Refrigeration Specifications & Worksheet

Tucson Electric Power

Refrigeration Measure Incentives

Anti Sweat Heater Controls	$12.00/Linear Foot Case
Automatic Door Closer	$40.00/Door
EC Evaporator Fan Motor/Controls	$100/Motor
Efficient Compressors	$80/Ton
Efficient Condensers	$20.00/Ton
Floating Head Pressure Controls	$20.00/Ton
High Efficiency Refrigerators	$125.00

High Efficiency Freezers	$125.00
High Efficiency Evap. Fan Motors	$50.00/Motor
LED Case Lighting Freezer	$30.00/Door
LED Case Lighting Refrigerator	$25.00/Door
Strip Curtains	$5.00/Square Foot
Vending Machine Controls	$75.00/Controller

Measure Specifications

Anti-Sweat Heater Controls

For this measure, a 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.

Automatic Door Closer

Measure: Install a new device to automatically close the main insulated door of an existing walk-in cooler or freezer.

- Only Retrofit installations are eligible for incentives.
- The auto-closer must firmly close the door when it is within one inch of full closure.

Electronically Commutated Evaporator Fan Motor with Evaporator Fan Control

Replacement of an existing standard efficiency shaded pole evaporator fan motor without controls with an electronically commutated (EC) evaporator fan motor with controls in medium and low temperature walk-in coolers and freezers. Must control a minimum fan load of 1/47 where the fan(s) operate continuously at full speed. Must reduce fan motor power by at least 75% during the compressor off-cycle. This measure is not applicable if any of the following existing (base case) conditions apply: the compressor runs all the time with high duty cycle, the evaporator fan does not run at full speed all the time, the evaporator fan motor runs on poly-phase power, or the evaporator does not use off-cycle or time-off defrost.

Efficient Compressors

Replace inefficient single compressor per line-up system with a high efficiency, multiplex (parallel) system. High efficiency features of this measure include floating head pressure by means of a variable speed fan control, and mechanical sub-cooling. In a multiplex system, multiple compressors serve a specific suction group, and each suction group serves one or more line-ups having similar temperatures.

- The replacement compressor must not exceed 110% of the existing compressor capacity.
- The invoice must show both the replaced and new compressor model numbers.
- The new compressor must meet or exceed the following efficiency for the equipment type.

Equipment Type	Efficiency (COP)
Walk-in Cooler	4.14
Walk-in Freezer	1.2
Reach-in Freezer	1.67
Food Service Equipment	2.15
Beverage Merchandiser	2.15

Efficient Condensers

Must replace existing condenser with an energy efficient unit equipped with several additional control mechanisms. This measure is only applicable to existing multiplex systems and does not apply to those converted from single compressor to multiplex; see the Efficient Compressor measure for existing single compressor to multiplex rebates. Retrofit air-cooled systems with an EER of 105 Btu/hr/Watt (for the condenser only) should operate with a temperature differential (TD) between the Saturated Condensing Temperature (SCT) and ambient design temperature of 10°F TD for low temperature and 15°F TD for medium temperature systems. Retrofit, evaporatively cooled systems with EER of 240 Btu/hr/Watt (for the condenser only) should operate at a 18°F TD above ambient wet-bulb temperature. Fans must be either staged or controlled via VSD and have variable set point floating head pressure controls. Manufacturer specifications showing ratings must be provided.

Evaporator Fan Motor

This measure is applicable to the replacement of an existing standard-efficiency shaded-pole evaporator fan motor in refrigerated display cases or fan coil in walk-ins. The replacement unit is an ECM motor.

Floating Head Pressure Controls

Measure: Convert the head pressure controls of an existing multiplex system from fixed control to floating control to take advantage of low outdoor-air temperatures.

- The condensers must use variable speed drive, staged fan-operation, or a combination of both.
- The primary market for this measure is grocery stores and refrigerated warehouses.

High-efficiency Reach-in Refrigerators and Freezers

This measure involves replacing standard supermarket reach-in refrigerated cases with ENERGY STAR® Certified high- efficiency cases, which includes one-door, two-door, and three-door refrigerators and freezers. All one-door units have a capacity of ≤30 cubic feet; two-door units are ≤60 cubic feet; and three-door units are ≤90 cubic feet. ENERGY STAR® Certified commercial solid door refrigerators and freezers are designed with components such as electronically commutated motor (ECM) evaporators and condenser fan motors, hot gas anti-sweat heaters, or high-efficiency compressors. A manufacturer's specification sheet must accompany the application.

To verify your product or look up additional Energy Star Certified products please visit:
http://www.energystar.gov/certified-products/certified-products?c=products.pr_find_es_products

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Project Name:		TEP Account #:	

LED Case Lighting

Measure: Replace T12 or T8 fluorescent lamps with qualified LED lamps. (See "LED Lighting Requirements (LED Lamps and Refrigerated Case Lighting)" on the "Lighting" Tab.)

- Refrigerated and freezer cases are eligible.
- Replace four-foot, five-foot, and six-foot fluorescent lamps on a one-for-one basis.
- Motion sensor must turn the light off when no motion is detected.
- Replacement cases with factory installed LED lamps are eligible for this incentive.

Strip Curtains on Walk-ins

New strip curtains or clear plastic swinging doors must be installed on doorways of walk-in boxes and refrigerated warehouses. This incentive is not available for display cases or replacing existing strip curtains. Incentive is based on the square foot of the opening.

Vending Machine Controls: Beverage, Snack and Cooler

Controller for both types of systems 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.

- The beverage machine is assumed to be a refrigerated vending machine that contains only non-perishable bottled and canned beverages.
- For the beverage machine, the control logic should power up the machine at 2-hour intervals to maintain product temperature.

Installed Measures

Measure	Type	Quantity	Incentive	Subtotal
Anti_Sweat_Heater_Controls	Multideck-Med Temp	1	$12.00	$12
Automatic_Door_Closers	Walk_In_Cooler	1	$40.00	$40
EC_Motors	With_Controls	1	$100.00	$100
High_Efficiency_Refrigerator	1-Door	1	$125.00	$125
High_Efficiency_Freezer	2-Door	1	$125.00	$125
High_Efficiency_Evap_Fan_Motor	1/8	1	$50.00	$50
LED_Case_Lighting	Refrigerator_per_Door	1	$25.00	$25
Strip_Curtains	Freezer	1	$5.00	$5
Vending_Machine_Control	Snack Machine	1	$75.00	$75
			Subtotal	**$557**

Compressor/Condenser/Floating Head Pressure Control Measures

Measure	Type	Size (Tons)	Quantity	Incentive	Subtotal
Efficient_Compressors	Walk_In_Cooler	3	1	$80.00	$240
Efficient_Condensers	Efficient_Condenser	4	1	$20.00	$80
Floating_Head_Pressure_Controls	Walk-In Cooler/Refrig	5	1	$20.00	$100
				Subtotal	**$420**

Project Completion Date
May 5, 2015

All work shall be performed in accordance with all applicable professional standards and comply with all applicable federal, state, and local laws, ordinances,codes and regulations.

Total: **$977**

Rebates cannot exceed 75% of the incremental measure cost.