium®" efficiency) levels.

MISCELLANEOUS

P.8.61 Beverage Vending Machine Controllers

Incentives are available for certain beverage vending machine controllers. The controller must include a passive infrared occupancy sensor to turn off fluorescent lights and other vending machine systems when the surrounding area is unoccupied for 15 minutes or longer. Also, the control logic should power up the machine at a minimum of every 2 hours to maintain product temperature and provide compressor protection. For refrigerated beverage machines located indoors, backlighting lamps and ballasts should be removed to obtain additional energy savings.

P.8.62 Plug Load Occupancy Sensor

This incentive applies to passive infrared and/or ultrasonic detectors only. Plug-load sensors must control electricity using equipment in offices or cubicles, including shared copiers and/or printers. The sensor must control at least three devices.

P.8.63 Intelligent Surge Protector

Incentives are available for surge protectors with built-in plug-load detection and control capabilities. The intelligent surge protector ("power strip") must include at least one uncontrolled socket which a primary device would be connected to. Turning the primary device (usually a computer) on or off will subsequently turn the associated controlled devices in the power strip on or off (ex. printers, monitors, etc.). The intelligent power strip may also contain sockets for devices that require a constant supply of power; these will not be affected by the 'control' device.

P.8.64 High Efficiency Heat Pump Water Heater

This incentive applies to installing a heat pump water heater of COP equal to or greater than 3.0 to replace an existing electric hot water heater. The heat pump size is in MBH (1,000 Btuh).

P.8.65 Energy Efficient Ice Machines

The incentive offering covers ice machines that generate 60 grams (2 oz.) or lighter ice cubes, flaked, crushed, or fragmented ice. Only air-cooled machines qualify (self-contained, ice-making heads, or remote condensing). The machine must have a minimum capacity of 101 lbs of ice per 24-hour period. The minimum efficiency required is per ENERGY STAR or CEE Tier 2 (www.cee1.org). A manufacturer's specification sheet must accompany the application shows rating in accordance with ARI Standard 810.

P.8.66 High Efficiency Clothes Washer (Electric Water Heater)

Incentives are available for clothes washers must meet a minimum efficiency of CEE Tier 2, with a Modified Energy Factor (MEF) ≥ 2.00 and a Water Factor (WF) ≤ 6.00.

INDUSTRIAL PROCESS

P.8.67 Variable Frequency Drives for Process Pumping

Incentives are available for VFDs used in conjunction with a process (non-HVAC) pumping application. Redundant or back-up units do not qualify. Routine replacement of existing VFDs does not qualify. VFD speed must be automatically controlled by differential pressure, flow, temperature, or other variable signal. The VSD installation must accompany the permanent removal or disabling of any throttling devices such as throttling valves. To qualify for the incentive, the pump must operate at least 2,000 hours per year. The incentive is per controlled HP.

P.8.68 High Efficiency Pumps

Incentives are available for high efficiency process pumps. Application submittals should include a pump performance curve demonstrating a pump efficiency of the following for the design operating condition. To qualify for this incentive, the pump must operate at least 2,000 hours per year. Qualifying efficiencies are shown in Table 8-8 below.

Table 8-8: Qualifying Pump Efficiency

Horsepower	Pump Efficiency
1.5 – 7.5	≥73%
10	≥75%
15 - 20	≥77%

P.8.69 Engineered Nozzle

Incentives are available for engineered nozzles that replace simple open pipe/tube assemblies connected to a compressed air system. Usage of the nozzles must be 2,000 hours or greater per year. The engineered nozzles must be between 1/8” and 1/2” in diameter. Air jets and nozzles must have an SCFM (standard cubic feet per minute) rating at 80 psig less than or equal to those rated in Table 8-9 below.

Table 8-9: Qualifying SCFM Ratings for Engineered Nozzles

Size (inch)	SCFM
1/8	10
1/4	17
3/8	18
1/2	18

P.8.70 Barrel Wraps for Injection Molders and Extruders

Insulated blankets strapped around barrels of extruders or injection molders are eligible for this incentive. Blankets must be installed on previously un-insulated barrels, in accordance with manufacturer recommendations.

P.8.71 Insulation for Pellet Dryer Tanks and Ducts

Insulation placed on tanks and flexible ducts of pellet dryers is eligible for this incentive. Insulation must be installed on previously un-insulated ducting with a diameter of 3 to 8 inches, or on centralized, recirculating hoppers in accordance with manufacturers' recommendations. Insulation may not be placed on transportable drums. Incentives are only applicable to products capable of maintaining duct steady-state temperatures of 200°F maximum. Most standard HVAC insulation is only rated to 140°F.

FOOD SERVICE (ELECTRIC) & REFRIGERATION

P.8.72 ENERGY STAR® Commercial Solid Door Refrigerator

Incentives are available for new units that are ENERGY STAR qualified. Cases with remote refrigeration systems do not qualify.

P.8.73 ENERGY STAR® Commercial Solid Door Freezer

Incentives are available for new units that are ENERGY STAR qualified. Cases with remote refrigeration systems do not qualify.

