

Energy Efficiency Program for Business

2023 measures & specifications catalog



The DTE Energy Efficiency Program for Business offers businesses like yours incentives for new energy-efficient improvements including lighting, HVAC, process and more. Just follow the simple steps in this catalog to begin the process. We look forward to working with you.

Application process:

The DTE Energy Efficiency Program for Business has prepared this catalog to provide information about the specific incentive programs available under this initiative.

To apply for incentives, you will need to complete the separate program application, which can be found online at mienergyrebates.com

Follow this easy process:

1. Are you eligible?

To apply for incentives, you must be a DTE commercial or industrial customer in good standing (for electricity, if you're applying for electric incentives, and natural gas, if applying for natural gas incentives). Your project must be installed at a facility served by DTE (one facility per application). An exception is limited to agricultural customers that are on both residential and commercial rate codes: they have access to a special list of energy efficiency measures designed to specifically meet the needs of the farming, dairy and greenhouse communities. These incentives are available only to commercial rate and residential rate customers whose primary source of income is from agricultural operations and activities.

2. About the measures

Become familiar with qualifying energy-saving measures offered in this catalog. Additional details are available in our policies and procedures manual, available on our website www.dtebizrebates.com. Equipment installed must meet the specifications detailed in this catalog. If you need assistance with understanding technical information or the feasibility of installing certain measures, contact our program team or one of our designated trade allies, all of whom have received training and are familiar with the program. A searchable directory is available online at dtebizrebates.com. You are not required to use a designated trade ally to complete your project.

3. Reservation applications

Project not completed or even started? Submit your application to reserve incentives from our limited funds. Our application can be found at dtebizrebates.com or at mienergyrebates.com. Submit your application online including required documentation such as itemized invoices, manufacturers' specification sheets for the items installed, and other applicable documentation. Reservation applications are strongly encouraged for all projects and are required prior to starting any custom and some prescriptive projects (see the application for more information). A custom project is one with measures that are not on our list of prescriptive measures. For more information, see page 31 or call us. Is your prescriptive project already completed? See step 5 below.

4. Installation

Complete your project within 90 days of the date indicated on your reservation letter from us that confirms we are holding incentives for you or by November 30, 2023 – whichever comes first.

5. Project completion (final applications)

Submit your online application and all required documentation to us, including dated, itemized invoices, manufacturers' specification sheets for the items installed, and the incentive summary, final agreement information and account holder signature page signed by the customer. The final application must be submitted within 60 days of completion of your project or by November 30, 2023, whichever comes first. Applications submitted after that date will be canceled.

Complete and submit an online application at mienergyrebates.com

Program & project eligibility

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

The incentive program offers business customers prescriptive incentives for many common energy efficiency measures and custom incentives for other eligible energy efficiency improvements. This program is not available to DTE customers in multifamily buildings or residential complexes. These customers are eligible to participate in the Multifamily Program or Residential Programs for energy saving upgrades to both tenant and common areas.

For custom measures, the maximum allowable incentive is limited to 50% of the allowable implementation cost of all eligible custom measures. Internal customer labor costs cannot be included in project costs.

Program incentives are limited per customer for each program year. The customer is defined as the business entity, with a unique taxpayer ID number, that is responsible for the DTE utility bill for one or more facilities.

Funds are limited and incentive payments are dependent on fund availability. Completed final applications for the program year must be received by November 30, 2023. Applications received after that date will be canceled.

2023 program year incentive limits

Participation in the program is subject to annual incentive limits as follows:

	Electricity	Gas
Customer	\$1,000,000	\$300,000

Reservation application process

A reservation is required for all custom and certain prescriptive measures, such as interior LEDs, and strongly encouraged for all other prescriptive measures in order to pre-approve incentive levels and reserve potential funding. If your project requires a reservation, do not begin any part of your project (including removal of old equipment) until after you have submitted your reservation application, allowed us the opportunity (up to 14 days) to conduct any pre-upgrade inspections that may be required and have issued you a reservation letter confirming that funds have been reserved for your project. The Energy Efficiency Program for Business team will review project eligibility and will contact you to conduct any pre-upgrade inspections that may be necessary to reserve program funds. Neither an application nor a reservation will guarantee an incentive. Actual incentives will be calculated based on the final application. Project funds will be reserved for 90 days, or until November 30, 2023, whichever comes first. Notify us at reservation submittal if your project will take longer than 90 days to complete. However, no project will be extended beyond November 30, 2023.

Final application review process

Final applications must be submitted within 60 days of project completion or by November 30, 2023, whichever comes first.

Applicants who submit incomplete applications will be notified of deficiencies. Final applications for each site must include project documentation, including copies of dated, itemized invoices for purchases and, if applicable, cost of installation of the energy efficient equipment and manufacturers' product specifications. Required documentation may vary based on type of application.

The project invoice must provide sufficient detail to separate the project cost from the cost of other services, such as repairs and building code compliance, as well as show the location where the measures were installed. Invoices must be dated and itemized and must clearly identify the equipment pertaining to the project for which incentives are requested. Multiple projects using the same invoices must be itemized by site, and the sum of all quantities of equipment per site must not exceed the total invoice quantity. Within the online application, upload all related specifications, invoices and other supporting documentation with reference number(s). Reference numbers are listed alongside each measure within the program application. DTE reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Requested information may include: floor plans, mechanical plans, demolition plans, equipment purchase dates, installation dates, proof that the equipment is operational, warranty information and proof of customer payment. Applicants should call 866.796.0512 (press option 3) if they have any questions about documentation requirements. All customer information will be held in confidence.

Once all required project information is received, the team will evaluate it to confirm that the project meets the program eligibility criteria and perform necessary inspections and/or technical reviews. Incentive checks can be expected 4-6 weeks after project final approval.

Inspections

DTE reserves the right to inspect all projects to verify compliance with program rules and verify the accuracy of project documentation. This may include pre-installation and/or post-installation inspections. Detailed lighting layout descriptions, metering, data collection, interviews and other information may be requested as appropriate.

Third-party payments

DNV Trade Ally

DTE account holders (customers) may assign payment of their incentives only to a DNV Trade Ally (DTA). A DTA is defined as a company/individual who has attended annual program training, has submitted at least one paid application within the previous program year and is otherwise in good standing.

To authorize such a payment, the account holder must complete and attach to the final application the designated trade ally payment authorization form, which will be provided by the DTA.

If a third-party payment is authorized for a contractor who is not a designated trade ally in good standing, the incentive will be paid to the account holder. (For more information about this policy, see the program's policies and procedures manual found at dtebizrebates.com or mienergyrebates.com.)

Landlord/tenants

DTE account holders (customers) who are facility landlords may assign payment of their incentives to a designated tenant.

To authorize such a payment, the account holder must complete tenant payment authorization form, which can be requested from the program office, or found in the Helpful Documentation section of the Online Application at mienergyrebates.com.

If a third-party payment is authorized for a tenant who is not eligible to receive payment, the incentive will be paid to the account holder. (For more information about this policy, see the program's policies and procedures manual.)

2023 additional program information

DLC & ENERGY STAR®

Only DesignLights Consortium® (DLC) listed products and ENERGY STAR® listed products are eligible for lighting incentives. In order to receive an incentive, you must list the DLC product ID or write "ENERGY STAR®" in the field on prescriptive worksheets - or in the "after retrofit" field on a custom worksheet. If your lighting equipment falls in a category not listed by DLC or ENERGY STAR®, you may apply for incentives by using our non-DLC category product approval form. You're encouraged to attach the manufacturer's specification sheets with the DLC product ID to your reservation application; you must submit the sheets with your final application.



Dual fuel measures

Measures marked with this icon mean that they appear in both the gas and electric sections of the application. If you are an electric and a gas customer of DTE, then you may apply for both electric and gas utilities within the same application.



New construction

Measures marked with this icon are eligible for the new construction program. When applying for new construction measures, please indicate that you are completing a new construction or major renovation project, as well as select your project type in the Online Application. Specifications for systems approach (prescriptive) measures have the same specifications listed in the program catalog; however, for new construction and major renovation projects, references to "replacing" equipment should be understood to mean installing "new" equipment. Reservation applications are not required for new construction projects, although it is recommended.

All final applications must include manufacturers' specification sheets for all incentivized equipment if not included with the reservation application.

Table of contents

Electric

Lighting	6
Lighting power density	9
Networked lighting controls	10
HVAC - electric.....	11
Process electric.....	15
Miscellaneous/indoor agricultural electric	21

Gas

HVAC - gas.....	25
Hot water & laundry	28
Insulation	29
Process gas	30
Miscellaneous gas.....	31
Boiler/furnace tune-ups	32

Custom

Custom specifications.....	34
----------------------------	----

Agriculture

Agriculture specifications.....	36
---------------------------------	----

LEED & design review assistance

LEED specifications.....	41
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Appendix

Sample specification sheet	43
Sample invoice.....	44
Terms and conditions	45

Prescriptive electric measures & specifications



Lighting specifications

Certain prescriptive measures require a reservation application. See individual specifications and the application for more information. All final applications must include manufacturers' specification sheets for lamps and ballasts demonstrating compliance with the specifications listed below. Screw-in LED lamps are not eligible for incentives, with the exception of mogul base (E39) lamps. All incentives are for one-for-one replacements except as noted. Note: These incentives are not available for lamps and fixtures purchased at retail stores participating in the DTE lamp discount program. Incentive for lamps and fixtures purchased from those retailers is included in the discounted price.

LED lighting, shift operation (reservation required)

Measure ID	Equipment type	Hours/week	Unit
L-1	LED lighting, 1-shift operation	1 - 65	Kilowatt reduced
L-2	LED lighting, 2-shift operation	66 - 115	Kilowatt reduced
L-3	LED lighting, 3-shift operation	116 - 167	Kilowatt reduced
L-4	LED lighting, 24/7 operation	168	Kilowatt reduced

L-1 to L-4 - LED lighting, 1-3 shift and 24/7 operation (reservation required)

Incentives are available for LED interior lamps or fixtures replacing existing lamps or fixtures with hours of use typical of one-shift, two-shift, three-shift and 24/7 operations. See table for acceptable range of hours per week. Replacement fixtures or lamps must be DLC-listed or ENERGY STAR®-rated.

Incandescent/Halogen/CFL to ENERGY STAR® LED

Measure ID	Equipment type	Unit
LL-3	LED recessed down light fixture	Fixture

LL-3 - LED recessed down light fixture

Incentives are available to replace incandescent/halogen/CFL recessed down light fixtures or lamps in ceilings or walls with new LED recessed down light fixtures or lamps. Replacement fixtures must be ENERGY STAR®-rated.

Exterior LED lighting retrofit

Measure ID	Pre-upgrade equipment	Unit
LL-20D	50 to 149W	Fixture
LL-21D	150W to 249W	Fixture
LL-22D	250W to 499W	Fixture
LL-84D	500W+ (reservation required)	Fixture

LL-20D to LL-22D; LL-84D - Exterior LED lighting retrofit (annual operating hours < 8,760) (reservation required for LL-84D)

Incentives are available for replacing lamps or fixtures with LED lamps or fixtures. Existing fixtures must operate less than 8,760 hours per year (less than 24 hrs/day). Fixture replacement must result in at least a 40% power reduction. Wattage range refers to nominal lamp wattage. Replacement lamps/fixtures must be DLC-listed or ENERGY STAR®-rated. New construction exterior lighting fixtures are eligible. Fixture quantity must remain the same before and after retrofit. If not, the project may qualify for custom incentives.

Lighting specifications

Controls/daylighting

Measure ID	Equipment type	Unit
LO-3	Interior central lighting control	10,000 sq. ft.
LO-4	Interior switching controls for multilevel lighting	10,000 sq. ft.
LO-5	Interior daylight sensor controls	Watt controlled
LO-8	Interior stairwell lighting controls	Kilowatt controlled
LO-9	Exterior lighting, bi-level control with override	Fixture
LO-10	Exterior dimming timer controls	Watt controlled
LO-11	Tubular skylights (light tubes)	Tube
LO-13	Exterior LED lighting bi-level controls	Fixture
LO-14	Garage LED lighting bi-level controls	Fixture
LO-15	Garage LED bi-level controls w/ photocell	Fixture
LO-60 to LO-62	Interior combined occupancy and daylight sensor	Sensor
LO-63 to LO-65	Interior occupancy sensors	Sensor

NOTE: Incentives are available for only one lighting control measure for a given space. There must be no previously existing automated control in the area for which incentives are being applied.

LO-3 – Interior central lighting control

Incentives are available for automated central lighting control systems with override capabilities. This measure includes time clocks, package programmable relay panels and complete building automation controls. Fractional values are allowed for areas that are not multiples of 10,000 square feet. Floor plan must be submitted verifying square footage.

LO-4 – Interior switching controls for multilevel lighting

Incentives are available to install switching controls for multilevel lighting. This measure is applicable to spaces that require various lighting levels such as classrooms, auditoriums, conference rooms and warehouses with skylights. This measure requires switching or dimming to be used in conjunction with occupancy sensors and/or daylight sensors. Fractional values are allowed for areas that are not multiples of 10,000 square feet. Floor plan must be submitted verifying square footage.

