

Table of Contents	Page #
Cases	2
1. Low or Medium Temperature Open Case to New Reach-in	3
2. Low Temperature Reach-in or Coffin to New High Efficiency Reach-in.....	3
3. Medium Temperature Open Case to New High Efficiency Open Case	3
4. Standard Doors to Low/No Anti-Sweat Heat Doors for Low Temperature Reach-in	3
5. Cases: No Doors to Doors	4
Controls	5
6. Anti-Sweat Heater (ASH) Controls.....	5
7. Walk-in Evaporator Fan Control – ECM – Low & Medium Temperature.....	5
8. Floating Head Pressure Controller for Multiplex Compressor System.....	6
9. Floating Head Pressure Control on Single Compressor Systems	6
10. Floating Suction Pressure Controller	7
11. Floating Head and Floating Suction Pressure Controls: Standard to Advanced	7
12. Floating Suction Pressure Controls: Standard to Advanced	8
Strip Curtains	8
13. Strip Curtains	8
Gaskets	9
14. Door Gaskets for Solid or Reach-In Glass Doors	9
Motors	9
15. ECMs - Replace Shaded Pole Fan Motors in Refrigerated Display Cases	9
16. ECMs - Replace Shaded Pole Fan Motors in Walk-in Coolers or Freezers	9
17. ECMs for Compressor Head Fans	10
18. VFD on Condenser Fan Motor	10
Condensers & Compressors	11
19. High Efficiency Multiplex Compressor System	11
20. Efficient / Oversized Air or Evaporative Condenser for Multiplex	12
21. Multiplex Compressor System with Efficient Condenser	13
22. Air-Cooled to Evaporative-Cooled Condenser	13
23. Efficient Compressors — Low Temperature	13
Lighting	14
24. General Lighting Retrofits	14
25. Case Lighting Retrofits	14
Commercial Food Service Measures	14
26. Electric Hot Food Holding Cabinet	14
27. Electric Steamer	14
28. Electric Fryer	14
29. Electric Convection Oven	14
30. Electric Combination Oven	14
31. Pre-Rinse Spray Valves	14
HVAC	16
32. Demand Controlled Kitchen Ventilation	16
33. Advanced Rooftop Unit Control Retrofit	17
34. Ductless Heat Pumps (DHP)	17
35. Connected Thermostat	18
Whole Building Measures	19
36. Grocery Existing Building Commissioning (EBCx)	19
37. Grocery New Construction	21

These terms and conditions are subject to change without notice.

Please check with your Account Manager to confirm that your proposed installation meets terms and conditions or call 1.800.230.9420 to speak with a program representative. If you have a custom measure that yields equal or greater energy savings, you may request an engineering review to determine whether it qualifies for a rebate.

Replaced equipment must be disposed of or recycled in accordance with current environmental laws after removal.

Refrigeration Retrofits

"Low temperature" covers evaporator temperatures below 0°F.

"Medium temperature" covers evaporator temperatures between 1°F and 35°F.

Cases

1. Low or Medium Temperature Open Case to New Reach-in

Must replace an existing low or medium temperature open vertical display case with a new high efficiency reach-in case.

<u>Existing Equipment Requirements</u>	<u>Replacement Equipment Requirements</u>
T-8/10/12 lamps	LED lamps
No doors	Glass doors
	ECM fan motors

Exclusions:

Refurbished cases are not eligible for rebate; replacement case must be new and have zero in-service hours. Additional separate rebates cannot be claimed for Efficient Evaporator Fan Motors or T-8/LED lamps. New case length must be equal to or shorter than original case.

Recommendations:

Customer should consider using compressor capacity modulation mechanisms (such as VFDs, cylinder un-loaders, evaporator pressure regulating valves and re-setting to higher suction pressures/temperatures).

Units: Linear feet of case

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate:

Low Temp case – T12 and T8 Baseline: \$400/ Ln feet of case
Med Temp case – T12 and T8 Baseline: \$150/ Ln feet of case

2. Low Temperature Reach-in or Coffin to New High Efficiency Reach-in

Must replace an existing low temperature reach-in or coffin case with a new high efficiency reach-in case.

<u>Existing Equipment Requirements</u>	<u>Replacement Equipment Requirements</u>
T-8/10/12 lamps, (reach-in only)	LED lamps
Glass doors (reach-in only)	Low/no anti-sweat heat glass doors (see measure #4)
	ECM fan motors

Equipment Terms and Conditions



Exclusions:

No additional rebate available for Anti-Sweat Heater Control.
 Reach-in cases replacing reach-in case must be equal to or shorter than original case.
 Reach-in cases replacing coffin cases must be equal to or shorter than 1/3 the original case length.
 Refurbished cases are not eligible for rebate; replacement case must be new and have zero in-service hours.

Recommendations:

Customer should consider using compressor capacity modulation mechanisms (such as VFDs, cylinder un-loaders, evaporator pressure regulating valves and re-setting to higher suction pressures/temperatures).

Units: Linear feet of case

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate:

Reach-in to high efficiency reach-in: \$130/ Ln feet of case
 Coffin to high efficiency reach-in: \$55/ Ln feet of case

3. Medium Temperature Open Case to New High Efficiency Open Case

Must replace an existing Medium temperature open case with a new high efficiency open case.