P.8.74 ENERGY STAR® Steam Cookers (Electric)

Incentives are available for new units that are ENERGY STAR qualified with a Cooking Energy Efficiency of 50% for all size units. This incentive applies towards the purchase of new or replacement energy efficient electric steamers (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.75 ENERGY STAR® Hot Holding Cabinets

Incentives are available for new units that are ENERGY STAR qualified and <40 W per cubic foot. This incentive applies towards the purchase of new or replacement energy efficient electric hot food holding cabinets. This measure does not include cook and hold equipment. Used or rebuilt equipment is not eligible.

P.8.76 Anti-Sweat Heater Controls

Incentives are available for anti-sweat heater controls. To qualify for this incentive, a control device is installed that senses the relative humidity in the air outside of the display case and reduces or turns off the glass door (if applicable) and frame anti-sweat heaters at low-humidity conditions. Technologies that can turn off anti-sweat heaters based on sensing condensation (on the inner glass pane) also qualify. The incentive is based on the total number of doors controlled on the case.

P.8.77 Night Covers

Incentives are available for night covers installed on open refrigerated display cases in supermarkets and grocery stores. The purpose of night covers is to reduce the amount of heat loss from the open refrigerated display cases during facility non-operating hours. The store must have a minimum of 6 non-operating hours per day for this measure to qualify. To decrease moisture build-up, it is recommended that the night covers are perforated. Applicant should consider using proper compressor capacity modulation and ensure the case manufacturer has no objections to use of a night cover.

P.8.78 Efficient Refrigeration Condenser

Design and installation of oversized condensers for multiplex refrigeration systems are eligible for this incentive. A design reducing the approach (difference in existing refrigerant and ambient dry build temperature) lowers the head pressure and conserves compressor horsepower. The new condenser must result in 85 Btu/hr of heat rejection per watt of fan power for air cooled condensers. For evaporative cooled, a minimum of 195 Btu/hr/Watt is required.

Table 8-10: Oversized Condenser Approach Requirements

Condenser Category	Typical Design Approach	Oversized Condenser Approach (at or below)
Air cooled low temperature	10°F	8°F
Air cooled medium temperature	15°F	13°F
Evaporative cooled	20°F	18°F

P.8.79 Floating Head Pressure Controls

This incentive is for installing automatic controls to lower condensing pressure at lower ambient temperatures in multiplex refrigeration systems. Controls installed must vary head pressure to adjust condensing temperatures in relation to outdoor air temperature. The controls will replace existing constant pressure or manually controlled system. Incentive only available to assist with the purchase of hardware needed to achieve lowered head pressure to maintain a minimum saturated condensing temperature set point of 70°F, or a 20°F variance below design heat pressure during milder weather conditions.

FOOD SERVICE (GAS) & MISCELLANEOUS

P.8.80 ENERGY STAR® Steam Cookers (Gas)

Incentives are available for new units that are ENERGY STAR qualified with a Cooking Energy Efficiency of 38% for both 5 and 6 pan units. This incentive applies towards the purchase of new or replacement energy efficient gas steamers (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.81 Convection Ovens

Incentives are available for new units with a Cooking Energy Efficiency of at least 40%. This incentive applies towards the purchase of new or replacement energy efficient gas convection ovens (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.82 Combination Ovens

Incentives are available for new units with a Cooking Energy Efficiency of at least 40%. This incentive applies towards the purchase of new or replacement energy efficient gas combination ovens (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.83 Rack Oven

Incentives are available for new units that have a heavy load Cooking Energy Efficiency of at least 50% for both single and double rack ovens. This incentive applies towards the purchase of new or replacement energy efficient gas rack ovens (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.84 ENERGY STAR® Fryers

Incentives are available for new units that are ENERGY STAR qualified with a heavy load Cooking Energy Efficiency of at least 50%. This incentive applies towards the purchase of new or replacement energy efficient gas fryers (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.85 Large Vat Fryers

Incentives are available for new units that have a heavy load Cooking Energy Efficiency of at least 80%. This incentive applies towards the purchase of new or replacement energy efficient gas large vat fryers (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible. Multi vat configurations are paid per unit.

P.8.86 Griddles

Incentives are available for new units that have a Cooking Energy Efficiency of at least 38%. This incentive applies towards the purchase of new or replacement energy efficient gas griddles (fuel switching applications are not eligible). Used or rebuilt equipment is not eligible.

P.8.87 Furnace Tube Inserts

Spiral ceramic inserts installed in the exhaust leg of heat treating furnace burner tubes are eligible for this incentive. The inserts must be new and replace existing U, W, or trident shaped burner tubes.

P.8.88 Pre-Rinse Sprayers (Gas Water Heater)

To qualify for this incentive, a low-flow, high efficiency pre-rinse sprayer less than or equal to 1.6 gallons per minute (gpm) must replace a sprayer of 2.2 gpm or greater. Customer must be a gas customer of the utility, and use gas fueled water heating.

CUSTOM

P.8.89 Custom Measures

The Program staff will review each custom application. These measures will be reviewed based on (but not limited to) the following criteria: energy savings, verifiability, cost, measure life, and payback period. Custom projects must involve a facility improvement that results in a reduction in electrical (kWh) and/or natural gas energy usage (MCF) due to an increase in system efficiency as set forth in section P.12. Applicants must provide the calculations documenting the estimated energy (kWh and/or MCF) savings. The calculations, assumptions supporting the kWh and/or MCF impact estimates and the resulting incentive amount are subject to the Program staff review and approval.