LO-5 – Interior daylight sensor controls

Incentives are available for daylight sensor controls in spaces with reasonable amount of sunlight exposure. The controls can be used to turn lights on/off, stepped dimming or continuous dimming based on light level from available daylight. This incentive cannot be combined with incentives for tubular skylights if they are in the same area.

LO-8 – Interior stairwell lighting controls

Incentives are available for interior stairwell lighting controls in which stepped dimming occupancy controls consist of a lighting system that operates at full power and full light output when the space is occupied, then at a reduced power level and reduced light output when unoccupied. In order to qualify for this incentive, the occupancy sensor must be installed in an interior stairwell or passageway requiring continuous lighting (24 hours a day) by code. The occupancy sensor must be hard-wired; it can be a passive infrared (PIR) or a microwave occupancy sensor, and the sensor must reduce the fixture output to use no more than 50 percent of full power.

LO-9 – Exterior 150W to 1,000W HID lighting, bi-level control with override

Incentives are available for retrofitting existing, exterior HID lighting with bi-level controls that reduce lighting levels by at least 50% when the outdoor area 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. Eligible controls include on-off controls, dimmers and hi-lo ballast controls. This measure is applicable to exterior fixtures that are on during the night.

LO-10 – Exterior multi-step dimming timer controls

Incentives are available for timing controls that automatically reduce an exterior light fixtures' power usage during periods of low traffic. New controls must contain a time clock system featuring multistep dimming capabilities. Fixture power usage must be reduced by at least 50%, for at least five hours per night, during low traffic periods. A detailed controls scheme must be submitted indicating how the lights will be controlled.

LO-11 – Tubular skylights

Incentives are available for new tubular skylights (light tubes) 10 inches to 21 inches in diameter. This measure is applicable to spaces that normally require electric lighting during peak hours (1-4 p.m. weekdays during the summer). Must be installed with daylight sensor controls on surrounding light fixtures. Surrounding areas are eligible for either sensor incentives or skylight incentives, but not both.

LO-13 – Exterior LED lighting bi-level controls

Incentives are available for bi-level controls on exterior LED lighting that reduce lighting levels by at least 50% when the area is unoccupied. The LED lighting must be coupled with hard-wired motion sensors to bring the light back to full lumen output for security reasons. This measure is applicable to exterior fixtures that are on during the night.

LO-14 – Garage LED lighting bi-level controls

Incentives are available for bi-level controls on parking garage LED lighting that reduce lighting levels by at least 50% when the area is unoccupied. The LED lighting must be coupled with hard-wired motion sensors to bring the light back to full lumen output for security reasons. This measure is applicable to parking garage fixtures that are on 8,760 hours per year.

LO-15 – Garage LED lighting bi-level controls with photocell

Incentives are available for bi-level controls on parking garage LED lighting that reduce lighting levels by at least 50% when the area is unoccupied and photocell controls turn off the lighting when adequate daylight is available. The LED lighting must be coupled with hard-wired motion sensors and photocells to bring the light back to full lumen output for security reasons. This measure is applicable to parking garage fixtures that are on 8,760 hours per year.

Lighting specifications

LO-60 to LO-62 – Interior occupancy sensors

Incentives are available for occupancy sensors for interior areas with intermittent occupancy, which automatically turn lights off when not occupied. Vacancy sensing is also eligible. Replacing existing sensors is not eligible. The minimum amount of time for the lights to stay on when no movement is sensed (delay set time) must be 10 minutes. The sensors can be passive infrared (PIR) or ultrasonic. Sensors installed that control a single light fixture are only eligible for the < 150 square foot tier with the exception of single Highbay fixtures ($\geq 15'$ from floor and typically control 500 sq.ft.) which can qualify for the 150-500 sq.ft. tier. For these exceptions, a floor plan must be provided to verify sq.ft. layout of fixtures. These measures can be combined with measures for HVAC occupancy sensors (HE-37/HE-38 and/or HG-16/HG-17) if sensors are controlling both lighting and HVAC.

LO-63 to LO-65 – Interior combined occupancy and daylight sensor

Incentives are available for sensors that detect both occupancy and light levels, and automatically turn lights off when not needed. These incentives are available for interior areas with intermittent occupancy and exposure to natural light. Vacancy sensing is also eligible. The minimum amount of time for the lights to stay on when no movement is sensed (delay set time) must be 10 minutes. The sensors can be passive infrared (PIR) or ultrasonic. Sensors installed that control a single light fixture are only eligible for the < 150 square foot tier with the exception of single Highbay fixtures ($\geq 15'$ from floor and typically control 500 sq.ft.) which can qualify for the 150-500 sq.ft. tier. For these exceptions, a floor plan must be provided to verify sq.ft. layout of fixtures. This incentive cannot be combined with incentives for tubular skylights if they are in the same area. These measures can be combined with measures for HVAC occupancy sensors (HE-37/HE-38 and/or HG-16/HG-17) if sensors are controlling both lighting and HVAC.

Refrigeration lighting

Measure ID	Equipment type	Unit
LL-32D	LED refrigerated case door lighting	Door
LL-33	Occupancy sensors for LED refrigerated case lighting	Door
FE-35	Refrigerated savings due to lighting savings	-20°F - 0°F
FE-36		0°F - 20°F
FE-37		20°F - 40°F

LL-32D – LED refrigerated case door lighting

Incentives are available to replace T12 or T8 fluorescent case lighting. Replacement lamps/fixtures must be DLC-listed or ENERGY STAR®-rated. Note: This incentive cannot be combined with incentives for refrigeration savings due to lighting wattage reduction.

LL-33 – Occupancy sensors for LED refrigerated case lighting

Incentives are available for adding occupancy sensor controls to LED lighting in refrigerated coolers and freezers.


FE-35 to FE-37 – Refrigeration savings due to lighting wattage reduction

Incentives are available for the reduction in refrigeration load as a result of a reduction in lighting wattage. This incentive is only available in conjunction with an eligible lighting retrofit for reach-in or walk-in coolers and freezers. The refrigerated space must be maintained between -20°F and 40°F at all times.

Lighting power density specifications

New construction/major renovation measures

An alternative to the LEED whole building approach (Page 38) is the systems approach, which does not require LEED certification and encourages designers to optimize the energy efficiency of the individual systems within a building. This approach is most appropriate for less complex projects; those whose systems are designed at different times, and for projects in which consideration for energy efficiency occurs later in the design phase. New construction systems approach measures cannot be combined with LEED whole building approach.

For common building types and system features, the Energy Efficiency Program for Business provides this straightforward approach to identify potential energy efficiency options and impacts. Available incentives through the systems approach are listed within the prescriptive measures section of the catalog and application and are identified by this icon: 

Lighting power density

Measure ID	Equipment type	Unit
LO-17	Interior lighting power density	Kilowatts reduced
LO-18	Garage lighting power density	Kilowatts reduced
LO-19	Exterior lighting power density	Kilowatts reduced

LO-17 to LO-19 – Lighting power density energy efficient lighting installation

Install energy efficient lighting with lighting power density (LPD) in watts per square foot less than values listed in ASHRAE 90.1-2013 corresponding to the building/space type.

- To qualify, LPD must show a reduction by at least 10% below the baseline.
- COMcheck lighting compliance document or the program's Excel LPD sheet required. (Free online software available for download at energycodes.gov/comcheck or LPD worksheet available at dtebizrebates.com). Not required for buildings less than or equal to 5,000 square feet.
- All projects claiming light savings require:
 - Scaled lighting plans and/or site lighting plans.
 - Lighting fixture schedules
 - Specification sheets for all lamps, ballasts and fixtures.
 - Explanation for any discrepancies between the plans, schedules and specifications, as well as updates not reflected on the above document requirements.
- Area is gross lighted area of each space type.
- Installed lighting power includes all power used by the luminaries, including lamps, ballasts, current regulators and control devices.

- The following lighting equipment and applications are **excluded** from the calculation of **interior** lighting power:
 - Display or accent lighting that is an essential element for the function performed in galleries, museums and monuments.
 - Lighting that is integral to equipment or instrumentation and is installed by its manufacturer.
 - Lighting specifically designed for use only during medical or dental procedures and lighting integral to medical equipment.
 - Lighting integral to both open and glass-enclosed refrigerator and freezer cases.
 - Lighting integral to food warming and food preparation equipment.
 - Lighting for plant growth or maintenance. New Construction eligible plant lighting measures can be found on page 23.
 - Lighting in spaces specifically designed for use by occupants with special lighting needs including visual impairment and other medical and age-related issues.
 - Lighting in retail display windows, provided the display area is enclosed by ceiling-height partitions.
 - Lighting in interior spaces that have been specifically designated as a registered interior historic landmark.
 - Lighting that is an integral part of advertising or directional signage.
 - Exit signs.
 - Lighting that is for sale or lighting educational demonstration systems.
 - Lighting for theatrical purposes, including performance, stage and film and video production.
 - Lighting for television broadcasting in sporting activity areas.
 - Casino gaming areas.
 - Furniture-mounted supplemental task lighting that is controlled by automatic shutoff.
- The following lighting equipment and applications are **excluded** from the calculation of **exterior** lighting power:
 - Specialized signal, directional and marker lighting associated with transportation.
 - Advertising signage or directional signage.
 - Lighting integral to equipment or instrumentation and installed by its manufacturer.
 - Lighting for theatrical purposes, including performance, stage, film production and video production.
 - Lighting for athletic playing areas.
 - Temporary lighting.
 - Lighting for industrial production, material handling, transportation sites and associated storage areas.
 - Theme elements in theme/amusement parks.
 - Lighting used to highlight features of public monuments and registered historic landmark structures or buildings.

Networked lighting controls specifications

Networked lighting controls (reservation required)

Measure ID	Equipment type	Hours/week	Unit
LO-20	DLC-listed interior LED lighting 1-shift operation	1 - 65	Kilowatts reduced
LO-21	DLC-listed interior LED lighting 2-shift operation	66 - 115	Kilowatts reduced
LO-22	DLC-listed interior LED lighting 3-shift operation	116 - 167	Kilowatts reduced
LO-52	DLC-listed NLC system* (tier 2 only)		10,000 sq. ft.

Incentives for networked lighting controls (NLCs) will be paid out at either Tier 1 rates or Tier 2 rates. These incentives are only available for interior upgrades for human occupancy. Sensors are not eligible for additional rebate if applying for a Tier 2 NLC system. Exterior upgrades are not eligible for networked lighting controls at this time.

Tier 1: To achieve this incentive rate, the NLC system must have at least three of the following capabilities*:

- Networking of luminaires and devices
- Occupancy sensing
- Daylight harvesting / photocell control
- High-end trim / task tuning
- Zoning
- Luminaire and device addressability
- Continuous dimming
- Scheduling
- Energy monitoring
- Device monitoring / remote diagnostics
- Load shedding (demand response)
- External systems integration (EMS / BMS / HVAC / API)
- Scene control

For Tier 1 only: If post upgrade wattage is permanently high-end trimmed / task tuned / maximum light output under any circumstance is less than the amount the manufacturer claims, then the "trimmed" wattage may be used as the post upgrade wattage. Pictures, screenshots, or power measurements of this are required with final application.

Tier 2: To achieve this incentive rate, the NLC system must be listed on DLC's Lighting Controls QPL.

*If the area being controlled has any of these capabilities in its pre-upgrade state, then those capabilities will not count towards the requirements for achieving Tier 1. Further definitions of these terms are available on www.designlights.org within the technical requirements of the lighting controls content.

Incentives for fixtures and sensors in the networked lighting controls section cannot be combined with other lighting measures in the lighting incentives worksheets with the exception of occupancy sensors, combined occupancy sensors, and daylight harvesting in Tier 1 systems. Sensors not eligible for additional rebate from any program if applying for a Tier 2 NLC system. Reflected ceiling plans or other information is required upon request.

LO-20 to LO-22 – Interior LED lighting (reservation required)

Incentives are available for LED interior lamps or fixtures replacing existing lamps or fixtures with hours of use typical of one-shift to three-shift operations. See table for acceptable range of hours per week. Replacement fixtures must be DLC-listed or ENERGY STAR®-rated. Replacement lamps must be DLC-listed. These incentives are only applicable for a simultaneous upgrade of lights and controls.

FOR TIER 2 ONLY

LO-52 – DLC-listed NLC system (reservation required)

Incentives are available for projects that are utilizing a networked lighting controls system on DLC's (Design Lights Consortium's) Networked Lighting Controls Qualified Product List. This list can be found at www.designlights.org. The system must be automated, must consider occupant schedules and override for safety, and a scaled floor plan is required to show square footage.

HVAC electric specifications

All equipment must be Air Conditioning, Heating and Refrigeration Institute (AHRI) rated. AHRI-rated capacities and efficiencies are used to calculate incentives.