Pre-Retrofit Requirements

Post-Retrofit Requirements

T-8/10/12 lamps

LED lamps

Evaporators must meet Saturated Evaporative Temperatures (SET) as follows: Produce, $\geq 29^{\circ}\text{F}$; Dairy / Deli, $\geq 26^{\circ}\text{F}$; Meat, $\geq 22^{\circ}\text{F}$

ECM fan motors

Exclusions:

Refurbished cases are not eligible for rebate; replacement case must be new and have zero in-service hours.
 New case length must be equal to or shorter than original case.
 Additional separate rebates cannot be claimed for Efficient Evaporator Fan Motors or LED lamps.

Recommendations:

Customer should consider using compressor capacity modulation mechanisms (such as VFDs, cylinder un-loaders, evaporator pressure regulating valves and re-setting to higher suction pressures/temperatures).

Units: Linear feet of case

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate: \$30/ Ln feet of case

4. Standard Doors to Low/No Anti-Sweat Heat Doors for Low Temperature Reach-in

Must replace an existing standard glass door of a low temperature reach-in or walk-in reach-in display case with a low/no anti-sweat heat glass door.

Pre-Retrofit Requirements

Post-Retrofit Requirements

Glass door

Triple pane glass door

Equipment Terms and Conditions



Anti-sweat heat >0.39 amps/ln ft of case at 120 volts	Anti-sweat heat in door rail, glass, and frame must be ≤ 0.39 amps/ln ft of case at 120 volts.
	Doors must prevent condensation from occurring in the frame assembly.
Exclusions: An additional separate rebate cannot be claimed for Anti-sweat Heater Controls.	
Units: Door	Pre-Inspection Required: Yes
Measure Life: 15 years	Rebate: \$173.25/ Door

5. Cases: No Doors to Doors

Must add glass doors to an existing open vertical medium temp display case.

<u>Existing Equipment Requirements</u>	<u>Replacement Equipment Requirements</u>
T-8/10/12 lamps or LEDs	LEDs. See DLC Technical Requirements for compliance. Total case lighting power ≤ 17.5 watts per linear foot of case
No Doors	No anti-sweat heat (ASH) doors (no heat in the glass or the glass frame)
Exclusions: Retrofitted door must not have anti-sweat heat in the door, rail, or frame. Not applicable to wet rack cases. Total lighting power in the proposed case may not exceed the total lighting power of the base case. The efficacy of the LED lamp must be no less than 10 lumens/watt of the Design Lights Consortium specification of 80 lumens/watt.	
Recommendations: Refrigeration load will be reduced as a result of adding doors to cases. Consult with your refrigeration contractor to make adjustments to refrigeration system capacity control. Program recommends that LED products be selected from the following Qualified Products List (QPL), have a 5 Year manufacturer product warranty and have an efficacy of at least 80 lumens/Watt. www.designlights.org www.lightingdesignlab.com	
Additional Information: Standard Power LED lighting refers to cases with a total lighting power consumption of ≤ 17.5 watts and > 9.5 watts per linear foot of case Low Power LED lighting refers to lighting fixtures with a power consumption less than of ≤ 9.5 watts per linear foot of case "French" Doors are a configuration of two reach-in doors that swing open away from the center interface between the two doors. French style doors do not have a traditional mullion; instead they have overlapping gasket material that creates a temporary seal when the two doors are closed. French doors typically have lighting on the doors next to the hinges, and along the top door frame.	
Units: Linear foot of case	Pre-Inspection Required: Yes
Measure Life: 12 years	Rebate: Add doors with LED Baseline: \$80/ Ln foot of case Add doors with T-8/10/12 Baseline: \$110/ Ln foot of case

Controls

6. Anti-Sweat Heater (ASH) Controls

Must install a device that controls the ASH load of reach-in doors. This measure is relevant for both MT and LT reach-in glass door cases.

Pre-Retrofit Requirements

Post-Retrofit Requirements

Medium Temperature Case

Uncontrolled ASH present > 0.20 amps/ft of case (door rail, glass and/or frame heating element combined)

Medium Temp: Controller settings must enable ASH run time to be reduced by at least 50%. Includes any heating element in door rail, glass, and frame.

Low Temperature Case

Uncontrolled ASH present > 0.39 amps/ft of case (door rail, glass and/or frame heating element combined)

Low Temp: Controller settings must enable ASH run time to be reduced by at least 50%. Includes any heating element in door rail, glass, and frame.

Exclusions:

An additional separate rebate cannot be claimed for Standard Doors to Low/No Anti-Sweat Heat Doors for Low Temperature Reach-ins.

This measure only applies to technologies that reduce energy consumption of anti-sweat heaters based on sensing humidity. It does not apply to doors equipped with low/no anti-sweat heat.

Additional Information:

If there is no amp tag for the case door, please call program staff to help qualify the case or door frame.

Units: Linear foot of case

Pre-Inspection Required: No

Measure Life: 8 years

Rebate: \$40/ Ln foot of case

7. Walk-in Evaporator Fan Control – ECM – Low & Medium Temperature

Must install controls that reduce energy consumption of evaporator fan motors in walk-ins by reducing fan speed when there is no refrigerant being delivered to the evaporator.