Pre-notification is required for all custom incentive applications. The pre-notification step provides an assurance that the methodology meets the program requirements. The Applicant must provide sufficient information and calculations to estimate the energy impacts. DTE Energy Your Energy Savings Program staff engineers will work with customers, their installing contractor or consultant to review the proposed savings methodology and to identify the information necessary to support the savings estimate and to collect any additional data needed to verify the savings.

Measurement and verification activities, including power measurements or monitoring for a period of time prior to and after the measure is installed may be required to document that energy impacts are consistent with the pre-approved estimates. In some cases, DTE Energy's Your Energy Savings Program staff may monitor the energy use of the base case (pre-retrofit) system as well as the post-retrofit system in order to establish the pre- retrofit energy and demand requirements. See Section P.12 for more details.

The final incentive amount will be based on the final savings documented through the Final Application and may include post-retrofit measurement review. This may be greater or less than the savings and/or incentive amount originally estimated in the pre-notification estimate, and may also be limited by fund availability.

P.9 HOW TO APPLY

The process of applying for an incentive under DTE Energy's Your Energy Savings Program is designed to be simple and to involve as few steps as possible. The Program staff is available during normal business hours to facilitate the application process.

P.9.1 Pre-Notification Application

Funding is limited and Pre-notification Applications are not a guarantee of program acceptance. DTE Energy will review final applications for eligibility and completeness.

- A Pre-notification Application **is required** for Custom projects.
- Pre-notification is **strongly encouraged** for all participants to pre-approve incentive levels and to reserve funding.
- Pre-notification commits funds for a specific project based on the following criteria:
    - Measures are completely installed within 90 days of project approval from DTE Energy

    - Customer has committed to commence work on the proposed measures within 30 days of project approval
- It is the responsibility of the Applicant to contact DTE Energy's Your Energy Savings Team if a project is delayed, substantially changed or cancelled.
- Funds that have been pre-approved for specific applications are not transferable to other projects, facilities/campuses, and/or customers.
- A complete mailed, faxed, or emailed copy of the Pre-notification Application form initiates the review process. Funding reservations are only committed to a given project when the project details have all been approved.
- The Pre-notification Application for prescriptive incentives of prescriptive measures must include sufficient information (equipment specifications, quantities, etc.) to estimate the incentive amount.
- The Pre-notification Application for custom incentives must include an estimate of the annual energy savings, as well as sufficient descriptive information, including equipment performance data, operating schedules, load profiles, assumptions and calculations and other information to support the energy savings estimates.

P.9.2 Detailed Program Steps

- **Step 1. Eligibility Check.** Verify that your project is eligible and meets the project requirements as set forth for Customer eligibility (section P.3), project requirements (section P.4), and incentive caps and limits (section P.5).

- **Step 2. Obtain, Complete and Submit a Pre-Notification Incentive Application.** Obtain a hard copy or access DTE Energy's Your Energy Savings Application form on-line at www.YourEnergySavings.com. Complete all the required information as listed on the Incentive Checklist page of the application. Pre-notification is required for custom projects and is strongly recommended for other projects. Contractors may complete the form on behalf of their customers, but all of the DTE Energy customer information and a DTE Energy customer contact name must be provided. Upon pre-notification, incentive funds will be secured for up to 90 days. A pre-inspection may be required.

  For projects requiring pre-notification, work should not begin until the customer receives a reservation letter from DTE Energy's Your Energy Savings Team.

- **Step 3. Project Installation.** Install the equipment or systems within 90 days of reservation.

- **Step 4.** Assemble the required documentation of project completion and costs, and (for custom projects) documentation of energy savings <u>within 60 days of project completion</u>. Obtain copies of the purchase orders or work orders, statements of work, equipment specifications, and paid invoices showing the costs for labor and materials for the covered work. Labor and material cost should be shown separately. The documents should clearly indicate the equipment quantities and performance that is indicated in the Incentive Application. If the project equipment is included on several invoices it will be helpful if the applicant prepares a summary sheet that totals the quantities and shows how the quantities match the quantities in the application.

- **Step 5. Obtain, Complete, and Submit a Final Application.** Obtain a hard copy, or complete and print out the Final Application form from the DTE Energy website: www.YourEnergySavings.com. Note that the Final Application form is the same as the Pre-notification Application form. If a Pre-notification Application was submitted, be sure

to correct any incomplete or incorrect information and check the "Final Application" box under the Application Type section. Final Applications must be received within 60 days after project completion or by **December 15, 2009** for the 2009 program year; whichever comes first. For Final Applications, sign and submit only after all equipment has been installed. Program funds are limited and submission of a final application does not guarantee an incentive payment. **A Customer signature is required for payment.**

- **Step 6. Final Application Review.** DTE Energy's Your Energy Savings Staff will review the Final Application and the final project documentation. A post-inspection may be required for verification purposes. Please note that the actual incentive amount paid will be based on our review of the Final Application and supporting project documentation of equipment installed, and will be subject to program specifications, terms and conditions. It is essential that both customers and contractors understand and comply with all specifications and program terms and conditions. Equipment specifications and program terms and conditions can be found on www.YourEnergySavings.com. Please note that a reservation does not guarantee an incentive. Multiple projects and reservations for projects at the same facility or customer may be subject to an annual cap.