Air conditioning systems and heat pumps

Measure ID	Equipment type	Size category	Qualifying efficiency	Unit		
HE-1	Unitary and split air conditioning systems	< 65,000 Btu/hr (5.4 tons)	14 SEER	Tons		
HE-3		≥ 65,000 Btu/hr (5.4 tons) < 135,000 Btu/hr (11.3 tons)	12 EER 13.8 IEER			
HE-4		≥ 135,000 Btu/hr (11.3 tons) < 240,000 Btu/hr (20 tons)	12 EER 13 IEER			
HE-5		≥ 240,000 Btu/hr (20 tons) < 760,000 Btu/hr (63.3 tons)	10.6 EER 13.3 IEER			
HE-6		≥ 760,000 Btu/hr (63.3 tons)	10.2 EER			
HE-70			9.7 EER			
HE-7		Air source heat pumps	< 65,000 Btu/hr (5.4 tons)		15.0 SEER 8.5 HSPF	Tons
HE-9	≥ 65,000 Btu/hr (5.4 tons) < 135,000 Btu/hr (11.3 tons)		11.8 EER 12.8 IEER 3.4 COP			
HE-10	≥ 135,000 Btu/hr (11.3 tons) < 240,000 Btu/hr (20 tons)		10.9 EER 12.0 IEER 3.3 COP			
HE-11	≥ 240,000 Btu/hr (20 tons)		10.3 EER 12.1 IEER 3.2 COP			
HE-12	Closed loop water source heat pump		≤ 17,000 Btu/hr (1.4 tons)	11.5 EER		
HE-13			> 17,000 Btu/hr (1.4 tons), ≤ 65,000 Btu/hr (5.4 tons)	12.3 EER		
HE-14			> 65,000 Btu/hr (5.4 tons), ≤ 135,000 Btu/hr (11.3 tons)	12.3 EER		
HE-17	Package terminal air conditioner		< 7,000 Btu/hr	13.1 EER	Tons	
HE-55			7,000 Btu/hr to 15,000 Btu/hr	11.8 EER		
HE-56			> 15,000 Btu/hr	10.5 EER		
HE-18	Package terminal heat pump	< 7,000 Btu/hr	13.1 EER 3.6 COP	Tons		
HE-66		7,000 Btu/hr to 15,000 Btu/hr	11.8 EER 3.5 COP			
HE-67		> 15,000 Btu/hr	10.5 EER 3.4 COP			
HE-72	Ground-loop heat pump (GLHP)	≤ 135,000 Btu/hr (11.3 tons)	17.0 EER	Tons		
HE-73			19.0 EER			
HE-74		≤ 135,000 Btu/hr (11.3 tons)	per .01 EER increase	Tons		
HE-75			per .01 COP increase			

✂ HE-1, HE-3 to HE-6, HE-70 – Unitary and split air conditioning systems

Incentives are available to install replacement air conditioning systems that meet or exceed qualifying cooling efficiency. They can be either split systems or single packaged units. Water-cooled systems, evaporative coolers and water source heat pumps are not eligible for this incentive, but may be eligible for a custom incentive. Split system efficiency must be for air handling and condensing unit combined.

✂ HE-7, HE-9 to HE-11 – Air source heat pumps

Incentives are available to install replacement air source heat pumps that meet or exceed qualifying cooling efficiency. Water-cooled systems, evaporative coolers and water source heat pumps are not eligible for this incentive, but may be eligible for a custom incentive.

✂ HE-12 to HE-14 – Closed loop water source heat pumps

Incentives are available to install replacement closed loop heat pumps that meet or exceed qualifying cooling efficiency.

✂ HE-17 & HE-18, HE-55 & HE-56, and HE-66 & HE-67 – Packaged terminal AC and heat pump units (PTAC/PTHP)

Incentives are available to install replacement packaged terminal air conditioners and heat pumps that are through-the-wall, self contained units. The qualifying efficiencies are provided in the table at left.

✂ HE-72 to HE-75 – Ground-loop heat pumps (GLHP)

Incentives are available to install ground-loop heat pumps (GLHP) that replace existing GLHP or air-source heat pumps. New GLHP must have a capacity less than or equal to 135,000 Btu/hr and have an energy efficiency ratio (EER) of ≥ 17.

HVAC controls

Measure ID	Equipment type	Unit
HE-26 & HE-27	Hotel guest room energy management control (air conditioning)	Room
HE-28	Web-based building automation system (reservation required)	1,000 sq. ft.
HE-29 & HE-59	Chilled water reset 5° or 10° – air/water cooled	Ton
HE-37	HVAC occupancy sensor	1,000 sq. ft.
HE-57	Chiller plant optimization	Ton controlled
HE-58	Optimum start stop	1,000 sq. ft.
HE-60	DDS/MZS to VAV	1,000 sq. ft.

✂ HE-26 & HE-27 – Hotel guest room energy management control (air conditioning)

Incentives are available for new sensors that control PTACs, heat pumps and other HVAC units for individual hotel rooms. Guest rooms must be controlled by automatic or key-based occupancy detectors. Replacement or retrofits of existing occupancy-based controls are not eligible. For multi-room suites, the incentive is per room controlled when a sensor is installed in each room.

HVAC electric specifications

HE-28 – Web-based energy management system (reservation required)

Incentives are available for installing a web-based energy management system in existing buildings that currently have no digital automated HVAC controls or have outdated pneumatic control systems with inoperable time control functions. Controlled spaces cannot be occupied 24/7. This incentive cannot be combined with incentives for chilled water reset with pump on/off control. Must include setback schedule and a scaled floor-plan with controlled areas highlighted. A minimum setback space temperature of at least 5 degrees must be achieved when cooling.

HE-29 & HE-59 – Chilled water reset 5° or 10° – air and water cooled chillers

Incentives are available for retrofitting existing chilled water systems with chilled water reset controls that allow the chilled water temperature to increase by at least 5°F or 10°F during periods of low-flow (low load). Upgrades must include hardware installation for new controls. This measure is not available on new chillers over 25 tons. This incentive is per ton of refrigeration and is based on the capacity of the chiller affected by the control upgrade.

HE-37 – HVAC occupancy sensor

Incentives are available for installing HVAC occupancy sensor controls used to reset space temperatures and reduce ventilation air supplied to individual zones when they are unoccupied. Cannot be combined with the demand control ventilation incentive. Fractional values are allowed for areas that are not multiples of 1,000 square feet. Floor plan must be submitted verifying square footage. These measures can be combined with measures for Interior lighting occupancy sensors (LO-60 to LO-62 and LO-63 to LO-65) if sensors are controlling both HVAC and lighting.

HE-57 – Chiller plant optimization (reservation required)

This measure covers the implementation of optimized chiller sequencing to existing chiller plants. There must be two or more chillers which operate with stand-alone controls pre-upgrade. The chilled water plant controller must be fully automated and programmed with each chiller's unique operating characteristics to optimize both full-load and part-load performance of the chiller, condenser water pumps, and towers as applicable. This incentive is only available to chillers with electrically operated compressors. Chillers providing cooling for HVAC and/or process purposes are eligible. Written overview of control strategy must be provided with application.

HE-58 – Optimum start (reservation required)

During optimal start morning warm-up, the supply fan shall run continuously and the heating or cooling shall be energized but the OA damper shall remain closed unless in economizer mode. Floor plans showing pertinent areas should be provided along with sequence of operation. Service contracts with an optimal start upgrade are not eligible. System must feature automated setback and/or setup capabilities at least seven times weekly.

HE-60 – DDS/MZS to VAV (reservation required)

Must be converting a dual duct system/multi-zone system to a VAV system. The areas served by the air system must be conditioned spaces (both heated and air conditioned). At a minimum, variable frequency drives must be installed on all fans in the system and VAV boxes and reheat must be added to a minimum of four zones. The incentive cannot be combined with the incentive for VFD/VSD on HVAC Fans or HVAC Pumps. Adding a VFD and controls to a dual duct or multi-zone AHU does not qualify. Existing single zone air handling equipment does not qualify (i.e., classroom unit ventilators or fan coil units).

Other HVAC

Measure ID	Equipment type	Unit
HE-41	Economizer	Ton
HE-42	Cool roof	1000 sq. ft.
HE-43	High performance glazing in windows	100 sq. ft.
HE-44	Window film	100 sq. ft.
HE-45	EC motors on small commercial furnaces replacing non-EC motors	HP
HE-46	Efficient chilled water pump	Pump HP
HE-47	Efficient hot water pump	Pump HP
HE-39	Variable frequency drive – VAV supply or return air fan	Fan HP
HE-40	Variable frequency drive – secondary chilled water pump	Pump HP
HE-51	Variable frequency drive hot water pump	Pump HP
HE-52	Variable frequency drive primary chilled water pump	Pump HP
HE-53	Variable frequency drive cooling tower fan	Fan HP
HE-54	Variable frequency drive condenser water pumps	Pump HP
HE-69	Variable frequency drive HVAC fans	Fan HP
HE-61 to HE-65	High volume, low speed fans	Fan
HE-68	Original double hung window with low U storm	100 sq. ft.

HE-41 – Economizer

Incentives are available for retrofitting an existing HVAC system having a fixed outdoor air setting to include air-side economizers.

HE-42 – Cool roof

Incentives are available for upgrading existing roofs to cool roofs that have a solar absorptance of ≤ 0.3 (reflectance of ≥ 0.7) and that are installed over an electrically air conditioned area. Fractional values are allowed for areas that are not multiples of 1,000 square feet. Floor plan must be submitted verifying square footage.

HE-43 – High performance glazing in windows

Incentives are available for high performance glazing having an east, west or southern exposure and a minimum 5-year manufacturer's warranty. Glazing must replace clear double-pane glass or lesser performing glazing. The new glazing must have a solar heat gain coefficient (SHGC) value of ≤ 0.39 and a U-value of ≤ 0.57 . The space upgraded with the glazing must be an electrically air conditioned area. 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. Fractional values are allowed for areas that are not multiples of 100 square feet. Documentation must be submitted verifying square footage.

HVAC electric specifications

HE-44 – Window film

Incentives are available for film applied to windows having an eastern, western, or southern exposure and a minimum 5-year manufacturer's warranty. Film must be 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 and a U-value of ≤ 0.72 . The space upgraded with the glazing must be an electrically air conditioned area. 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. Fractional values are allowed for areas that are not multiples of 100 square feet. Documentation must be submitted verifying square footage.

⚡ HE-45 – EC motors on small commercial furnaces replacing non-EC motors

Incentives are available for replacing a shaded pole or PSC (permanent split capacitor) motor with an ECM (electronically commutated motor) on a small commercial furnace. Qualifying motors should be 7.5 HP or less. An ECM on a unit ventilator or fan coil unit are also eligible for this measure.

HE-46 – Efficient chilled water pump

Incentives are available for high efficiency chilled water pumps. Pump performance curve must indicate that the pump meets a minimum efficiency of 75%. Pumps must operate at least 2,000 hours per year. Redundant or back-up pumps are not eligible.

HE-47 – Efficient hot water pump

Incentives are available for high efficiency hot water pumps. Pump performance curve must indicate that the pump meets a minimum efficiency of 75%. Pumps must operate at least 2,000 hours per year. Redundant or back-up pumps are not eligible.

HE-39 – Variable frequency drives – VAV supply and return air fans

Incentives are available for adding variable frequency drives (VFD) to existing supply and return air fans of variable air volume (VAV) comfort cooling air handling systems. Redundant or back-up fans are not eligible. VFDs on new equipment are not eligible for this incentive. The installation of a VFD must accompany the permanent removal or disabling of any throttling devices such as inlet vanes and bypass dampers. Incentive is per horsepower (HP) of the supply or return air fan. Eligible for new construction for the following:

1. DX cooled AHU $\leq 65,000$ Btu/h
2. Chilled water AHU fan motor ≤ 5 HP
3. Evaporatively cooled AHU with fan motor $\leq 1/4$ HP

HE-40 – Variable frequency drives – secondary chilled water pumps

Incentives are available for adding variable frequency drives (VFD) to existing secondary chilled water pumps of comfort cooling chilled water systems having a primary-secondary pumping arrangement. Redundant or back-up pumps are not eligible. VFDs on new equipment are not eligible for this incentive. The installation of a VFD must accompany the permanent removal or disabling of any throttling devices such as throttling valves. Eligible for new construction if total system is <10 hp.

⚡ HE-51 – Variable frequency drives for hot water pumps

Incentives are available for converting constant flow hot water systems for space heating to variable flow systems by adding variable frequency drives (VFD) to existing hot water pumps. The existing 3-way valves must be converted to or replaced with 2-way valves. VFDs added to redundant or back-up pumps are not eligible. Eligible for new construction if total pump system < 10 hp.

⚡ HE-52 – Variable frequency drives for primary chilled water pumps

Incentives are available for converting constant flow chilled water systems for space cooling to variable flow systems by adding variable frequency drives (VFD) to existing primary chilled water pumps. Conversions of both primary only and primary-secondary systems are eligible. Any existing 3-way valves must be converted to or replaced with 2-way valves. Redundant or back-up pumps are not eligible. Eligible for new construction if total pump system power < 10 hp.

⚡ HE-53 – Variable frequency drives for cooling tower fans

Incentives are available for replacing ON/OFF cycled cooling tower fan control with variable speed fan control by adding variable frequency drives (VFD) to existing cooling tower fans. The following are not eligible for this incentive: upgrades to towers with 2-speed motors or adjustable pitch fans; redundant or back-up tower fans; and integrated VFDs on new equipment. For multi-cell towers, incentive is per the combined horsepower (hp) of all motors to which a VFD is added.