Pre-Retrofit Requirements

Post-Retrofit Requirements

Electronically Commutated Motor (ECM)

Same

Evap fan motor size (nameplate rated output power) > 23 Watts

Evap fan motor size (nameplate rated output power) > 23 Watts

Evap fan full speed runtime: full speed 24hrs/day except if off for defrost periods

Evap fan full speed runtime: full speed only during call for cooling (compressor on or liquid-line solenoid open)

Evap fan full speed: 1,550 RPM

Evap fan full speed: 1,550 RPM

Evap fan low speed: N/A

Evap fan low speed: 500<=RPM>=600

Alternative to low speed: On/Off Cycling. During periods when there is no refrigerant being delivered to the evaporator, eligible controllers may cycle the fans off only if they turn the fans on periodically during that time to circulate air in the walk-in (not more than 1 minute every 8 minutes or 13% of time).

Exclusions:

Not applicable if Evaporator Fan Control is already installed.

On walk-in refrigeration circuits served by multiplex systems, liquid-line solenoid is required for adequate control; multiplex systems without liquid-line solenoid on the walk-in circuit are not eligible at this time.

Units: Motor

Pre-Inspection Required: No

Measure Life: 15 years

Rebate: \$35/ Motor

8. Floating Head Pressure Controller for Multiplex Compressor System

Must convert the head pressure controls of an existing multiplex system from fixed control to floating control.

Existing Equipment Requirements

Replacement Equipment Requirements

Fixed head pressure set >70F

Floating head pressure

Air-cooled condensers:

Must maintain an ambient following condensing setpoint of 12°F temperature differential (TD) or less between the outside air dry-bulb temperature and the setpoint.

Either use a variable speed drive (VFD) or assume no change in fan operation. If a variable frequency drive is used it must control all condenser fans in parallel, unless the controls sequence receives pre-approval by The Program.

Evaporative-cooled condensers:

Must maintain a wet-bulb following setpoint of 17°F TD or less between the outside air wet-bulb temperature and the setpoint.

Must be controlled with a VFD or 2 speed fan control.

Minimum saturated condensing temperature must be equal to or less than 70°F.

Exclusions: Measure cannot be used in conjunction with measures that require floating head pressure controls.

Additional Information: For air-cooled systems only, in place of all systems set with a 12 degree TD or less, low temperature systems can be set with a 10 degree TD or less while medium temperatures systems are set to 15 degree TD or less.

Energy savings will be higher the higher the baseline fixed head pressure setpoint. Condensers with a VFD will result in higher savings than those without a VFD

Units: Compressor nameplate horsepower

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate:

Air or Evap-Cooled: \$60/ Compressor nameplate HP

Air or Evap-Cooled with VFD: \$80/Compressor nameplate HP

9. Floating Head Pressure Control on Single Compressor Systems

Must convert the head pressure controls of an existing single compressor system from fixed control to floating control. Applicable to either condensing unit or remote condensing refrigeration systems.

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
Fixed pressure head control valve	Must replace any nonadjustable flood-back control valve with adjustable flood-back control to saturated pressure equivalent of 70° F or less. Alternatively, a fan control safety switch can be used to maintain adequate head pressure. Pressure setting must be verified against a calibrated pressure gauge or transducer.
Expansion valve	To prevent evaporator from starving at low condensing pressures, one of the following must be implemented: <ul style="list-style-type: none"> - Replace each expansion valve with balanced-port valve or electronic expansion valve (EEV) sized to meet the load requirement at 70° F condensing temperature - Install a device to supplement refrigerant feed to each evaporator attached to the condenser. Exemption: Existing expansion valve is a balanced port or electronic expansion valve.
Compressor motor nameplate indicates motor is 1 HP or more	Same
A single compressor serves suction group	Same
Condenser intake air must be from outside ambient air	Same
Units: Compressor nameplate horsepower	Pre-Inspection Required: Yes
Measure Life: 15 years	Rebate: Condensing Unit: \$100/ Compressor nameplate HP Remote Condensing Unit: \$60/ Compressor nameplate HP

10. Floating Suction Pressure Controller

Must convert the suction pressure controls of an existing multiplex system from fixed control to floating control.

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
Fixed suction pressure set point	Floating suction pressure
	Suction pressure must be adjusted to the highest point that can still maintain setpoint temperatures at monitored cases on the suction circuit.
Units: Compressor nameplate horsepower	Pre-Inspection Required: Yes
Measure Life: 15 years	Rebate: \$15/ Compressor nameplate HP

11. Floating Head and Floating Suction Pressure Controls: Standard to Advanced

Must replace existing mechanical expansion valves with electronic expansion valves or balanced port valves on all evaporator coils served by the impacted refrigeration system

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
<p>A multiplex refrigeration system with mechanical expansion valves</p> <p>Floating head pressure control is enabled with a minimum saturated condensing temperature setpoint of 70°F</p>	<p>Must replace mechanical expansion valves with electronic expansion valves or balanced port valves on all evaporator coils served by the impacted suction groups</p> <p>Must change minimum saturated condensing temperature setpoint to 65°F or lower</p> <p>Must commission system to minimize superheat without impacting system performance</p> <p>Floating suction setpoints must be optimized to allow suction pressure to rise to the highest pressure while still maintaining</p>
<p>Exclusions: At least ¼ of the retrofitted system's nominal compressor horsepower must be low temperature (e.g. suction temperature setpoint is ≤ 0°F)</p>	
<p>Recommendations: For additional energy savings, the lowest possible minimum saturated condensing temperature setpoint should be used.</p> <p>A refrigeration contractor with system design experience should be consulted before measure implementation to ensure that the system will continue to operate within design parameters.</p>	
Units: Nominal Compressor HP	Pre-Inspection Required: Yes
Measure Life: 10 years	Rebate: \$32/HP for balance port valve retrofit \$90/ HP for electronic expansion valve retrofit

12. Floating Suction Pressure Controls: Standard to Advanced

Must replace existing mechanical expansion valves with electronic expansion valves on critical loads served by the impacted suction groups

Pre-Retrofit Requirements

A multiplex refrigeration system with mechanical expansion valves

Post-Retrofit Requirements

Must replace mechanical expansion valves with electronic expansion valves on critical loads on impacted suction groups

Must adjust system to minimize superheat without impacting system performance

Floating suction setpoints must be optimized to allow suction pressure to rise to the highest pressure while still maintaining temperature at the critical case(s).