  Incentive payments will be sent within 4 to 6 weeks from the time that all the documentation is received and the field inspection is complete.

- **Step 7. Measurement & Verification.** Some projects will be chosen for measurement and verification (M&V) independent from DTE Energy's Your Energy Savings Program purposes. If so, the customer will be contacted by a utility representative. M&V may include obtaining logged data on individual project components.

P.9.3 Discrepancies

If it is determined that there are significant discrepancies between the incentive application and DTE Energy's on-site analysis, the processing staff will contact the customer to review these differences. This provides an opportunity for the customer (or contractor) to dispute the inspection results. After a period of **10 calendar days**, if the customer (or contractor) has not contacted DTE Energy's Your Energy Savings Program Staff to discuss inspection results, the revised incentive levels will be deemed final. If the customer (or contractor) disputes the inspection results, DTE Energy's representatives and the customer (or contractor) shall thereupon attempt in good faith to resolve such dispute promptly.

P.9.4 Reservation Extension Process

If the Customer receives approval to move forward with a project and it appears the Customer will need more than 90 days to complete the project, the Customer may provide proof the project is progressing toward completion and request an extension of the reservation. DTE Energy's Your Energy Savings Staff may, but is not required to, grant an extension after reviewing project details. Length of extensions granted will depend on project type. The granting or denying of the extension request is within the sole discretion of DTE Energy.

If a customer receives one extension and it appears the project will not be completed until after the first extension has expired, the customer may provide additional proof the project is progressing toward completion and request a second extension. At the end of the second extension, customer must provide the Final Application, along with all required final documentation. DTE Energy will not grant subsequent reservation extensions and incentive payments will be subject to funding availability.

P.9.5 Forms

DTE Energy's Your Energy Savings Application form acts as both a Pre-notification Application form as well as a Final Application form.

If submitting a Pre-notification Application, check off the relevant documents that will be submitted with the incentive application under the Pre-notification header on the Incentive Checklist page of the application. Mail, fax or email the completed application to DTE Energy's Your Energy Savings Team for pre-notification and the reservation of funds.

To request payment for a completed project, submit the same form with the relevant attached documents checked off under the "Final Application" heading on the Incentive Checklist page. The Final Application must be fully completed and returned with an original signature before incentives will be paid. Signed applications received by fax or email will be treated the same as original applications received by mail. The Final Application must also include all necessary final documentation such as paid, itemized invoices and/or receipts, cut sheets, and commissioning (operation) reports (See Section P.10 below).

Please note: DTE Energy reserves the right to conduct both pre- and post-inspections of all projects.

P.10 PAYMENT PROCESS

For commercial retrofit projects, the incentives paid by DTE Energy's Your Energy Savings Program will be based on either the per-unit, per-kWh, or per-MCF incentives for the prescriptive measures and per-kWh or per-MCF for custom measures.

DTE Energy's Your Energy Savings **incentive will be paid directly to customers OR to a designated recipient –** please indicate the exact name of the designated payee and the appropriate Tax ID number on the Customer Information page of the Incentive Application, or on the Payment Release Authorization section on the Final Application Agreement page if it is a third-party recipient. If a Contractor is to be paid directly, be sure to provide the Contractor signature on the Payment Release Authorization section on the Final Application Agreement Page, as well as the Contractor's Tax ID number.

P.11 DOCUMENTATION

For prescriptive measures, the final project documentation required includes detailed invoices listing specific equipment types and quantities purchased. Copies of invoices should be indicated as "paid", and itemized with the costs for equipment, labor, supplies, and other costs. Location or business name on the invoice should be consistent with the application information. Only expenses incurred during the term of the program (program year) can be reimbursed.

Applicants may be asked to provide more detailed information on the equipment location and to aid in the pre and post-inspection process. Manufacturer's product literature, product brochures, cut sheets, or other certified performance data for the specific model numbers and sizes of the equipment installed that documents the performance factors that are used as a basis for the incentive must also be submitted with the Final Application. If the documented capacity or performance differs from the performance in the Pre-notification Application, the incentive will be adjusted accordingly. Failure to provide the documentation will delay the payment process and may result in no incentive payment.

For custom measures, final documentation may include plans or specifications for the equipment or systems that are modified, paid invoices, equipment specification sheets or other information indicating performance over the full range of operation, documentation of operating schedule and loading profiles, commissioning reports or other documentation required by DTE Energy's Your Energy Savings engineering staff. Power or other operating measurements or monitoring may be required for verification of calculated energy savings prior to approval of incentive payments. See Section P.12 for guidelines on calculating and documenting energy savings of custom measures.

All Final Application must be fully complete with final documentation and have an original signature of the customer and, if applicable, the designated third party recipient of the incentive. Applications must be received by **December 15, 2009** to apply for the 2009 program. The exact funding amounts for subsequent program years have not yet been determined; once the budget totals are finalized, they will be provided in this document.