⚡ HE-54 – Variable frequency drives for condenser water pumps

Incentives are available for converting constant flow HVAC condenser water pumps to variable flow systems by adding variable frequency drives (VFD) to existing condenser water pumps. Any existing 3-way valves must be converted to or replaced with 2-way valves. Redundant or back-up pumps are not eligible. Eligible for new construction if total pump system power < 10 hp.

⚡ HE-69 – Variable frequency drives for HVAC fans - fixed speed, tier 1 (51-54 Hz)

Available for installing a VFD on new or existing HVAC fans.

- Fan motor must operate at least 2,000 hrs./yrs.
- Must be set at a fixed speed between 51 and 54 Hz.
- Incentive is per controlled HP.
- The replacement of existing VFDs or installation of VFDs on redundant or back-up HVAC fans do not qualify for incentive.
- Pre-Notification is required on fan motors greater than 50 HP.

HE-61 to HE-65 – High-volume, low-speed fans

This measure applies to 16-24 foot diameter, horizontally mounted ceiling high-volume low-speed (HVLS) fans which replace multiple non-HVLS fans that have reached the end of useful life in commercial or industrial applications.

⚡ HE-68 – Original double hung window with low U storm

⚡ Incentives are available for rehabilitating double hung storm windows with low U values. The solar heat gain coefficient (SHGC) value must improve from ≥ 0.73 to ≤ 0.27 . The U-value must improve from ≥ 1.27 to ≤ 0.21 . Fractional values are allowed for areas that are not multiples of 100 square feet. Documentation must be submitted verifying square footage.

HVAC electric specifications

Chillers

Type		ASHRAE 90.1-2013 Baseline (units kW/ton)				
		Size category (tons)	Path A		Path B	
			Full load	IPLV	Full load	IPLV
CH-200 & CH-201, CH-204 & CH-205	Air cooled reciprocating, screw or scroll	< 150	1.19	0.88	1.24	0.76
CH-202 & CH-203, CH-206 & CH-207		≥ 150	1.19	0.86	1.24	0.75
CH-208 & CH-209	Water cooled, screw or scroll	< 75	0.75	0.60	0.78	0.50
CH-210 & CH-211		≥ 75 and < 150	0.72	0.56	0.75	0.49
CH-212 & CH-213		≥ 150 and < 300	0.66	0.54	0.68	0.44
CH-214 & CH-215		≥ 300 and < 600	0.61	0.52	0.63	0.41
CH-216 & CH-217		≥ 600	0.56	0.50	0.59	0.38
CH-218 & CH-219	Water cooled centrifugal	< 150	0.61	0.55	0.70	0.44
CH-220 & CH-221		≥ 150 < 300	0.61	0.55	0.64	0.40
CH-222 & CH-223		≥ 300 and < 400	0.56	0.52	0.60	0.39
CH-224 & CH-225		≥ 400 and < 600	0.56	0.50	0.59	0.38
CH-226 & CH-227		≥ 600	0.56	0.50	0.59	0.38



CH-200 to CH-227 – Chillers

Incentives are available for chillers of the following types: air-cooled reciprocating, air-cooled screw or scroll, water-cooled screw or scroll, and water-cooled centrifugal.

Each application with a new chiller must complete and submit the new chiller addendum along with the application. Along with the chart above of qualifying efficiencies, the [new chiller addendum](#) explains the methodology of incentive payments.

HVAC tune-ups

Measure ID	Equipment type	Unit
HE-48	Refrigerant charging correction on RTU AC	Ton
HE-49	DX condenser coil cleaning	Ton
HE-50	Chiller tune-up	Ton

HE-48 – Refrigerant charging correction on RTU AC

An incentive is available for adjusting undercharged refrigerant so that it is within manufacturer specifications.

The AC must meet the following criteria:

- Must be a rooftop unit meeting minimum efficiency per ASHRAE 90.1 2013 Table 6.8.1-1 (see appendix in back)
- Cannot be located on a grocery, high school, or large office
- Measurements must show that the refrigerant charge is ±20% rated charge

HE-49 – DX condenser coil cleaning

An incentive is available for cleaning direct expansion condenser coils.

The coil must meet the following conditions:

- Must not have been cleaned within the past three years.
- Airflow measurements must be taken at 9 different locations on the coil and averaged
- Measurements should not be taken within 2 inches of the coil housing perimeter

- Cleaning must be done by a qualified technician following standard practices

HE-50 – Chiller tune-up

An incentive is available for the tune-up of any air-cooled or water-cooled chiller greater than 20 tons with an electrically operated compressor. The incentive is available once in a 24-month period. Each individual chiller is considered one unit. Please be sure to complete the [Chiller Tune-Up Checklist](#).

Cooling service tune-ups must include the following maintenance items, if applicable:

- Inspect and correct oil level and pressure at full load operation
- Clean the air-cooled condenser coil
- Check and adjust the system pressure
- Inspect and/or replace filter
- Inspect and/or replace belt
- Check and repair the electrical contactors
- Check and repair evaporator condition
- Validate compressor amp draw
- Validate supply motor amp draw
- Validate condenser fan(s) amp draw
- Check liquid line temperature
- Check suction pressure and temp
- Check refrigerant temperature and pressure
- Validate low-pressure controls
- Validate high-pressure controls
- Validate crankcase heater operation
- Clean water cooled chiller condenser tubes
- Clean water cooled chiller evaporator tubes (if performance warrants)
- Check and repair economizer operation
- Validate sub-cooling and superheat
- Validate suction temperature and pressure
- Inspect all refractory
- Patch and wash coat as required
- Check safety controls
- Check for proper venting
- Lubricate all motors
- Check coupling alignment

Process electric specifications

Compressed air

Measure ID	Equipment type	Unit	
CA-23	Compressed air engineered nozzle	Nozzle	
CA-24	Compressed air pressure flow controller	HP	
CA-25 & CA-41	Compressed air audit with leak repair	CFM	
CA-26	VSD air compressor 50 - 500 HP	2,000 - 6,000 hours of use	HP
CA-43		> 6,000 hours of use	HP
CA-34	VSD air compressor < 50 HP	1 shift (2,080 average hrs/yr)	HP
CA-51		2 shift (4,160 average hrs/yr)	HP
CA-44		3 shift (6,240 average hrs/yr)	HP
CA-52		24/7 (8,760 hrs/yr)	HP
CA-46	VSD air compressor (multiple systems) 50 - 500 HP	4,000 - 7,200 hours of use	HP
CA-45		> 7,200 hours of use	HP
CA-47	VSD retrofit air compressor (multiple systems) 50 - 500 HP	> 7,200 hours of use	HP
CA-48	Two stage rotary screw air compressor (VSD/VD/LNL type)	≥ 4,000 hours of use	HP
CA-49	Low pressure drop air filters ≥ 50 HP		HP
CA-50	Air compressor outdoor air intake ≥ 50 HP		HP
CA-27	Efficient compressed air dryers	Refrigerated, cycling thermal mass	CFM
CA-28		Refrigerated, variable speed compressor	CFM
CA-29		Refrigerated, digital scroll	CFM
CA-30	Refrigerated air dryer replacing desiccant air dryer		SCFM
CA-31	No-loss condensate drains*		Drain
CA-32	Compressor air storage tank		HP
CA-33	Variable displacement air compressor		HP
CA-35	Heated desiccant air dryer	VSD compressor	SCFM
CA-36		VD compressor	SCFM
CA-37		LNL compressor	SCFM
CA-38	Blower purge desiccant air dryer	VSD compressor	SCFM
CA-39		VD compressor	SCFM
CA-40		LNL compressor	SCFM

*Cannot be integrated into new equipment

CA-23, CA-53 to CA-68 - Compressed air engineered nozzle

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

Table 1: Qualifying SCFM ratings for engineered nozzles

Size (inch)	1/8	1/4	3/8	1/2
SCFM	10	18	35	60

CA-24 - Compressed air pressure flow controller

Incentives are available for installing a pressure flow controller downstream from the storage/receiver tank in compressed air systems. The controller must be installed on a main pressure header. Replacement of an existing controller does not qualify. The air compressor must be at least 50 HP. There must be at least 5 psig reduction between the discharge pressure from the air compressor and the discharge pressure from the pressure flow controller.

CA-25 & CA-41 - Compressed air audits with leak repair

Incentives are available for compressed air audits that result in repair of air leaks. Audit must consist of compressor kW, pressure and flow rate, as well as a leak detection survey. Survey must identify system leaks by location (or tag number) and size (cfm). Amount of leaks repaired must be ≥ 50% of the total leakage rate (cfm). Compressed air systems must be electrically driven and must have a rated power of at least 50 HP. The air compressor must have at least 2,000 annual run hours (excluding back-up). In the case of a multiple compressor system where the trim compressor is VSD, apply via measure CA-25 (VSD air compressor). The complete audit report with leak location, size and repair information must be submitted with final application. Incentive is available once per year.

CA-26 & CA-43 - VSD air compressors (50-500 HP) (single air compressor systems)

Incentive is for a single compressor system (i.e., the upgraded system only has one air compressor, which is a VSD). A single VSD compressor may replace multiple compressors. Incentives are available for variable speed air compressors from 50 to 500 HP that replace constant speed air compressors which use inlet modulation or load/no load control. Adding a VSD to an existing compressor does not qualify. Only one VSD compressor per compressed air system is eligible. Replacement of existing VSD air compressor and VSD air compressor of equal or lesser HP is not eligible for this incentive. If a larger VSD air compressor is installed, the difference in horsepower may be incentivized. Redundant or back-up compressors are not eligible. Annual run hours determine which measure the compressor is eligible for. Instead of receiving the prescriptive incentive, a customer may instead submit a VSD compressor project as a custom measure but then must fulfill all pre-install and post-install data requirements.

CA-34, CA-44, CA-51 & CA-52 - VSD air compressor (< 50 HP)

Incentive is for new VSD air compressors under 50 HP. Back-up and redundant air compressors are not eligible for this incentive. Air compressors on multiple-compressor systems must operate the new VSD air compressor 8,320 hours per year for 24/7, 6,240 hours per year for 3-shift, 4,160 hours per year for 2-shift, and 2,080 hours per year for a single shift, and be set up to control load variations and not be base loaded. Only one compressor on a compressed air system (connected by piping) can qualify for this VSD incentive. Existing reciprocating compressor replacements must prove the duty cycling is at least 60% to qualify for this measure. Annual run hours determine which measure the compressor is eligible for.

Process electric specifications

✂ CA-45 & CA-46 – VSD air compressor (multiple systems)

Must be a variable speed screw compressor replacing a screw compressor with modulating control or LNL control in a multiple air compressor system. For new VSD compressors only, compressors must be between 50-500 HP. A multiple air compressor system is defined as more than one air compressor being required to operate simultaneously to meet the facility's compressed air demand, excluding redundant or standby air compressors. Installation of VSD to an existing compressor and redundant or back up VSD air compressors do not qualify. Annual run hours determine appropriate measure eligibility.

CA-47 – Retrofit air compressor (multiple systems)

Must be retrofitting a variable speed screw compressor with modulating control or LNL control. Retrofitting for VSD compressors must be between 50-300 HP. A multiple air compressor system is defined as more than one air compressor being required to operate simultaneously to meet the facility's compressed air demand, excluding redundant or standby air compressors. Installation of new VSD air compressor, redundant or backup compressors does not qualify. Annual run hours determine appropriate measure eligibility.

✂ CA-48 – Two stage rotary screw air compressor (VSD/VD/LNL Type)

Air compressors on multiple-compressor systems must operate the new, two-stage, air compressor at least 4,000 hours annually and must be ≥ 50 HP.

✂ CA-49 – Low pressure drop air filters

Available to prevent the over-filtering of air compressor systems. The potential energy savings is attributed from the over-pressuring of the compressed air to compensate for higher filtration. Compressed air system HP must be ≥ 50 HP. Must replace a standard coalescing filter.

✂ CA-50 – Air compressor outdoor air intake

Available to customers whose existing air compressor(s) current air inlet comes from the ambient conditioned (heated) space and are proposing to permanently hard duct the air inlet directly from the outside. Compressed air system HP must be ≥ 50 HP and operate at ≥ 80 psig.

✂ CA-27 to CA-29 – Efficient compressed air dryers

Incentives are available for replacing refrigerated, non-cycling, compressed air dryers with efficient refrigerated dryers. The new compressed air dryer may use cycling thermal mass, variable speed or digital scroll technology. The new dryer may be free-standing or integral to the air compressor as a factory-installed option.

CA-30 – Refrigerated air dryer replacing desiccant air dryer

Incentives are available for replacing an existing desiccant air dryer with a refrigerated air dryer. The compressed air system must be 50HP or greater. The new dryer may be free-standing or integral to the air compressor as a factory-installed option.

✂ CA-31 – No-loss condensate drains

Incentives are available for replacing existing timed or manual drains with no-loss condensate drains on compressed air systems. The drain must continuously monitor the level of condensate and drain it without also leaking compressed air. Manual drains, timed drains, and standard factory-installed drains in equipment, such as compressor and dryers, are not eligible.