Notes:

Pre-approval must be granted prior to installation. Pre-approval is contingent upon an engineering review to verify conformity with Terms and Conditions before any installation. Please contact your Field Energy Analyst or program headquarters to pre-qualify this measure for the rebate.

Exclusion:

This measure cannot be combined with Floating Head and Floating Suction Pressure Controls: Standard to Advanced (Measure #11)

Recommendations:

A refrigeration contractor with system design experience should be consulted before measure implementation to ensure that the system will continue to operate within design parameters.

Units: Nominal Compressor HP

Pre-Inspection Required: Yes

Measure Life: 10 years

Rebate: \$25/HP

Strip Curtains

13. Strip Curtains

Must install new strip curtains or plastic swinging doors on qualifying walk-in doorways.

Pre-Retrofit Requirements

No strip curtains installed

Post-Retrofit Requirements

Strip curtains ≥ 0.06 inches thick

Low temp strip curtains must be used on low temp applications.

Exclusions:

Rebate is only eligible for applications in supermarket walk-in freezers & coolers, convenience store freezers and restaurant walk-in freezers. A supermarket is defined as a $\geq 10,000$ sq ft self-service commercial retail food service facility. A restaurant is defined as a commercial retail facility with the majority sales resulting from prepared food.

This measure is eligible for a one-time incentive only. Measure is not eligible for equipment with strip curtains included in a maintenance contract, providing regular upkeep/replacement. Rebate is not available for replacement of existing strip curtains, or application of strip curtains on display cases, or restaurant walk-in freezers located inside of walk-in coolers.

Rebate is not available for other facility types such as drug stores.

Notes: Rebates are only available to certified strip curtain trade allies. If you are interested in certification information, please contact the Program at 800-230-9420. Restaurants: Only Walk-in Freezer boxes qualify for rebates.

Units: Square feet of doorway (measured inside door frame)

Pre-Inspection Required: No

Measure Life: 4 years

Rebate: \$9/ Square feet of doorway

Gaskets

14. Door Gaskets for Solid or Reach-In Glass Doors

Applicable to main insulated solid door(s) of walk-in cooler or freezer that open to ambient temperatures and/or standard size reach-in glass or solid door(s) of a low or medium temperature display case.

Pre-Retrofit Requirements	Post-Retrofit Requirements
Worn or damaged gasket (and/or door sweep) with degradation sufficient to create an air gap (leak) equal to or greater than 6 inches in length. This measure is eligible for a one-time incentive only. Measure is not eligible for equipment with gaskets included in a maintenance contract providing regular upkeep/replacement.	Replacement gaskets and/or door sweep must meet the manufacturer's specifications regarding dimensions, materials, attachment method, style, compression, and magnetism.
Exclusions: Under counter half coolers, freezers, or beverage merchandisers do not qualify for rebates.	
Units: Door	Pre-Inspection Required: Yes (Pre-Inspection alternative: If program audit took place more than one month prior to the proposed installation date, photo verification of damaged or missing gaskets may be used in lieu of pre-inspection.)
Measure Life: 4 years	Rebate: Walk-In Cooler: \$25/ Door Walk-In Freezer: \$65/ Door Reach-In Cooler: \$25/ Door Reach-In Freezer: \$40/ Door

Motors

15. ECMs - Replace Shaded Pole Fan Motors in Refrigerated Display Cases

Applicable to existing shaded pole evaporator fan motors in refrigerated display cases.

Pre-Retrofit Requirements	Post-Retrofit Requirements
Shaded pole motor in display case	Electronically Commutated Motor (ECM) in display case
Units: Motor	Pre-Inspection Required: No
Measure Life: 15 years	Rebate: \$55/ Motor

16. ECMs - Replace Shaded Pole Fan Motors in Walk-in Coolers or Freezers

Applicable to existing shaded pole evaporator fan motors in refrigeration system evaporators in walk-in coolers or freezers.

Pre-Retrofit Requirements	Post-Retrofit Requirements
Shaded pole motor in walk-in evaporator	Electronically Commutated Motor (ECM) in walk-in evaporator

Equipment Terms and Conditions

Exclusions: Not applicable for motors with fans less than 10" in diameter. Not applicable if Evaporator Fan Control is already installed. This measure cannot be combined with "Walk-in Evaporator Fan Control – ECM" measure.	
Units: Motor	Pre-Inspection Required: No
Measure Life: 15 years	Rebate: \$140/ Motor

17. ECMs for Compressor Head Fans

Must replace existing shaded pole compressor head-cooling fan motors with ECM fan motor.