P.12 GUIDELINES FOR CALCULATING AND DOCUMENTING ENERGY SAVINGS OF CUSTOM MEASURES

The incentives for DTE Energy's Your Energy Savings Program's custom projects are based on the calculated annual kilowatt-hour (kWh) or MCF savings. To be accepted as a basis for the incentive, the savings calculations must be developed using acceptable engineering calculation techniques supported by site-specific operating and equipment performance documentation. Applicants must also be aware that the incentive estimates are not final until after the measures have been installed and DTE Energy has performed various measurement and verification (M&V) activities. The final incentive payment may be different from the reserved amount if the post-retrofit system operation or performance does not reflect the assumptions used to set the reserve amount.

The guidelines provide suggestions for submitting project documentation to insure that your project qualifies as a DTE Energy's Your Energy Savings custom measure and the savings estimates and incentive applied for are actually realized. This section provides information to assist you in calculating/measuring energy savings associated with your project.

The analysis methods and documentation details are recommendations and not requirements. These guidelines should help speed our review of your project by helping you meet the program requirements and by helping you complete energy savings calculations.

Before you submit your application as a custom project, please check that the measures are not included as part of our prescriptive program and if so, submit them on a prescriptive application. Before you begin your savings estimate, identify the project payback period as well as the measure life. Both of these factors will determine if the measure is eligible for the program as well as identify the applicable incentive. If there is any concern on qualifying for the program, please contact the program team for assistance.

For certain projects, in addition to energy savings calculations, the program may require measurement and verification (M&V) in order to qualify for an incentive. We encourage custom incentive applicants to review the International Performance Measurement and Verification Protocol (IPMVP) (www.ipmvp.org/download.html) and review documents available through a web search on "Measurement and Verification" for some good discussion of the concepts behind project performance measurement. Any operational data that you have available to support the energy usage claims for your project can help validate your savings calculations so

please provide this data with your application. If you need assistance in identifying appropriate M&V procedures, the program team can assist you.

The following sections discuss general guidelines for project submittals. It is recommend that the Applicant contact DTE Energy's Your Energy Savings Program Team as you prepare your custom application, to discuss the data and documentation requirements and savings estimation approach.

P.12.1 General Guidelines

To estimate first year energy (kWh or MCF) savings for retrofit projects, calculate the difference between the pre-retrofit, or "base case," system energy (kWh or MCF) use and the post-retrofit or "efficient case" system kWh or MCF. The Applicants will need to define and describe the base case and efficient case system and operating conditions. The kWh and MCF savings calculations can be done in a number of ways, depending on the specific measure that is installed and the percentage of the total usage that the savings represents.

There are general requirements that are common to all Custom projects as listed below:

- Concise project description: Describe BOTH the existing (pre-retrofit or "base case") system and the proposed (post-retrofit or "efficient-case") system. Be as precise, yet concise, as possible in the descriptions - include specific quantities and equipment descriptions.
- Provide the quantity, make, model number and rated capacity of BOTH the existing and the new equipment that is being installed. Also provide other nameplate information like operating voltage and rated full load amps where appropriate. **The scope of work from the proposal to the customer is often helpful to describe the new equipment.**
- Provide copies of the manufacturer's specification sheets and/or performance rating sheets and the website address where further technical information about the equipment performance might be found.
- Identify equipment using the terminology or numbering system used by the customer. (e.g. "Replace compressor #3 with a new variable speed compressor" or "install a VFD on VAV AHU #3,5,7,8,9").
- Provide copies of sketches, drawings, equipment lists, or inventories that help to clarify the scope.
- Describe the locations where the equipment is installed.
- Describe BOTH the facility operating hours and the equipment operating schedule for each day of the week. Where equipment operation varies with days of the week or seasons, be sure to provide a description of the operation for all days of the week and all seasons.
- Describe equipment load conditions for the hours the equipment typically operates.
- Annotate all assumptions or constants used in engineering calculations.
- Provide the name and contact information of the person(s) conducting the savings calculations so that DTE Energy's Your Energy Savings Staff can discuss any questions.
- Use accepted engineering algorithms and procedures from recognized technical organizations such as ASHRAE, SMACNA, ANSI, etc.
- Use rated performance factors tested under accepted procedures specified by recognized rating agencies such as ARI, AGA, ANSI, ASTM, etc. Provide an explanation when equipment performance rating conditions vary from standard conditions.

Acceptable Calculation Methods

A list of acceptable energy savings calculation approaches follows. Each of the methods will be discussed in more detail as they apply to categories of measures in the following sections:

Whole Building Metering

For some projects, where the savings are a significant fraction (10 percent or more) of the total monthly (or annual) kWh or MCF usage, a "bills before minus bills after" approach may be used. This approach assumes that conditions are identical before and after the project, such as building occupancy levels or operating hours. Usually, a regression must be included in this approach to adjust for uncontrolled variables, such as weather.