✂ CA-42 – Compressed air storage tank

Incentives are available for the installation of a compressed air storage tank to augment the capacity of trim (not base-load) compressors. Tank must be supplied by rotary screw compressors operating at greater than 90 psig. Storage capacity must be increased from ≤ 1 gal/CFM to ≥ 3 gal/CFM of the trim compressor. Upgrades from ≤ 1 gal/CFM to ≥ 5 gal/CFM of the trim compressor are eligible for both CA-32 and CA-42. Installation of tanks to support base-loaded compressors is not eligible.

Example

Before retrofit:

(1) 100 CFM trim compressor with (1) 100 gallon tank = 1 gal/CFM

After retrofit:

(1) 100 CFM trim compressor with (1) 400 gallon tank = 4 gal/CFM

Qualifies for CA-42 only.

✂ CA-32 – Increased compressed air storage tank

Incentives are available for the installation of a compressed air storage tank to augment the capacity of trim (not base-load) compressors. Tank must be supplied by rotary screw compressors operating at greater than 90 psig. Storage capacity must be increased from ≤ 3 gal/CFM to ≥ 5 gal/CFM of the trim compressor. Upgrades from ≤ 1 gal/CFM to ≥ 5 gal/CFM of the trim compressor are eligible for both CA-32 and CA-42. Installation of tanks to support base-loaded compressors is not eligible.

Example

Before retrofit:

(1) 100 CFM trim compressor with (1) 200 gallon tank = 2 gal/CFM

After retrofit:

(1) 100 CFM trim compressor with (1) 500 gallon tank = 5 gal/CFM

Qualifies for CA-32 only.

✂ CA-33 – Variable displacement air compressor

Incentives are available for variable displacement screw air compressors that replace screw air compressors which use modulating control or load/no-load control. The variable displacement compressor must be set up to control load variations (non-base load). Only one variable displacement compressor on a system is eligible. The air compressor system must be ≥ 50 HP. Redundant or back-up compressors are not eligible. Instead of receiving the prescriptive incentive, a customer may instead submit a variable displacement compressor project as a custom measure, but then must fulfill all pre-install and post-install data requirements.

✂ CA-35 to CA-37 – Heated desiccant air dryers

Incentives are available for replacing a heatless desiccant air dryer with a desiccant air dryer that uses a heater to pre-heat the desiccant purge air.

✂ CA-38 to CA-40 – Blower purge desiccant air dryers

Incentives are available for replacing a heatless desiccant air dryer with a desiccant air dryer that uses a blower to purge the desiccant material instead of compressed air.

Process electric specifications

Variable frequency drive for process

Measure ID	Equipment type	Unit
PE-9 to PE-20	Variable frequency drive for process pumps	HP controlled
PE-97	Variable frequency drive for fixed speed process pump control	HP controlled
PE-21	Variable frequency drive for process fans ≤ 50HP	HP controlled
PE-22	VFD on computer room AC supply fans	HP controlled

PE-9 to PE-20 – Variable frequency drives (VFD) for process pumps

Incentives are available for retrofitting existing process (non-HVAC) pumps with VFDs. Pumps must operate at least 2,000 hours per year. VFDs for redundant or back-up pumps are not eligible. VFDs replacing existing VFDs are not eligible. The installation of a VFD must accompany the permanent removal or disabling of any throttling devices such as throttling valves.

PE-97 – Variable frequency drives (VFD) for fixed speed process pump control

VFD must be used in conjunction with a process (non-HVAC) pumping application. Redundant or backup units do not qualify. Replacement of functioning existing VFDs does not qualify. VFD speed must be automatically controlled by differential pressure, flow, temperature, or other variable signals. The proposed VFD frequency must be reduced to 54 Hz or less. The system controlled must have significant load diversity that will result in savings through motor speed variation. Copies of specification sheets and invoices that clearly show the drive's size are required.

PE-21 – Variable frequency drives (VFD) for process fans

Incentives are available for retrofitting existing process (non-HVAC) fans ≤ 50 HP with VFDs. The installation must accompany the permanent removal or disabling of any throttling devices. VFD speed must be automatically controlled by differential pressure, flow, temperature, or other variable signal. VFDs for redundant or back-up fans are not eligible.

PE-22 – VFD on computer room air conditioning (CRAC) supply fans

Incentives are available for installing VFDs on existing telecommunications or computer room air conditioning (CRAC) units. The units must operate continuously all year. Replacement of existing VFDs is not eligible. Redundant or backup units are not eligible.

High efficiency pumps

Measure ID	Pump Class	Constant		Variable		
		All HP	1-1.9 HP	2-3 HP	3.1-5.9 HP	6-50 HP
PE-64 & PE-65	ESCC, 1800	1.00	0.55	0.53	0.51	0.49
	ESCC, 3600	0.96	0.57	0.55	0.54	0.51
	ESFM, 1800	0.98	0.55	0.53	0.52	0.49
	ESFM, 3600	0.99	0.58	0.55	0.51	0.51
	IL, 1800	0.99	0.54	0.55	0.51	0.49
	IL, 3600	0.98	0.56	0.57	0.54	0.51
	RSV, 1800	0.98	0.56	0.55	0.52	0.50
	RSV, 3600	0.98	0.56	0.55	0.52	0.50
	VT-S, 1800	0.96	0.66	0.63	0.60	0.60
	VT-S, 3600	0.96	0.66	0.63	0.60	0.60

PE-64 & PE-65 – High efficiency pumps

Incentives are available for high efficiency clean water pumps (i.e., for HVAC, irrigation, & municipal service) with a Pump Efficiency Index (PEI) that is less than or equal to the values in the table. Energy savings and incentives are increased for each 0.01 below the baseline PEI value for that pump. Pumps are rated as either constant load with a PEICL or variable load with PEIVL or both. Variable load PEIVL rated pumps cannot be used in a constant speed system unless it has a PEICL rating that also meets the baseline requirements. Changing systems from constant speed to variable speed are not considered for this measure, those are addressed by measure PE-97.

Process electric specifications

Miscellaneous process

Measure ID	Equipment type		Unit	
PE-23	Industrial 3-phase HF battery charger	1-shift operation	Charger	
PE-24		2-shift operation	Charger	
PE-25		3-shift operation	Charger	
PE-26	Electrically commutated plug fans	In-cabinet	Fan	
PE-27		Under-cabinet	Fan	
PE-63	Process cooling ventilation reduction		CFM reduced	
PE-31	Barrel wraps for injection molders & extruders		Square foot	
PE-32	Insulated pellet dryer ducts	3" diameter	Linear foot	
PE-33		4" diameter	Linear foot	
PE-34		5" diameter	Linear foot	
PE-35		6" diameter	Linear foot	
PE-36		8" diameter	Linear foot	
PE-37	Tank insulation - 1"	Low temp (120°F-170°F)	Square foot	
PE-38		High temp (> 170°F)	Square foot	
PE-39	Tank insulation - 2"	Low temp (120°F-170°F)	Square foot	
PE-40		High temp (> 170°F)	Square foot	
PE-41	Electric motors replacing pneumatic (air) motors		HP	
PE-42	High efficiency welders - inverter style (reservation required)		Welder	
PE-43	Air blowers replacing compressed air blow-off		Blower	
PE-44	Electric tools replacing pneumatic (air) tools		Tool	
PE-49	Fiber laser cutter replacing CO ₂ laser cutter	≥ 2,500 to < 4,000 hrs./yr.	kW	
		≥ 4,000 hrs./yr.	kW	
PE-46	All-electric injection molding machines replacing hydraulic injection molding machines		Ton	
PE-47	Hybrid injection molding machines replacing hydraulic injection molding machines		Ton	
PE-48	Cordless electric tools replacing pneumatic (air) tools (reservation required)		Ton	
PE-67	VSD plastic injection molding machine	Constant displacement	1,600 - 3,000 hrs/yr	HP
PE-68			3,001 - 5,000 hrs/yr	HP
PE-69			5,001 - 8,760 hrs/yr	HP
PE-70		Variable displacement	1,600 - 3,000 hrs/yr	HP
			3,001 - 5,000 hrs/yr	HP
			5,001 - 8,760 hrs/yr	HP
PE-72	Variable frequency drives on process cooling tower fans		HP	
PE-74 to PE-96	ENERGY STAR UPS		kVA	

✂ PE-23 to PE-25 – Industrial 3-phase high frequency battery chargers

Incentives are available for replacing ferroresonant and silicon controlled rectifier chargers with new 3-phase high frequency chargers. The new chargers must have a minimum power conversion efficiency of 92% and must be utilized at least 5 days per week, one 8-hour shift per day, year round. This measure is available for battery chargers for electric vehicles, such as forklifts, golf carts and automatic guided vehicles, etc. Installation of chargers for electric passenger vehicles is not eligible under this measure.

✂ PE-26 & PE-27 – Electronically commutated plug fans

Incentives are available for plug fans with electronically commutated motors that replace constant speed, belt-driven centrifugal fans and motors in floor-mounted, down-flow computer room air conditioning units serving data centers. Fans may be located in-cabinet or under-cabinet. Plug fans with electronically commutated motors for other unit configurations are not eligible for this incentive, but may be eligible for custom incentives.

PE-63 – Process cooling ventilation reduction (CFM)

Reduced volume flow rate must exceed 5,000 CFM and proposal must be authored by a Professional Engineer (PE) Licensed in the State of Michigan. Operational performance verification (complete pre and post construction volume flow rate testing) by a certified Testing, Adjusting and Balance Agent is required. Systems designed to allow the carbon dioxide levels in occupied spaces to exceed a maximum level of 1,200-ppm do not qualify. The incentive is limited to 50% of the total installation cost. Total installation costs may include outside engineering and data collection costs. Reservation applications must include a one-page narration of the project's proposed scope of work.

PE-31 – Barrel wraps for injection molders and extruders

Incentives are available for installing insulating blankets on the barrels of extruding or injection molding machines. Blankets must be installed on previously uninsulated barrels. Include summary sheet identifying machine, circumference of heater band, width between thermocouples and calculated blanket square footage.

PE-32 to PE-36 – Insulated pellet dryer ducts

Incentives are available for insulation placed on flexible ducts of pellet dryers. Insulation must be installed on previously un-insulated duct with a diameter of 3 to 8 inches.

PE-37 to PE-40 – Tank insulation

Incentives are available for adding insulation to existing hot-fluid storage or process tanks that are not insulated. Replacement insulation is not eligible. Tank must be uninsulated, bare or painted steel, and in use 8,760 hours/year. Insulation added must have an R-value of at least 3.2/inch. Fluid must be electrically heated.

PE-41 – Electric motors replacing pneumatic (air) motors

Incentives are available for electric-driven motors that replace existing pneumatic-driven motors. The pneumatic motors must be fed by a compressed air system and operate at least 400 hours per year. The compressed air branch headers must be demolished from the existing pneumatic motor back to the compressed air header.

✂ PE-42 – High efficiency welders – inverter style (reservation required)

An incentive is available for replacing an existing transformer rectifier power source welder with a new inverter power sourced welder. The facility must operate the welding process a minimum of 1,000 hours per year.

Process electric specifications

PE-43 – Air blowers replacing compressed air blow-off

Incentives are available for air blowers that replace compressed air blow-off nozzles or pipes. The existing compressed air blow-off system must operate at a pressure ≥ 80 psig. The blowers must be used in a manufacturing production environment where the pressure conditions are ≤ 15 psig. The blow-off system must operate $\geq 1,000$ hours per year.

PE-44 – Electric tools replacing pneumatic (air) tools

Incentives are available for electric-driven tools that replace existing pneumatic-driven tools. The pneumatic tools must be fed by a compressed air system and operate at least 400 hours per year. Qualified pneumatic tools for replacement must use ≥ 15 CFM per tool. Pneumatic bevellers, nailers, riveters and staplers do not qualify for this incentive. The compressed air branch headers must be demolished from the existing pneumatic tool back to the compressed air header. The electric tool must be corded and permanently installed.

PE-48 – Cordless electric tools replacing pneumatic (air) tools (reservation required)

Incentives are available for cordless tools that replace existing pneumatic-driven tools. To qualify for this incentive, the existing pneumatic hand tool must be replaced with a cordless electric (i.e. 18V lithium-ion brushless cordless) hand tool. The pneumatic tools must be fed by a compressed air system and operate at least 400 hours per year. Qualified pneumatic tools for replacement must use ≥ 15 CFM per tool. Pneumatic hand tools that do not qualify for this measure include: bevellers, nailers, riveters and staplers. Portable air hand tools or hand tools used for maintenance are not eligible for this incentive. The compressed air branch headers must be sealed without leaks from the existing pneumatic tool back to the compressed air header.

✂ PE-45 & PE-49 – Fiber laser cutter replacing CO2 laser cutter

This incentive is for customers who are replacing their existing CO2 laser cutting equipment with new fiber laser cutting equipment. New installation of fiber lasers where there were not any CO2 lasers before also qualify. To qualify for this incentive, the laser must be cutting stock 0.2" (5mm) or less, most of the time. The cutting equipment must operate at least two shifts ($\geq 2,500$ to $< 4,000$ hours annually) or three shifts ($\geq 4,000$ hours annually). Equipment must be mechanically cooled year-round to qualify. This incentive is based on the fiber laser's cutting power kW output.