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
Shaded pole motor, 35-55 Watts	ECM motor, ≤20 W atts
Exclusions: Applicable to only low temperature reciprocating compressor systems that are an integral part of a refrigeration system with a remote air cooled or evaporative condenser.	
Units: Motor	Pre-Inspection Required: No
Measure Life: 15 years	Rebate: \$62/ Motor

18. VFD on Condenser Fan Motor

Must install variable frequency drive (VFD) on condenser fan motors. Not applicable for new condensers.

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
No VFD present	All condenser fan motors controlled via VFD
Exclusions: Cannot be combined with measures that require a VFD or assume their installation in the energy savings calculations.	
Units: Motor nameplate horsepower	Pre-Inspection Required: Yes
Measure Life: 15 years	Rebate: \$225/ Motor nameplate horsepower

Condensers & Compressors

19. High Efficiency Multiplex Compressor System

Must replace stand-alone compressor system with a high efficiency multiplex compressor system.

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
Standalone compressor system	High efficiency multiplex compressor system

Equipment Terms and Conditions

<p>Air Cooled Condenser - Fixed pressure head</p>	<p>Floating head pressure controls, air-cooled condensers: Must use staged fans or variable speed drive. Must maintain an ambient following condensing setpoint of 10°F temperature differential (TD) or less between the outside air drybulb temperature and the setpoint for low temperature systems, and a 15°F TD or less for medium temperature systems. When a single circuit condenser is used, it must operate at a 10°F TD or less. Minimum saturated condensing temperature must be equal to or less than 70°F.</p>
<p>Evaporative Cooled Condenser - Fixed pressure head</p>	<p>Floating head pressure controls, evaporative-cooled condensers: Must use variable speed drive. Must maintain a wetbulb following setpoint of 25°F TD or less between the outside air wetbulb temperature and the setpoint. Minimum saturated condensing temperature must be equal to or less than 70°F.</p>
<p>Exclusions: An additional rebate cannot be claimed for Floating Head Pressure Control</p>	
<p>Notes: See measure #20 if this measure is implemented in tandem with an efficient oversized condenser. Rebate is limited to 120% of the required condenser capacity necessary to meet TD requirements. Pre-approval must be granted prior to installation. Pre-approval is contingent upon an engineering review to verify conformity with Terms and Conditions before any installation. Please send a refrigeration schedule to your Field Energy Analyst or program headquarters to pre-qualify this measure for the rebate.</p>	
<p>Units: Ton of multiplex compressor capacity</p>	<p>Pre-Inspection Required: Yes</p>
<p>Measure Life: 15 years</p>	<p>Rebate: \$300/ Ton of multiplex compressor capacity</p>

20. Efficient / Oversized Air or Evaporative Condenser for Multiplex

Must replace an existing condenser with a new efficient/oversized condenser.

<u>Pre-Retrofit Requirements</u>	<u>Post-Retrofit Requirements</u>
Existing condenser	Efficient/oversized condenser
Air Cooled Condenser - Fixed pressure head	<p>Floating head pressure controls, air-cooled condensers: Must use stage fans or variable speed drive.</p> <p>Must maintain an ambient following condensing setpoint of 8°F temperature differential (TD) or less between the outside air drybulb temperature and the setpoint for low temperature systems, and a 13°F TD or less for medium temperature systems. When a single circuit condenser is used, it must operate at an 8°F TD or less.</p> <p>Minimum saturated condensing temperature must be equal to or less than 70°F.</p>
Evaporative Cooled Condenser - Fixed pressure head	<p>Floating head pressure controls, evaporative-cooled condensers: Must use variable speed drive.</p> <p>Must maintain a wetbulb following setpoint of 18°F TD or less between the outside air wetbulb temperature and the setpoint.</p> <p>Minimum saturated condensing temperature must be equal to or less than 70°F.</p>
	Condenser energy efficiency ratio (EER) must be 105 or greater at a 30°F TD.
<p>Exclusions: An additional rebate cannot be claimed for Floating Head Pressure Control</p>	
<p>Notes: See measure #19 if combined with a multiplex compressor implementation. This measure applies to new and existing multiplex systems. Rebate is limited to 150% of the required condenser capacity necessary to meet TD requirements. Pre-approval must be granted prior to installation. Pre-approval is contingent upon an engineering review to verify conformity with Terms and Conditions before any installation. Please send a refrigeration schedule to your Field Energy Analyst or program headquarters to pre-qualify this measure for the rebate.</p>	
Units: Ton of condenser capacity	Pre-Inspection Required: Yes
Measure Life: 15 years	Rebate: \$110/ Ton of condenser capacity

21. Multiplex Compressor System with Efficient Condenser

Must replace a stand-alone compressor system with a multiplex compressor system, and replace an existing condenser with a new efficient/oversized condenser.

Pre-Retrofit Requirements

Post-Retrofit Requirements

Requirements for both Multiplex Compressor Systems (Measure #19) and Efficient/Oversized Condensers (Measure#20) apply. Please refer to Terms & Conditions for these measures.

Notes:

An installation of either a multiplex or an efficient condenser will be treated as a combined installation if the other item (a multiplex or efficient condenser) was installed in the current Program time frame.

Pre-approval must be granted prior to installation. Pre-approval is contingent upon an engineering review to verify conformity with Terms and Conditions before any installation. Please send a refrigeration schedule to your Field Energy Analyst or program headquarters to pre-qualify this measure for the rebate.

Units: Ton of capacity

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate: To be determined by Pre-Qualifying Review

22. Air-Cooled to Evaporative-Cooled Condenser

Must replace an existing air-cooled condenser with an evaporative condenser.