- If a whole system or building model is used, be sure to provide sufficient documentation or annotation so that the differences in inputs between the base case and high-efficiency case can be understood and verified by the reviewers.
- Models that do not reflect the actual systems and their operation (i.e. defaults are used instead of building-specific equipment) are not acceptable.
- Whole building models should be calibrated to actual energy use (electric or gas bills) and use typical weather data, such as TMY for weather calibration.

Equipment or Process Sub-Metering

When measures are installed that affect large individual systems or sets of equipment (for example an air-compressor, chiller, process blower or induction molding machine), sub-metering may be the best way to document the savings. This may require the installation of temporary portable monitoring equipment that measures and records the equipment power at short intervals over several days or weeks. When sub-metering is used, a method must be developed to extrapolate the savings for the measurement period to a full year of operation. Component sub-metering may often include observation of other variables like outside air temperature, operating hours, or production quantities during the measurement period to allow for this extrapolation.

Engineering Calculations

For measures with impacts over several small systems, sub-metering may be impossible. For these measures, an engineering calculation method is probably the simplest method to document savings. For most equipment types and efficiency measures there are well-established engineering procedures and there are a number of public domain component or equipment performance models that are available to calculate pre- and post- energy use. One common modeling method is the "bin-method" in which the equipment pre- and post-energy requirements are identified for several fractional load "bins" (i.e. 25%, 50%, 75% and 100% load or temperature range bins) and the pre- and post-equipment performance in each load or temperature bin is applied to the loads and hours that the system operates in the bin over the year.

Whole Building Modeling Methods

For measures that have building-wide impacts or impacts across a number of systems, engineering modeling using generally accepted **public domain** software is acceptable to document savings. When using any model, the applicant must provide both the base case and post-case input files and annotate the files to clearly show how the differences between the pre-

and post-retrofit systems are being simulated. Initial savings estimates that are submitted based on manufacturers' proprietary performance models may be acceptable for initial estimates of savings but additional information and actual on site operating data or measurements verifying the model assumptions will usually be required to confirm the final savings. Applicants who expect to use modeling to estimate savings as a basis for the incentive should contact the program staff early in the project development process.

The following sections describe how these basic savings estimation principles and submittal requirements may apply to certain project types or technologies.

P.12.2 Custom Lighting Measures

The following information should be provided when submitting custom lighting measures.

1. Project description – for example, "Replace 200 – 400 watt hi-bay HID lighting fixtures in the warehouse with 220 suspended 6-lamp high output T8 fixtures equipped with daylight controls."
2. Provide a detailed lighting inventory that includes the following:
   - Location (area, aisle #, etc.)
   - Existing and new fixture description
   - Existing and new fixture wattage
   - Existing and new fixture quantity
   - Existing and new controls
   - Existing and new annual operating hours (different if installing controls)
   - Interior or exterior fixtures
3. Provide the electrical plan sheet that shows the existing and proposed lighting layout or a reflected ceiling plan and the lighting fixture schedule, when available.
4. The use of standard "default" fixture wattages is acceptable. A table of "default" fixture wattages for common fixture/lamp types is available upon request. If the fixture type being installed is not on the table, specification sheets showing the wattage of all retrofit fixtures must be provided with the lighting inventory.

Use the following general equations to calculate the savings.

Base Case Lighting kW = [(# base case fixtures * base case fixture wattage * fraction of fixtures that are typically operating) / (1000 watts/kW)]

Base Case Lighting kWh = Base case lighting kW * base case annual operation hours

Post Retrofit Lighting kW = # post-retrofit fixtures * kW per fixture * fraction of fixtures that are expected to be operating

Post Retrofit Lighting kWh = Post-retrofit lighting kW ***** post-retrofit annual operation hours

Annual kWh Savings =
(Base case lighting kWh – *post* retrofit lighting kWh) * HVAC interaction effect

Other Guidelines

When preparing the project information, please consider:

- Operating hours are typically the operating hours of the facility except as noted below. If the lighting is on a different operating schedule from the facility, consider using lighting or power data loggers to document the fixture operating hours.
    - Exit signs and emergency lighting and many hallway and stairway fixtures are typically on 24 hours a day, 7 days a week, and therefore use 8760 hours per year if you have a project that involves these technologies that falls outside of the prescriptive measures
    - In order to provide more accurate operation hours, consider dividing the fixtures into usage groups – offices, common areas, restrooms, conference rooms, etc. to define operating hours by usage group
- Pre-retrofit and post-retrofit operation hours are often the same. However, if the project includes the installation of control technologies such as occupancy sensors, timers, etc., new (lower) hours of operation usually result. Justification for the lower hours should be provided.
- Installing a lower wattage lamp of the same type is NOT considered an eligible measure unless it can be established that the replacement fixture is more efficient (i.e. the lumens per watt) than the fixture that it replaces.
- There may be cases when the program team will ask for validation of operating hours.
- Be aware that the review team will check for inconsistencies between the quantities of fixtures used in the savings calculation, shown in the invoice documentation and observed in the post-inspection.