✂ PE-46 & PE-47 – All-electric or hybrid injection molding machines replacing hydraulic injection molding machines

This incentive is available for installation of hybrid or all-electric injection mold machines. Hybrid machines use an electric motor to directly drive the main screw; hydraulics are used for other functions. Hydraulic injection molding machines (baseline system) use a hydraulic motor for the main screw drive as well as hydraulic for other functions, such as clamping and ejection. VSD control or servo hydraulic control on hydraulic injection molding machines does not qualify. The new injection mold machines must be screw type and driven by servo motors. The proposed injection mold machine must operate at least 4,000 hrs/yr to qualify.

For retrofit applications, this measure only applies to the installation of a new all-electric or hybrid (servo hydraulic) injection molding machine to replace an existing hydraulic injection molding machine. Incentive is based on the metric tonnage of the new machine. Auxiliary hydraulic core puller packages are considered to be separate from the injection mold machine and are allowable for both all electric and hybrid injection machines. Qualifies for new construction and retrofit applications. Use standard tons to determine incentive.

PE-67 to PE-72 – VSD plastic injection molding machines

This incentive is available for installation of new servo hydraulic injection mold machines and variable speed motor retrofits for existing hydraulic injection molding machines. Hydraulic injection molding machines use a hydraulic motor for the main screw drive or for other functions such as clamping and ejection. This incentive cannot be combined with a new construction measure for either a hybrid or all electric machine. Provide confirmation of:

- Pump type on the HPU
- Whether it is constant displacement or variable displacement
- Annual hours of use

✂ PE-73 – Variable frequency drives on process cooling tower fans

Available for installing a VFD on new or existing process cooling tower fans.

- Fan motor must operate at least 2,000 hours/year.
- Must be automatically controlled (i.e., basin temperature) or at a fixed speed no greater than 54 Hz.
- Incentive is per controlled HP.
- The replacement of existing VFDs, or installing VFDs on redundant or back-up cooling towers do not qualify for incentive.
- Pre-notification is required on fan motors greater than 50 HP.

✂ PE-74 to PE-96 – ENERGY STAR UPS

Incentives are available for replacing existing UPS (uninterrupted power supply) with an ENERGY STAR rating.

Single-normal-mode UPS: A UPS that functions in Normal Mode within the parameters of only one set of input dependency characteristics. For example, a UPS that functions only as a VFI.

Multiple-normal-mode UPS: A UPS that functions in Normal Mode within the parameters of more than one set of input dependency characteristics. For example, a UPS that can function as either VFI or VFD.

VFD: Voltage and frequency dependent

VFI: Voltage and frequency independent

VI: Voltage independent

Process electric specifications

Computer room air conditioning units

Measure ID	Equipment type	Unit
PE-98 & PE-99	Hot aisle cold aisle configuration 10°F return air increase	Air cooled
PE-100 & PE-101		Glycol cooled
PE-102 & PE-103		Water cooled
PE-104 & PE-105	Hot aisle cold aisle configuration 5°F return air increase	Air cooled
PE-106 & PE-107		Glycol cooled
PE-108 & PE-109		Water cooled
PE-110 to PE-112	CRAC economizer	Air cooled
PE-113 to PE-115		Glycol cooled
PE-116 to PE-118		Water cooled
PE-119 to PE-121	High efficiency CRAC	Air cooled
PE-122 to PE-124		Glycol cooled
PE-125 to PE-127		Water cooled

PE-98 to PE-109 – Computer room hot aisle cold aisle configuration

This measure describes the efficiency benefits of increasing the return air temperature of computer room air conditioning (CRAC) units. Increasing the return air temperature can be accomplished through various means of strategically controlling the cooling air flow to optimize equipment heat rejection and eliminate supply air “short circuiting.” This can be achieved by arranging server racks into parallel rows and designating hot and cold aisles.

Table 2: Hot aisle cold aisle estimated energy savings

Equipment type	Rating condition	AES 5°F KW/MBH	AES 5°F KW/MBH	AES 10°F KW/MBH	AES 10°F KW/MBH
Air cooled	Class 1	62.93	0.0072	115.8	0.0132
Water cooled		55.20	0.0063	101.6	0.0116
Glycol cooled		66.59	0.0076	122.6	0.0140
Air cooled	Class 2	49.75	0.0057	91.55	0.0105
Water cooled		46.62	0.0053	85.79	0.0098
Glycol cooled		54.72	0.0062	100.7	0.0115

PE-110 to PE-115 – CRAC economizer - air, glycol & water cooled

This measure describes the replacement of computer room air conditioning (CRAC) units which run mechanical cooling year round with CRAC units that employ free cooling economizers. The economizers will be pumped refrigerant based. When outdoor temperatures are below a certain value (35°F for class 1, 45°F for class 2, and 55°F for class 3 are typical) refrigeration compressors are turned off and cool refrigerant is pumped from the condenser and diverted around compressor for DX equipment. Savings are based on compressors being turned off all winter, with a slight penalty for pumping energy.

PE-119 to PE-127 – High efficiency CRAC

This measure describes the replacement of standard efficiency computer room air conditioning (CRAC) units with high efficiency units. CRAC units are rated in units of net Sensible COP (SCOP), which is the net sensible cooling coefficient of performance. This efficient unit savings are based upon a 10% increase in SCOP over the ASHRAE 90.1-2016 minimum efficiency requirements. This 10% improvement can be considered an incremental improvement to estimate the savings and cost associated with more efficient equipment. Operating or design return temperatures must be specified to select the appropriate Class of equipment. See tables below for equipment class and measure breakdown:

Table 3: CRAC equipment class

Equipment class	Proposed or actual operating return temperature
Class 1	Temperature ≤ 75°F
Class 2	75°F < Temperature ≤ 85°F
Class 3	85°F < Temperature ≤ 95°F

Table 4: High efficiency CRAC energy savings over baseline

Equipment type	Rating condition	Average class SCOP base	SCOP new, 10% above base	Base peak demand, kW/MBH	Peak demand savings, kW/MBH	Annual energy savings, kWh/MBH
Air cooled	Class 1	2.00	2.20	0.0087	0.0087	65.94
Water cooled		2.28	2.51	0.0076	0.0076	57.84
Glycol cooled		1.89	2.08	0.0092	0.0092	69.78
Air cooled	Class 2	2.53	2.78	0.0068	0.0068	52.13
Water cooled		2.70	2.97	0.0064	0.0064	48.85
Glycol cooled		2.30	2.53	0.0075	0.0075	57.34
Air cooled	Class 3	2.56	2.82	0.0068	0.0068	51.52
Water cooled		2.65	2.73	0.0065	0.0065	49.77
Glycol cooled		2.25	2.47	0.0077	0.0077	58.61

Miscellaneous electric specifications

Refrigeration

Measure ID	Equipment type	Unit
FE-20 & FE-21	Evaporator controls with demand frost for walk-in coolers/freezers	Ton
FE-22	Efficient oversized refrigeration condenser	Ton
FE-23	ECM motor for reach-in refrigerated display case (reservation required)	Motor
FE-24	ECM motor for walk-in cooler and freezer (reservation required)	Motor
FE-25 & FE-26	Evaporator fan motor control for walk-in coolers and freezers	Controller
FE-27	Walk-in cooler/freezer evaporator fan motor reduction (reservation required)	Fan
FE-28	Vertical night covers	Linear foot x hrs / day
FE-29 & FE-30	Strip curtains on walk-in cooler and freezer doors	Square foot
FE-31	Door gaskets on walk-in coolers and freezers	Linear foot
FE-32	Automatic door closers for refrigerated walk-in coolers/freezers doors (reservation required)	Door
FE-33 & FE-34	Reach-in refrigerated display case door retrofit (reservation required)	Linear foot
FE-51 to FE-58	Walk-in and case cooler permanent magnet synchronous motor	Motor

FE-20 & FE-21 – Evaporator controls w/ demand frost for walk-in coolers/freezers

Controls must have adaptive learning via a micro-processor or web-based controller. Control of the defrosting system is based on demand-initiation of defrost cycle. Manual control (always on) of evaporator fans does not qualify. Temperature in coolers must range from 33°-50°F and temperature in freezers must range from 0°-32°F.

FE-22 – Efficient oversized refrigeration condenser

Incentives are available for the **design and installation** of oversized condensers for multiplex refrigeration systems. A design reducing the approach (difference in exiting refrigerant and ambient dry bulb temperature) lowers the head pressure and conserves compressor horsepower (see Table 3). Provide documentation of condenser and compressor capacities.

Table 5: Oversized condenser approach requirements

Condenser category	Typical design approach	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

FE-23 – ECM for reach-in refrigerated display case (reservation required)

Incentives are available for retrofitting existing refrigerated display cases with an ECM (electronically commutated motor) replacing an existing standard efficiency shaded pole (S-P) or permanent split capacitor (PSC) evaporator fan motor.

FE-24 – ECM for walk-in freezer and cooler (reservation required)

Incentives are available for an ECM (electronically commutated motor) replacing shaded pole motors or PSC (permanent split capacitor) motor on existing walk-in freezer and walk-in cooler evaporator fans.

FE-25 & FE-26 – Evaporator fan motor control for walk-in cooler or freezer

Incentives are available for controllers that lower fan air-flow and reduce motor power consumption by at least 75% during compressor off cycles. Each controller must control at least two evaporator fan motors with motor sizes of 1/20 hp or larger. Motor types must be ECM or PSC motors. Eligible for new construction ECM motor types only.

FE-27 – Walk-in cooler/freezer evaporator fan motor reduction (reservation required)

Incentives are available for replacing existing evaporator fan/motor assemblies for walk-in coolers (medium-temperature) and freezers (low temperature). The installation must include evaporator or fan housing upgrades with similar cooling capacity in conjunction with the motor reduction. Blanking off existing fan ports or just reducing the motor HP of existing fans does not qualify. The existing evaporator fan motor must be at least 1/20 HP and less than 1/5 HP. The new evaporator fan/motor assemblies cannot increase the individual assembly's motor size. Incentive not applicable if the existing evaporator fan motor does not run at full speed all the time.

FE-28 – Vertical night covers

Incentives are available for vertical night covers installed on open refrigerated display cases. Incentive is per linear foot of cover per hours that the store is closed per day.

FE-29 & FE-30 – Strip curtains on walk-in cooler and freezer doors

Incentives are available for installing new strip curtains on doorways to walk-in coolers and freezers. Replacement of existing strip curtains is not eligible. Display cases are not eligible.

FE-31 – Door gaskets on coolers and freezers

Incentives are available for replacing existing leaky gaskets on doorways to coolers and freezers. An incentive is available every four years and for doors ≥ 5 feet in height. Site survey detailing total number of doors, location and number of leaky gaskets must be provided at reservation application. Stand alone ice and specialty coolers and freezers do not qualify.

FE-32 – Automatic door closers for refrigerated walk-in cooler/freezer doors (reservation required)

An incentive is available for installing an auto-closer to the main insulated opaque door(s) of a walk-in cooler or freezer. The auto-closer must firmly close the door when the door is within 1 inch of full closure. This measure has an eight-year life and is eligible for incentives every eight years.

FE-33 & FE-34 – Reach-in refrigerated display case door retrofit (reservation required)

Incentives are available for installing new vertical glass doors on existing open, vertical (or multi-deck), low temperature (LT) or medium temperature (MT) display cases, or for replacing existing, open, vertical (or multi-deck) display cases with new reach-in glass door display cases. The air temperature inside the cases must range from 0°-32°F (LT), or 33°- 50°F (MT). The case length must be equal to, or shorter than, the original case.

FE-51 to FE-58 – Walk-in and case cooler permanent magnet synchronous motor

Applies to replacement of existing standard efficiency shaded pole, permanent split capacitor evaporator or electronically commutated motors (ECM). The replacement must be a permanent magnet synchronous motor (PMSM). Permanent magnet synchronous motors installed in new walk-in or case coolers do not qualify. This measure is intended for grocery stores, convenience stores, restaurants, deli, health care, and academia that use refrigeration equipment.

Miscellaneous electric specifications

Controls

Measure ID	Equipment type	Unit
FE-16	Beverage vending machine controllers	Controller
FE-17	Anti-sweat heater controls (reservation required)	Door
FE-18	Floating head pressure controls	Ton

✂ FE-16 – Beverage vending machine controllers

Incentives are available for retrofitting existing vending machines with 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.

✂ FE-17 – Anti-sweat heater controls (reservation required)

Incentives are available for anti-sweat heater controls. Eligible control devices that sense 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 are also eligible.

✂ FE-18 – Floating head pressure controls

Incentives are available 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 must replace existing constant pressure or manually controlled systems to achieve lowered head pressure in order to maintain a minimum saturated condensing temperature of 70°F, or a 20°F variance below design head pressure during mild weather conditions.

Sensors and controls

Measure ID	Equipment type	Unit
ME-1	Intelligent multi-socket surge protector	Protector
ME-2	PC network energy management controls	PC

✂ ME-1 – Intelligent multi-socket 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 to which a primary device can be connected.

✂ ME-2 – PC network energy management controls

Incentives are available for implementing a desktop personal computer (PC) power management program for networked PCs. The power management software must dynamically control processing units and monitors from one central location; must collect consumption data over time; and must offer a system-wide energy savings reporting function. Laptops, thin clients and other network devices are not eligible for this incentive.