Pre-Retrofit Requirements

Post-Retrofit Requirements

Air-cooled condenser

Evaporative-cooled condenser

Condenser must be sized to maintain a wet-bulb following setpoint of 25°F temperature differential (TD) or less between the outside air wet-bulb temperature and the setpoint.

Multiplex or single compressor system

Same

Exclusions: Rebate eligible only in hot/dry inland climate zones; not eligible in coastal or humid climate zones. Please contact your Field Energy Analyst or Program headquarters to determine if the store's climate zone qualifies for this rebate.

Notes: Pre-approval must be granted prior to installation. Pre-approval is contingent upon an engineering review to verify conformity with Terms and Conditions before any installation. Please send a refrigeration schedule to your Field Energy Analyst or program headquarters to pre-qualify this measure for the rebate.

Units: Tons of condenser capacity

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate: \$195/ Tons of condenser capacity

23. Efficient Compressors — Low Temperature

Must replace a reed valve compressor with a disc valve or discus compressor on low temp systems.

Pre-Retrofit Requirements

Reed valve compressor on low temp system

Post-Retrofit Requirements

Disc valve or discus compressor on low temp system

Recommendations: Only compressors serving evaporators with Saturated Evaporative Temperatures (SET) of -10°F or less can benefit from this measure.

Notes:

Rebate will be allowed for up to 110% of the existing compressor capacity.
Invoice must show both the pre-existing and new compressor model numbers.

Units: Tons of compressor capacity

Pre-Inspection Required: Yes

Measure Life: 15 years

Rebate: \$45/ Tons of compressor capacity

Lighting

24. General Lighting Retrofits

Must retrofit overhead lighting with lamps that increase overall efficiency of lighting load.

Post-Retrofit Requirements

A copy of the current BPA Lighting Calculator and program offering can be found on the BPA Commercial Lighting page; <http://www.bpa.gov/energy/n/Commercial/lighting/index.cfm>.
Affected lighting load must be reduced by 25% of the baseline.
All materials, including PCB ballasts, must be disposed of or recycled in accordance with current environmental laws.

LED Requirements

LED products must have an efficacy no less than the Design Lights Consortium (DLC) requirement for Category Specifications/Product application. <http://www.designlights.org/Content/QPL/ProductSubmit/CategorySpecifications>
Screw in and integral LED lamps, must have an efficacy no less than the Energy Star requirement for Integral LEDs. Please contact the program for more information on LEDs that are not represented by current categories on the DLC or Energy Star Integral LED Lamps.

Notes:

Lighting retrofit energy savings and rebates amounts are calculated for each specific project using the BPA lighting calculator. Customer must be a commercial customer of a participating BPA utility and have a lighting audit performed by the EnergySmart Program prior to installation.

Recommendations

Program recommends that products be selected from the following Qualified Products List (QPL) and have a 5 Year manufacturer product warranty
www.cee1.org
www.energystar.gov
www.designlights.org

Units: kWh/saved

Pre-Inspection Required: Yes

Measure Life: varies by project

Rebate: Based on the output of BPA lighting calculator

25. Case Lighting Retrofits

Must retrofit refrigerated case lighting with lamps that increase overall efficiency of lighting load.

Pre-Retrofit Requirements

T8, T10 and T12 Fluorescent lamps operating with electronic or magnetic ballasts.

Post-Retrofit Requirements

Must install a LED lighting system in lieu of a fluorescent lighting system in an existing reach-in or open multi-deck refrigerated case.

The efficacy of the LED lamp must be no less than the Design Lights Consortium specification of 80 lumens/watt.

LED lighting system must be a permanently installed luminaire. Fluorescent ballasts cannot be used to power the LED system. LEDs must be rated for 50,000 hours.

T10 lamps will be treated as T12 lamps for the purpose of calculating rebate values. The total number of feet of LEDs rebated shall not exceed the total number of feet of fluorescent lamps replaced.

Notes:

Lighting retrofit energy savings and rebates amounts are calculated for each specific project using the BPA lighting calculator: <http://www.bpa.gov/energy/n/Commercial/lighting/index.cfm>. Affected lighting load must be reduced by 25% of the baseline. All materials, including PCB ballasts, must be disposed of or recycled in accordance with current environmental laws.

A luminaire that is modified and can no longer accept the original lamps must have a visible label affixed to the altered luminaire indicating the modified luminaire and can no longer operate originally intended lamp(s).

These measures may be combined with motion sensor measures for additional energy savings and incentives.

Drop in replacement LED lamps must use manufacturer recommended ballast type.

Recommendations

Program recommends that products be selected from the following Qualified Products List (QPL), have a 5 Year manufacturer product warranty and have an efficacy of at least 80 lumens/Watt.

www.designlights.org

Units: Ln Ft of LED

Pre-Inspection Required: No

Measure Life: 6 years

Rebate:

Based on output of BPA Lighting Calculator

Commercial Food Service Measures

Please see the BPA Implementation Manual for Commercial Food Services terms and conditions: <https://www.bpa.gov/ee/policy/imanual/pages/default.aspx>. The ESG program is able to incentivize the following measures:

- 26. Electric Hot Food Holding Cabinet
- 27. Electric Steamer
- 28. Electric Fryer
- 29. Electric Convection Oven
- 30. Electric Combination Oven
- 31. Pre-Rinse Spray Valve

HVAC

32. Demand Controlled Kitchen Ventilation

Applicable to existing exhaust hoods and the associated make-up air units installed in commercial zones

Space Requirements

- Installed in zones that contain a kitchen

Replacement Equipment Requirements

- Controls must reduce fan speed during times of low activity or demand
- Must control the primary ventilation and make-up air units in the zone
- Must utilize one or more control sensors to modify the fan speeds

Units: Horsepower of fan (exhaust fan and MAU fan combined)

Pre-Inspection Required: Yes

Post Install Inspection: Required (please contact program for requirement details)

Measure Life: 5 years

Rebate: \$200/fan horsepower for one sensor type
\$400/fan horsepower for multiple sensor types

33. Advanced Rooftop Unit Control Retrofit

Applicable to existing roof top units (RTU).