P.12.3 Custom HVAC Measures

Note that some of the most common HVAC measures are included in the list of prescriptive measures. These measures, including HVAC chiller or packaged AC unit replacement and variable frequency drives (VFDs or VSDs) for HVAC motors, should be applied for under the prescriptive application. Common custom measures that may be applied for under the Custom HVAC Category might include:

- Water-side economizer, also know as “free cooling” (e.g. plate and frame heat exchanger, closed-loop tower, or “glycooler”)
- Exhaust heat recovery equipment (heat exchangers)
- Constant volume to variable volume water or air distribution
- Variable-speed control of centrifugal equipment (other than HVAC fans or pumps) that are throttled by less efficient means
- Control upgrades or energy management system programming changes[9]. To qualify for a Custom incentive, an energy management system needs to include a strategy not included in the standard specification.

Most (but not all) HVAC system measures are weather-dependent. As such, the preferred methods of estimating energy savings are building or system models that integrate local weather conditions with system loads and performance or “temperature bin” models. This section includes several acceptable methods for providing the savings analysis for HVAC measures. In all cases, it is important to document the pre- and post-retrofit conditions thoroughly. For most projects, the analysis will need to be calibrated and adjusted to reflect the weather variances, occupancy variations or internal load changes.

[9] Except for specific upgrade noted under prescriptive measure.

The following techniques may be employed for calculating project savings:

- Building models that are publicly available and well-documented, such as eQUEST, Energy Plus, and DOE2 are recommended for measures with building-wide or interactive effects. Proprietary vendor programs such as Trane Trace, Carrier HAP etc. may be accepted with appropriate documentation; without good documentation, these models cannot be utilized and offer little confidence in the results[10].
- ASHRAE-based simplified calculation methodologies including the "bin methods" are usually useful to estimate the savings of many weather-dependent strategies such as economizer systems (water and air), heat recovery, ventilation control, or even VAV conversions. These methods can be easily calculated in a spreadsheet format so that the underlying assumptions can be easily followed. In many cases for retrofit projects the existing building energy use and energy use patterns can provide the basis for calibration for these methods.
- Simple spreadsheet analysis may be used for certain stand-alone retrofits such as carbon monoxide sensors for parking garages.
- For certain projects, a monitoring/metering approach may be the best means to document savings. The applicant should remember that it is simpler to verify the post-case, but it is the base case condition that requires documentation for program verification. Be sure to consider pre-project measurements when planning a future project. The following are some suggestion parameters for measuring pre- and post-retrofit:
    - Power (kW), energy (kWh), gas use (MCF)
    - Air flows, temperatures, water flows
    - Outdoor temperatures and humidity (however may be available from other sources)
    - Building activity (people, hours, etc)

P.12.4 Custom Building Envelope Measures

Common custom measures that may be applied for under this category might include:

- Window treatments like external or internal shading
- Insulation
- Door or window opening treatments that reduce infiltration
- Shading

Accurately estimating envelope improvement measure energy savings is often difficult because their impacts involve a high degree of system and interactive effects. The best way to estimate the impacts of envelope treatments is to use a whole building model as described in the previous section. The models described provide the opportunity to describe the pre- and post-retrofit insulation and surface characteristics and do an excellent job of including all the system and any interactive effects.

However, setting up a whole building model to estimate the savings for envelope improvements is often not practical. There are a number of simplified degree-day or weather-based "bin analysis" methods that are sufficient to estimate the impacts of these measures. These methods are described in detail in the ASHRAE Handbooks. ASHRAE combined with local weather data files will provide most of the information and calculation procedures necessary to estimate savings resulting from building envelope measures. Some of the more common

[10] The Your Energy Savings review team may attempt to duplicate savings estimates using other tools and must be provided sufficient information to do so.

methodologies have been put into spreadsheet format and are available commercially online. The Department of Energy and some states have supported the development of analytical tools that are useful in isolating the savings for various envelope improvements such as the Cool Roof Rating Council (http://www.coolroofs.org/) tool. It is useful in estimating the impacts of roof insulation and treatments. The performance characteristics and properties of various coatings and materials are also provided.

P.12.5 Custom Process and Refrigeration Measures

Some typical measures that may fall in this category are:

- "Tower-free cooling" for process cooling (e.g. plate and frame heat exchanger, closed-loop tower, or "glycooler")
- Waste heat recovery equipment (heat exchangers)
- Constant volume to variable volume water or air distribution
- Upgrade of a refrigeration compressor
- Air compressor improvements
- Process Improvements

There are several methods that can be used to document energy savings for process measures. Nearly all process measures will require some degree of monitoring or measurements or hourly log observations to establish the load profile for the equipment, the energy use, and the savings, which are then extrapolated to a full year period. In all cases, it is important to consider any seasonal, weekly, or monthly variations in operation.