Clothes washers

Measure ID	Equipment type	Unit
ME-3	ENERGY STAR® High efficiency clothes washer (electric water heat, electric dryer)	Washer
ME-4	ENERGY STAR® High efficiency clothes washer (electric water heat, gas dryer)	Washer

✂ ME-3 & ME-4 – ENERGY STAR® High efficiency clothes washer (electric water heater)

Incentives are available for high efficiency clothes washers that are connected to an electric water heater.

Miscellaneous electric

Measure ID	Equipment type	Unit
ME-5	Heat pump storage water heater	Heater
ME-16	HP water heater - residential unit in commercial application	Heater
ME-6	Electric tankless water heater	Heater
ME-7	High efficiency hand dryer	Dryer
ME-8	Automatic speed doors - between freezer and dock	Square foot
ME-9	Automatic speed doors - between freezer and cooler	Square foot
ME-10	Automatic speed doors - between cooler and dock	Square foot

✂ ME-5 – Heat pump storage water heater

Incentives are available for replacing existing electric domestic water heater with air source heat pump (HP) domestic water heater system that is used in commercial applications. The HP water heater must be installed in conditioned space. A tank style domestic hot water heat pump must be ≤55 gallons, have an EF ≥2.0 and it should replace an existing electric domestic water heater.

✂ ME-16 – Heat pump water heater - residential unit in commercial application

Incentives are available for ENERGY STAR® certified residential heat pump water heaters.

✂ ME-6 – Electric tankless water heater

Incentives are available for tankless/instantaneous electric water heaters that replace existing electric storage water heaters. Replacement unit must have an energy factor ≥0.98.

✂ ME-7 – High efficiency hand dryer

Incentives are available for high efficiency hand dryers that replace standard efficiency hand dryers. High efficiency hand dryers must have a demand rating ≤ 1,500 Watts and have a drying cycle time ≤ 15 seconds.

✂ ME-8 – Automatic speed doors - between freezer and dock

Must install high speed doors in place of strip curtains, separating with different cooling set points.

✂ ME-9 – Automatic speed doors - between freezer and cooler

Must install high speed doors in place of strip curtains, separating with different cooling set points.

✂ ME-10 – Automatic speed doors - between cooler and dock

Must install high speed doors in place of strip curtains, separating with different cooling set points.

Miscellaneous electric specifications

Laminar flow restrictors

Measure ID	Equipment type	Unit
ME-11	Laminar flow restrictor - public	0.5 gpm
ME-12	Laminar flow restrictor - private	0.5 gpm
ME-13		1.0 gpm
ME-14		1.5 gpm
ME-15		2.0 gpm

AG-39 – Dehumidification units

This measure is for new portable or standalone dehumidifiers. Units must be greater than 155 pints/day and have an energy factor of 2.80 L/kWh (5.92 pints/kWh) or higher. Dehumidifiers must be installed in an indoor horticultural facility that operates year-round. Green house installations do not qualify. If replacing an existing unit, the proposed unit must be the same size. For new construction assume 1.90 L/kWh (4.01 pints/kWh) minimum energy factor for baseline.

ME-11 to ME-15 – Laminar flow restrictor

This measure offers incentives on private lavatories a laminar flow restrictor with a flow rate of less than or equal to 2 gallons per minute. On public lavatories a laminar flow restrictor that is equal to 0.5 gallons per minute, where the flow rate of the faucet aerator being replaced is 1.67 gpm or greater. Existing faucet must not have an aerator but must have higher GPM than the laminar flow restrictor. Assumes no preheating or heat recovery technologies at the facility.

Agricultural lighting

Measure ID	Description	Unit
AG-30 & AG-31	LED grow lights	kWh
AG-40 & AG-41	LED grow lights (new construction)	kWh
AG-35	HVAC reduction in interior horticultural grow rooms	Watts reduced

AG-30 & AG-31 – LED grow lights

Existing high-pressure sodium, metal halide, incandescent, or fluorescent fixture must be replaced by a completely new LED fixture. Lamps must be reduced in wattage, UL Listed, have a power factor (PF) ≥ 0.90 , a minimum rated lifetime of 50,000 hours, and a minimum warranty of 5 years. Tier 1 lights must operate $>4,000$ to $\leq 6,000$ hours/year and Tier 2 lights must operate $>6,000$ hours/year.

AG-40 & AG-41 – LED grow lights (new construction)

New LED grow fixtures must be third party tested, reduced in wattage, UL Listed, have a power factor (PF) ≥ 0.90 , a minimum rated lifetime of 50,000 hours, and a minimum warranty of 5 years. New construction LED lamps shall have a PPE of $\geq 1.90 \mu\text{mol} \times \text{J}^{-1}$. Tier 1 lights must operate $>4,000$ to $\leq 6,000$ hours/year and Tier 2 lights must operate $>6,000$ hours/year.

AG-35 – HVAC reduction due to LED lighting in horticultural grow rooms

Grow rooms for indoor cannabis grow facilities must operate year-round. Grow lights must operate at least 4,380 hours a year. Existing high-pressure sodium, metal halide, incandescent, or fluorescent fixture must be replaced by a completely new LED fixture. Lamps must be reduced in wattage, third party tested, UL or ETL listed, have a power factor of (PF) ≥ 0.90 , have a minimum rated lifetime of 50,000 hours and a minimum warranty of 5 years. Must utilize an LED grow light measure (AG-30, AG-31, AG-40, or AG-41). Must use AC year-round. Spaces with free cooling are not eligible for this measure but may be submitted as a custom measure.

Measure ID	Description	Unit
AG-39	Commercial dehumidification units > 155 pints/day	Pints per day

Prescriptive gas
measures &
specifications



HVAC gas specifications

Prescriptive incentives are available only for retrofit or new construction 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 must be used.

Boilers and furnaces

Measure ID	Equipment type	Unit
HG-1	Boiler modulating burner control retrofit	Input MBH
HG-2	Boiler water reset control retrofit	Input MBH
HG-3	High efficiency furnace 95% efficient	Input MBH
HG-4	High efficiency furnace 92% efficient	Input MBH
HG-5	High efficiency boiler - Space heating (< 300 kBtuh 90% AFUE)	Input MBH
HG-53	High efficiency boiler - Space heating (< 300 kBtuh 88% AFUE)	Input MBH
HG-55	High efficiency boiler (> 2500k Btuh 88EC)	Input MBH
HG-56	High efficiency boiler (> 2500k Btuh 90EC)	Input MBH
HG-57	High efficiency boiler (300 - 2500k Btuh 88ET)	Input MBH
HG-58	High efficiency boiler (300 - 2500k Btuh 90ET)	Input MBH
HG-6	Leaking steam trap repair or replacement	Trap
HG-41	Steam trap monitoring system - space heating	Trap
HG-32	O ₂ trim controls added to boilers without linkageless controls	MBH
HG-33	Linkageless boiler controls	MBH
HG-34	O ₂ trim controls added to boilers with linkageless controls	MBH
HG-38 to HG-40	Boiler stack economizer	MBH
HG-49	HVAC boiler sequencing	kBtu per hr

✂ HG-1 – Boiler modulating burner control

Incentives are available for retrofitting existing non-modulating boilers with modulating burner controls added to boilers. The control must have a minimum turn-down ratio of 5:1. Boiler must operate a minimum of 4,000 hours per year. Incentive is only available for equipment used in space heating conditions.

HG-2 – Boiler water reset control

Incentives are available for temperature reset controls added to existing boilers operating with a constant supply temperature. A replacement boiler with boiler reset controls is not eligible. For controls on multiple boilers to be eligible, control strategy must stage the lag boiler(s) only after the lead boiler fails to maintain the desired boiler water temperature. Incentive is available only for equipment used in space heating conditions.

✂ HG-3 & HG-4 – High efficiency gas furnace/unit heater

Incentives are available for replacement furnaces and unit heaters that have an AFUE of 92% or greater and have a sealed combustion unit. Air handlers are not eligible. Equipment purchased for backup or redundancy is not eligible. Incentive is only available for equipment used in space heating conditions.

✂ HG-5 & HG-53 – High efficiency space heating boiler

Incentives are available for replacement boilers used for space heating. Boilers purchased for backup or redundancy are not eligible. Boilers must be modulating with a minimum turndown ratio of 5:1 and be of the sealed combustion type. Refer to Boilers and Furnaces Table for qualifying efficiencies.

✂ HG-55 to HG-58 – High efficiency boiler

Incentives are available for replacement boilers used for space heating. Boilers purchased for backup or redundancy are not eligible. Boilers must be modulating with a minimum turndown ratio of 5:1 and be of the sealed combustion type.

HG-6 – Steam trap repair/replacement

Incentives are available for the repair or replacement of steam traps that have failed open and that are leaking steam. Incentive is not available for traps that have failed, closed, or that are plugged. Incentive is available once per 24 month period, per trap. Steam trap repair work must be recorded and the service report must be attached to the incentive application. The report must contain:

- Name of survey/repair technician
- Survey/repair date
- System nominal steam pressure
- Annual hours of operation
- Number of steam traps serviced
- Per steam trap:
 - ID tag number, location and type of trap
- If repaired or replaced:
 - Orifice size
 - Pre- and post-conditions (e.g., functioning/not functioning, leaking/not leaking)

✂ HG-41 – Steam trap monitoring system – space heating

Incentives are available for the installation of steam trap monitoring systems. Pre-existing automatic steam trap monitoring systems are not eligible. Supporting documentation must include characteristics for the steam system, including number of steam traps, boiler efficiency, steam trap orifice size(s), operating pressure. Monitoring systems must provide real time data to identify leaking and failed steam traps.

✂ HG-32 – O₂ trim controls added to boilers without linkageless controls

Incentives are available for adding boiler oxygen trim controls to existing boilers without linkageless boiler controls. Both space heating and process boilers are eligible for this incentive. Redundant and backup boilers do not qualify for this incentive. When combining with linkageless boiler controls, apply for measure HG-34 only.

HG-33 – Linkageless boiler controls

Incentives are available for adding linkageless boiler controls to existing boilers without boiler oxygen trim controls. Both space heating and process boilers are eligible for this incentive. Redundant and backup boilers do not qualify for this incentive. When combining with boiler oxygen trim controls, apply for measure HG-34 only.

✂ HG-34 – O₂ trim controls added to boilers with linkageless controls

Incentives are available for adding both boiler oxygen trim controls and linkageless boiler controls to existing boilers. Both space heating and process boilers are eligible for this incentive. Redundant and backup boilers do not qualify for this incentive.

✂ HG-38 to HG-40 – Boiler stack economizer

Incentives are available for adding stack economizers that recover flue gas waste heat from existing boilers. Boilers must be used for space heating. Economizer must reduce net stack temperature (flue gas exit temperature minus the inlet combustion air temperature) at least 80°F and must offset a heating load. Both water and steam boilers are eligible. This incentive can be combined with incentives for new boilers. Economizers on redundant or back-up boilers are not eligible.

HVAC gas specifications

✂ HG-49 – HVAC boiler sequencing

Available for installing sequence controls on existing boilers and for new boilers with built-in controls. The customer must provide the nominal unit rating (MBH) for the lead boiler and all additional lag/redundant boilers in the boiler plant. The Boiler Plant Control incentive is available for heating systems with at least two boilers currently isolated from each other independently feeding a common header. All boilers shall be monitored and controlled, at a minimum, as follows: sequenced and staged, both enabled and disabled, in a manner to optimize their operation as recommended by the boiler manufacturer. Within 15 minutes of disabling a boiler, the boiler's flow through that disabled boiler must be stopped, either by automatically disabling the boiler's corresponding circulating pump, or through automatically shutting of an isolation valve when applicable. Hospitals or universities whose boiler operates year round may qualify as a process boiler. Qualifies for new construction and retrofit applications.

Other HVAC

Measure ID	Equipment type	Unit
HG-7	Infrared heaters	MBH
HG-9	Destratification fans	1,000 sq. ft.
HG-10	Direct fired make-up air units	MBH
HG-11	Outside air ventilation reduction	CFM
HG-35	Sensible energy recovery ventilation	CFM
HG-36	Total energy recovery ventilation	CFM
HG-37	Automatic high speed doors – exterior doors	Square foot
HG-47	DDS/MZS to VAV	1,000 sq. ft.
HG-52	Original double hung windows with low U storm	100 sq. ft.
HG-54	Window reduction	100 sq. ft. glazing

✂ HG-7 – Infrared heaters

Incentives are available for infrared heaters with electronic ignition replacing unit heaters. Low-intensity heaters must use non-conditioned, outside air for combustion. Incentive is available for heaters used for building space heating.

✂ HG-9 – Destratification fans

Incentives are available for adding destratification fans to spaces that are heated and that have a ceiling height ≥ 15 feet. Floor plan must be submitted verifying square footage.

✂ HG-10 – Direct fired make-up air units

Incentives are available for replacing standard efficiency indirect fired heating units with a direct-fired make-up air unit. This measure can be combined with outside air ventilation reduction (HG-11).

HG-11 – Outside air ventilation reduction (reservation required)

Incentives are available for permanently reducing the outside air ventilation rate to a space with gas heat, during the heating season. Outside air must be mechanically provided to the space. Complete outside airflow rate measurements, in CFM, must be clearly documented and provided for both the existing and reduced ventilation system to verify the CFM reduced. The existing and new outside air volume flow rate should comply with all local and/or state codes.