Existing Equipment Requirements

- Have greater than 5 tons of cooling capacity
- Unitary equipment (no split-systems)
- Constant speed supply fan (no variable speed fans)

Replacement Equipment Requirements

- Variable speed, multi-speed or cycling of supply fan while meeting ventilation and space conditioning needs
- For full ARC Retrofit, must also include a digital, integrated economizer control and Web-enabled control, monitoring, and alarms.

Additional Information

Rebate is broken into regular occupancy and high occupancy, and Full and Lite options. Regular occupancy is defined as 2,000-4,000 occupied hours a year. High occupancy is defined as 4,001-8,760 occupied hours a year. A full ARC retrofit includes both the fan replacement requirements and has a digital, integrated economizer control. It is recommended that systems receive a tune up prior to installation of the advanced controller to optimize energy savings.

Units: Tons

Pre-Inspection Required: Yes

Post Install Inspection: Required (please contact program for requirement details)

Measure Life: 5 years

Rebate:

Full ARC retrofit --

Regular occupancy \$150

High occupancy \$225

Lite ARC retrofit –

Regular Occupancy \$100

High Occupancy \$150

34. Ductless Heat Pumps (DHP)

Applicable to new Ductless Heat Pumps.

Space Requirements

- The area to be conditioned by the DHP is heated by either zonal or forced air electric resistance heat as the primary system (gas is not eligible)
- The area to be conditioned by the DHP is not conditioned by an air source, ground source, or ductless heat pump

Replacement Equipment Requirements

- Installed DHPs must have the following characteristics:
 1. A split system heat pump employing an inverter-driven outdoor compressor
 2. Inverter driven or variable speed fan or indoor blower
 3. Rated with a minimum of 9.0 HSPF (single head systems) and 8.0 HSPF (multi head systems)

Additional Information:

Ductless Heat Pumps will only qualify for rebate if they are on the BPA Ductless Heat Pump Qualified Products List. If a product meets the requirements but is not listed, please contact your Field Energy Analyst, Account Manager or the EnergySmart Grocer Program at 800-230-9420.

Rebate is based on installed outdoor unit heating capacity in tons for each DHP unit serving a qualified indoor space. To determine tonnage, divide installed BTU capacity by 12,000 and round to the nearest tenth.

<u>Units:</u> Tons for heating capacity	<u>Pre-Inspection Required:</u> Yes
	<u>Post Install Inspection:</u> Required (please contact program for requirement details)
<u>Measure Life:</u> 20 years	<u>Rebate:</u> \$250/ton

35. Connected Thermostat

Existing Equipment Requirements

- Heating type is electric or gas
- Replaces an existing thermostat that is not web-enabled

Replacement Equipment Requirements

- Limited duration occupied-period override
- Multiple set-back schedules with energy-saving temperature set-points during unoccupied periods including evenings, holidays, and breaks
- Supply fan is scheduled to operate continuously during occupied periods, and to operate in "auto" mode during unoccupied periods
- Remote, web-based monitoring and programming
- Battery and memory back-up to retain settings during power or internet losses
- A rebate may be paid for on more than one connected thermostat, which replaces a single non-web enabled thermostat, as long as each connected thermostat controls an HVAC system with a separate supply fan in separate zones

Additional Information:

Thermostats will only be eligible for rebate if they are on the BPA Connected Thermostat Qualified Products List. If a product meets the requirements but is not listed, please contact your Field Energy Analyst, Account Manager or the EnergySmart Program at 800-230-9420.

<u>Units:</u> Thermostat installed or retrofitted.	<u>Pre-Inspection Required:</u> Yes
	<u>Post Install Inspection:</u> Required (please contact program for requirement details)
<u>Measure Life:</u> 5 years	<u>Rebate:</u> \$200 per unit.

Whole Building Measures

36. Grocery Existing Building Commissioning (EBCx)

EBCx projects achieve energy savings by investigating, analyzing, and optimizing the performance of a building through the identification and implementation of energy efficiency measures and ensuring their persistence.

If you have any questions, please contact your Field Energy Analyst, Account Manager or the EnergySmart Program at 800-230-9420.