- **Short-term pre- and post-retrofit measurements extrapolated by production.** Energy use for process systems can often (but not always) be related to production output. One method to document annual savings is to compare the pre- and post-retrofit systems over a representative production period (which may include multiple shifts) and then extrapolate the results to a full year. The method is as follows:
    - Determine the pre-retrofit system kWh per unit of production per shift/production run/equipment cycles, as appropriate.
    - Determine the post-retrofit kWh per unit of production per shift/production run/equipment cycles, as appropriate.
    - Adjust the baseline using the post-retrofit production levels.
    - Extrapolate to a full year by multiplying the difference by the annual production.
- **Short-term measurements extrapolated by shifts or operating time.** In some cases the energy use does not relate to production, but to equipment operating time or availability instead. In this case the savings are similar to the above except the time in days or number of shifts is the factor used to extrapolate the savings to the full year.
- **Short-term monitoring extrapolated to a full year.** A short term pre- and post monitoring of a week or two can be carried out and the results extrapolated to a full year based on time. The difference is then multiplied by the ratio of annual hours to the monitored hours.
- **Post-retrofit energy monitoring and calculated base case energy, extrapolated to a full year.** This method is useful when the performance or efficiency of the base case equipment is known, but the load profile was not monitored prior to the project. This method often applies to compressed air systems or large refrigeration systems. In this case, the post-retrofit system power and output (cfm or tons) is measured for a period of a week or more. The base case power for the same period is then calculated by

multiplying the output by the base case equipment performance. The savings are then extrapolated to a full year by extrapolating based on the projected loading pattern.

P.12.6 Unacceptable Documentation

This section lists methods that are not acceptable for calculating the energy savings for custom measures.

- Vendor-specific or proprietary analysis software will not be accepted unless the methods used are available for review and the input parameters are specific to the site.
- Simple percent of total kWh or MCF savings or percent of end use energy savings are not acceptable.
- Factors or percentages of savings achieved at other sites are not acceptable as documentation for custom savings unless there is an extensive body of statistically valid results.
- Using rules of thumb for calculating savings is not acceptable.
- Marketing materials from the manufacturer or distributor, their company's case studies, or savings claims based on non-standardized methods are not acceptable. For example, a manufacturer or distributor product savings claim that has not been verified by a certified third party will not be accepted.
- For intermittently operating equipment, the hours of operation must be documented in some fashion – either from logs, elapsed time meters, or daily observation of occupancy hours. If documentation is not provided, very conservative estimates must be used.
- Spot measurements as documentation of power or energy use are typically not acceptable for variable load equipment.
- Amperage can often be used as a proxy for true power (kW) measurements EXCEPT for systems where the power factor may vary significantly, as in variable speed drive situations (where the voltage may vary as well as the amperage). Contact DTE Energy's Your Energy Savings Team to verify monitoring needs where VSDs are installed.

P.13 DEFINITIONS

BEF: Ballast Efficacy Factor

Btuh: British Thermal Units per hour

CEE: Consortium of Energy Efficiency

CFL: Compact Fluorescent Lamp

COP: Coefficient of Performance

Customer: The customer is the utility customer-of-record who pays the bills for the principal account (the account with the largest kWh or MCF consumption) that is affected by the project. The primary criterion for determining the customer is the Account name.

EER: Energy Efficiency Ratio

Facility: The primary criterion for determining the extent of a site is necessary for the incentive cap. A facility is defined as any single meter or multiple meters on a single property for which a single customer is responsible for paying the DTE Energy electricity and/or gas bill.

Final Application: Once the Project has been completed, the Applicant is to submit a copy of the Application form with any information not completed in the Pre-Notification Application. The Final Application must include a signature and all appropriate backup documentation, including detailed invoices.

IPLV: Integrated Part Load Value

LED: Light Emitting Diode

Incentive: The incentive is the amount to be paid to the customer or contractor once the final project documentation has been approved.

MLPW: Mean Lumens per Watt

Pre-Notification: Pre-Notification is the process of informing the Program Team of your project plans for pre-notification based on customer eligibility and project requirements. Pre-Notification is required for all Custom projects, and strongly encouraged for other measures.

PTAC: Package Terminal Air Conditioner

Program Year: The program year starts on July 13, 2009 and ends on December 31, 2009.

THD: Total Harmonic Distortion

P.14 SATISFACTION

DTE Energy's Your Energy Savings Team will take every possible step to ensure a high level of satisfaction with all aspects of the program. However, if any problems or concerns should arise, we encourage you to contact DTE Energy's Your Energy Savings Program Hotline: 1-866-796-0512.

If you have questions that the hotline staff cannot answer, they can provide you with the appropriate contact information or other resources to help answer your questions.

P.15 TAX IMPLICATIONS

Paid incentives that exceed $600 are reported to the IRS on Form 1099. Incentive payments may have tax implications for businesses and/or contractors who receive them. The recipient is responsible for any and all tax payments that may result from an incentive payment. Participating businesses and contractors are encouraged to consult their accountant or tax experts to determine implications.

P.16 DISCLAIMER

Neither DTE Energy nor any of its affiliates guarantees the energy savings or makes any warranties associated with the measures eligible for incentives under this program. DTE Energy has no obligations regarding, and does not endorse or guarantee, any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures. DTE Energy has no obligation to make any incentive described herein unless certain minimum requirements of the Program have been met and funds allocated for such incentives are available for distribution.

P.17 CONTACT INFORMATION

Program Hotline:	1-866-796-0512
Email Address:	YourEnergySavings@kema.com
Website:	www.YourEnergySavings.com
Mailing Address:	DTE Energy's Your Energy Savings P.O. Box 11289 Detroit, MI 48211
Fax:	1-877-607-0744