Ideal Customers will have:

- Not completed a major retrofit that resulted in savings greater than 2% of the total store energy use in the past 12 months
- A multiplex refrigeration compressor rack
- Building area equal to or greater than 35,000 ft²
- **If your store does not meet these ideal conditions, but you are still interested in participating in an EBCx project, please contact the EnergySmart Program**

Typical measures eligible for rebate*:

Refrigeration:

- Floating head pressure set point optimization
- Floating suction pressure set point optimization
- Energy management system (EMS) sensor recalibration
- Mechanical sub-cooling optimization
- Superheat set point optimization

HVAC:

- HVAC set point optimization
- HVAC compressor unloader optimization
- HVAC fresh air optimization

Lighting:

- Case, décor, sales area lighting time of day schedule optimization

*More measures are eligible, please contact program for more information

General Requirements:

- Preapproval by the EnergySmart Program and Utility is required prior to proceeding with the project. Please contact program for approval details.
- **The equipment cannot be ordered, purchased or installed prior to approval of the custom project.**
- Commission work must be completed by an RCx Service Provider who has demonstrated successful commissioning of grocery stores with references. RCx Service Provider must provide at least two recommendations for previous EBCx work completed.
- Projects must meet requirements for custom projects as defined in BPA's Implementation Manual including measurement & verification requirements for existing building commissioning.
- Measures must be designed to result in improvements in the energy efficiency of electricity distribution or use and must have a savings life of at least one year
- The expected project simple payback (project cost/annual energy cost savings) must be six months or greater and must have a minimum B/C ratio of 0.5.
- Measures or projects that do not have a BPA deemed reimbursement level, deemed busbar energy savings, or for which cost-effectiveness has not been determined, must be submitted as custom projects
- Proposed baseline annual energy usage for each measure must be documented and provide a basis for establishing annual energy savings.
- Custom projects are limited to one sector each (i.e. commercial only)

Persistence Plan Requirements:

Persistence is an important component of EBCx work as operational measures can more easily be undone than retrofit measures. The RCx Service Provider will provide the store owner and/or store's refrigeration contractor with a Post Conditions Document outlining all new setpoint and operational parameters that can serve as an updated systems' manual. In addition, a two year monitoring agreement will be required to further ensure the persistence of the EBCx work. The requirements of the monitoring agreement are outlined below.

BPA EBCx Persistence Requirements

- Customer must have a monitoring agreement in place for two years with a refrigeration or commissioning contractor (RCx Service Provider) that has demonstrated successful commissioning with references of grocery stores.
- RCx Service Provider must complete a quarterly review of the customer's operating parameters either onsite or by remotely accessing the store EMS/BAS to ensure that settings have not deviated from the commissioned settings as documented in the Post Conditions Document.
- If settings have deviated, customer is responsible for working with the contractor to correct the settings and any maintenance that is required to achieve the optimized settings before the quarterly report is sent to the Program.
- Documentation of the quarterly visit and tune ups made will need to be provided to the Program for the duration of the two- year contract in the form of screen shots within 30 days after the review is completed by the RCx Service Provider.

Recommendations:

For RCx to be successful a facility must be in a condition where general maintenance has been attended. It is assumed that general maintenance is part of a facilities' ongoing operation; however, below is a list of specific activities that will help ensure that RCx work has optimized energy savings results. These types of pre-RCx maintenance activities can be completed by the RCx Service Provider and be included as part of the EBCx project.

- | | |
|--------------------------|---|
| • Charge refrigerant | • Clean fans |
| • Clean case honeycombs | • Check amp draw of compressors, condensers |
| • Clean condenser coils | • Check amp draw of defrost heaters |
| • Clean evaporator coils | • Check oil levels |
| • Clean drain pan | |

<p>Units: Annual kWh saved</p> <p>Annual kWh will be determined using short term whole building interval meter data and regression models</p>	<p>Pre-Inspection Required: Yes</p>
<p>Measure Life: 4 years</p>	<p>Rebate: 17 cents per first year kWh saved and capped at 70% of qualifying project cost. Project cost will be determined by the Program.</p>

37. Grocery New Construction

New Construction projects calculate site specific energy savings based on the efficiency of proposed systems above industry standards. Please **contact your Field Energy Analyst, Account Manager or the EnergySmart Program at 800-230-9420 for more information.**

Typical measures eligible for rebate*:

Refrigeration:

- Floating head pressure below 70°F
- Floating suction pressure
- High Efficiency cases
- Oversized/Efficient Condensers
- VFD on Condensers and compressors

HVAC:

- Efficient air handler unit & roof top unit
- Supply fan VFD
- Demand Control Ventilation
- Dedicated outside air systems for humidity control
- Advanced roof top unit controls

Lighting:

- Case, décor, sales area lighting
- Time of day schedule optimization
- Day lighting Controls
- Efficient store signage lighting
- Efficient parking lot lighting and controls

*More measures are eligible, please contact program for more information

General Requirements:

- Preapproval by the EnergySmart Program and Utility is required prior to proceeding with the project. Please contact program for approval details.
- Measures must be designed to result in improvements in the energy efficiency of electricity distribution or use and must have a savings life of at least one year
- The expected project simple payback (project cost/annual energy cost savings) must be six months or greater and must have a B/C ratio of ≥ 0.5 .
- Measures or projects that do not have a BPA deemed reimbursement level, deemed busbar energy savings, or for which cost-effectiveness has not been determined, must be submitted as custom projects
- Construction plans including mechanical and electrical drawings are required to determine eligible measures and estimated energy savings.

Units: Annual kWh saved

Annual kWh will be determined using an eQuest model. Project with over 200,000 kWh saved will require M&V using whole building interval meter data and regression models to calibrate the model.

Pre-Inspection Required: No

Measure Life: 10 years

Rebate:

17 cents per first year kWh saved for measures with an effective useful life (EUL) of 4 years or more. Rebate is capped at 70% of qualifying project cost. Project cost will be determined by the Program. Please contact the program for information regarding measures with a EUL of less than 4 years.