✂ HG-35 – Sensible energy recovery ventilation

Incentives are available for sensible heat energy recovery ventilators (HRV) (e.g. flat plate heat exchangers). Both whole unit replacements with integrated HRV and retrofits to existing HVAC units are eligible. Sensible heat HRV should have a sensible recovery effectiveness of 55%. The space being served by the HRV must be heated with natural gas. This incentive can be combined with incentives for high efficiency HVAC units when performing a whole unit replacement with qualifying efficiency.

✂ HG-36 – Total energy recovery ventilation

Incentives are available for total heat energy recovery ventilators (ERV) (e.g. enthalpy wheels). Both whole unit replacements with integrated ERV and retrofits to existing HVAC units are eligible. Total heat ERV should have a total recovery effectiveness of 70%. The space being served by the ERV must be heated with natural gas. This incentive can be combined with incentives for high efficiency HVAC units when performing a whole unit replacement with qualifying efficiency. If an ERV does not meet the total recovery effectiveness requirement, but it does meet the sensible recovery effectiveness requirement, then it is eligible for measure HG-35.

✂ HG-37 – Automatic high speed doors – exterior doors

Incentives are available for installing automatic high speed doors that replace standard roll-up doors between a conditioned space and an unconditioned space. Conditioned space must be heated with natural gas. Incentive is per sq. ft. of the door.

⚙️ HG-47 – DDS/MZS to VAV

Must be converting a dual duct system/multi-zone system to a VAV system. The areas served by the air system must be conditioned spaces (both heated and air conditioned). At a minimum, variable frequency drives must be installed on all fans in the system and VAV boxes and reheat must be added to a minimum of four zones. The incentive cannot be combined with the incentive for VFD/VSD on HVAC Fans or HVAC Pumps. Adding a VFD and controls to a dual duct or multi-zone AHU does not qualify. Existing single zone air handling equipment does not qualify (i.e., classroom unit ventilators or fan coil units). See electric Measure ID (HE-60).

⚙️ HG-52 – Original double hung windows with low U storm

Incentives are available for rehabilitating double hung storm windows with low U values. The solar heat gain coefficient (SHGC) value must improve from ≥ 0.73 to ≤ 0.27 . The U-value must improve from ≥ 1.27 to ≤ 0.21 . Fractional values are allowed for areas that are not multiples of 100 square feet. Documentation must be submitted verifying square footage.

HG-54 – Window reduction

This measure is for replacing existing window glazing with opaque insulation panels that are $\geq R-11$. Provide the following: a scaled plan of the facility's total window area that is being replaced with insulation panels, a window construction detail (sketch) showing a section cut of the existing window with proposed insulation panel, and specifications of the proposed insulation panel. Pre-construction pictures of the condition of the existing windows would also be beneficial.

HVAC gas specifications


HVAC controls

Measure ID	Equipment type	Unit
HG-15	Demand controlled ventilation CO ₂ sensor-based	1,000 sq. ft.
HG-16	HVAC occupancy sensor	1,000 sq. ft.
HG-18	Hotel guestroom energy management control (gas heat)	Room
HG-46	Optimum start	1,000 sq. ft.
HG-48	DCV and HVAC occ sensor	1,000 sq. ft.
HG-51	Enhanced ventilation control	Tons


HG-15 – Demand controlled ventilation CO₂ sensor-based

Incentives are available to retrofit existing buildings with ventilation controls that use carbon dioxide levels to measure occupancy and modify the percentage of outside air based on occupancy levels. Only buildings with space heating requirements are eligible. Zone-level and return system CO₂ sensors are eligible. Cannot be combined with the HVAC occupancy sensor incentive. Fractional values are allowed for areas that are not multiples of 1,000 square feet. Floor plan must be submitted verifying square footage.

HG-16 – HVAC occupancy sensor

 Incentives are available for installing HVAC occupancy sensor controls used to reset space temperatures and reduce ventilation air supplied to individual zones when they are unoccupied. This incentive is not available for spaces controlled by outside air demand control ventilation systems. Fractional values are allowed for areas that are not multiples of 1,000 square feet. Floor plan must be submitted verifying square footage. These measures can be combined with measures for interior lighting occupancy sensors (LO-60 to LO-62 or LO-63 to LO-65) if sensors are controlling both HVAC and lighting.

HG-18 – Hotel guestroom energy management control (gas heat)

 Incentives are available for new sensors that control HVAC units for individual hotel rooms. Guest rooms must be controlled by automatic occupancy detectors. Replacement or upgrades of existing occupancy-based controls are not eligible. For multi-room suites, the incentive is available per room controlled when a sensor is installed in each room.

HG-46 – Optimum start

During optimal start morning warm-up, the supply fan shall run continuously and the heating or cooling shall be energized but the OA damper shall remain closed unless in economizer mode. Floor plans showing pertinent areas should be provided along with sequence of operation. Service contracts with an optimal start upgrade are not eligible. System must feature automated setback and/or setup capabilities at least seven times weekly.

HG-48 – DCV and HVAC occ sensor

This incentive is available for installing both demand control ventilation and occupancy sensors for HVAC. Occupancy sensor controls shall be used to reset space temperatures and reduce ventilation air supplied to individual zones when they are unoccupied. Retrofitting existing buildings with ventilation controls shall use carbon dioxide levels to measure occupancy and modify the percentage of outside air based on occupancy levels. Only buildings with space heating requirements are eligible. Zone-level and return system CO₂ sensors are eligible. Fractional values are allowed for areas that are not multiples of 1,000 sq.ft. Floor plan must be submitted verifying square footage. These measures can be combined with (LO-60 to LO-62 or LO-63 to LO-65) if sensors are controlling both HVAC and lighting.

HG-51 – Enhanced ventilation control

This incentive is available for adding enhanced ventilation control (EVC) to single zone packaged heating, ventilation, and air conditioning (HVAC) units or roof-top units (RTU). Available for both new and existing HVAC equipment; however, the existing RTU must be in good working order.

Must include the following:

- An advanced digital economizer control (ADEC) system replaces their existing analog or non-functional economizer control system with an ADEC system.
- The ADEC system must identify and report problems with sensors, dampers, and other components to ensure consistent and reliable economizer mode operation.
- Demand Control Ventilation (DCV) to reduce the amount of ventilation during periods of low occupancy, typically achieved through a carbon dioxide (CO₂) sensor.
- The DCV must be tied into the controller Variable Speed Drives (VSD) to modulate the supply fan (evaporator) motor. The VSD must be automatically controlled by differential pressure, flow, temperature, or other variable signals. The VSD must be tied to the controller.

This measure cannot be combined with the demand control ventilation (DCV), VFD, or economizer incentive measures. Incentive will be based on the nominal input rating in tons of the HVAC equipment. The existing system cannot have a supply fan VFD or CO₂ sensors installed. Factory provided controls on a new RTU would not qualify.

Hot water & laundry specifications

Hot water

Measure ID	Equipment type		Unit	
WG-1	High efficiency indirect domestic hot water heating system (90% efficient)		Input MBH	
WG-2	Mid efficiency indirect domestic hot water heating system (84% efficient)		Input MBH	
WG-3	Gas tankless water heater		Heater	
WG-4	High efficiency pool heater (gas heat)		Input MBH	
WG-5	Low-flow sink aerator		Aerator	
WG-6	Low-flow shower head		Shower head	
WG-15	Condenser heat recovery DWH	HVAC cooling	Water-cooled	Ton
WG-16			Air-cooled	Ton
WG-17		Process cooling	Water-cooled	Ton
WG-18			Air-cooled	Ton

WG-1 & WG-2 – Domestic hot water system

Incentives are available for domestic hot water systems containing a new boiler and a separate storage tank. The boiler must have a thermal efficiency (AFUE) of 84% or better for a mid-efficiency system and 90% or better for a high-efficiency system. Boiler must be 75 MBH or larger to qualify. Boilers used for space heating do not qualify for this incentive.

WG-3 – Gas tankless water heater

Incentives are available for tankless/instantaneous gas water heaters that replace existing gas storage water heaters. Replacement unit must have an energy factor of ≥ 0.70 .

WG-4 – High efficiency pool heater

Incentives are available for replacement indoor pool heaters. Replacement heaters must have a thermal efficiency $\geq 84\%$ and must be rated between 500 MBH and 2,000 MBH. The pool heater may not be used as a back-up for solar water-heating.

WG-5 – Low-flow sink aerator

Incentives are available for low-flow sink aerators which must not exceed a 1.0 gallons per minute (gpm) flow rate and are installed on a system with a gas water heater.

WG-6 – Low-flow shower head

Incentives are available for low-flow shower heads that must not exceed a 2 gpm flow rate and are installed on a system with a gas water heater.

WG-15 to WG-18 – Condenser heat recovery

Incentives are available for the installation of heat recovery technology on air-cooled or water-cooled condensers on process or HVAC equipment that supplement heat for domestic hot water. New construction applications with chiller plants that operate under 400 tons qualify. This incentive may be combined with high efficient air conditioning measures.

Gas storage water heater

Measure ID	Equipment type	Unit
WG-8	$\leq 75,000$ Btu/hr, high-efficiency (≥ 0.80 EF)	Heater
WG-10	$> 75,000$ Btu/hr, high-efficiency (≥ 0.94 thermal efficiency)	Heater

WG-8 – Gas storage water heater (≤ 55 Gallons)

Incentives are available for natural gas high-efficiency storage tank water heaters that replace existing natural gas storage water heaters. Water heaters must be less than or equal to 55 gallons in size and less than or equal to 75,000 Btu/hr in capacity. Heaters must have an EF ≥ 0.80 .

WG-10 – Gas storage water heater (> 55 Gallons)

Incentives are available for natural gas high-efficiency storage water heaters that replace existing natural gas storage water heaters. Water heaters must be greater than 55 gallons in size and $>75,000$ Btu/hr, in capacity. Heaters must have a thermal efficiency ≥ 0.94 .

Laundry

Measure ID	Equipment type	Unit
WG-11	ENERGY STAR® High efficiency clothes washer (gas water heat, electric dryer)	Washer
WG-12	ENERGY STAR® High efficiency clothes washer (gas water heat, gas dryer)	Washer
WG-13	Ozone laundry	lb. wash capacity

WG-11 & WG-12 – ENERGY STAR® Clothes washer (gas water heater)

Incentives are available for ENERGY STAR® clothes washers connected to a gas water heater with electric or gas dryers.

WG-13 – Ozone laundry system

Incentives are available for ozone injection systems added to existing or new commercial washers using hot water from a natural gas boiler or water heater. System must be installed on-site. This incentive is available only to fitness and recreational sports centers and to hotels or motels with fewer than 250 guest rooms or similar building types. Not available for commercial laundry.

Laminar flow restrictors

Measure ID	Equipment type	Unit
WG-19	Laminar flow restrictor - public	0.5 gpm
WG-20	Laminar flow restrictor - private	0.5 gpm
WG-21		1.0 gpm
WG-22		1.5 gpm
WG-23		2.0 gpm
		Per restrictor

WG-19 to WG-23 – Laminar flow restrictor

This measure offers incentives on private lavatories a laminar flow restrictor with a flow rate of less than or equal to 2 gallons per minute. On public lavatories a laminar flow restrictor that is equal to 0.5 gallons per minute, where the flow rate of the faucet aerator being replaced is 1.67 gpm or greater. Existing faucet must not have an aerator but must have higher GPM than the laminar flow restrictor. Assumes no preheating or heat recovery technologies at the facility.

Insulation specifications

Insulation

Measure ID	Equipment type	Unit
IG-1	Pipe wrap – steam boiler	Linear foot
IG-2	Pipe wrap - steam boiler condensate return	Linear foot
IG-3	Pipe wrap – hot water boiler	Linear foot
IG-4	Domestic hot water pipe wrap	Linear foot
IG-7	Truck loading dock seals (new installation) (reservation required)	Door
IG-8	Truck loading dock seals (replacement) (reservation required)	Door
IG-9	Truck loading dock leveler ramp air pit seals (new installation)	Ramp
IG-10	Flat roof insulation	1,000 sq. ft.
IG-11	Attic roof insulation	1,000 sq. ft.
IG-12	Wall insulation (reservation required)	1,000 sq. ft.
IG-13	Pool covers	Sq. ft.

IG-1 – Pipe wrap – steam boiler

Incentives are available for insulation applied to existing bare steam boiler piping used for space heating. Insulation must have an applied thickness of at least 1 inch and a minimum thermal resistance of R-4. A minimum of 10 linear feet of pipe must be insulated or a sufficient number of fittings that equal 10 linear feet. The outer diameter of the bare pipe size must be ½ inch or larger.

IG-2 – Pipe wrap - steam boiler condensate return

Incentives are available for adding insulation to existing steam heating piping systems that are not insulated. Only condensate return piping used as heating piping qualifies; condensate piping extending to a drain does not qualify. A minimum of R-4 (approximately 1 inch thickness) of pre-formed pipe insulation must be added. New or recently repaired piping does not qualify for this incentive. The outer diameter of the bare pipe size must be ½ inch or larger. A minimum of 10 linear feet of pipe must be insulated or a sufficient number of fittings that equal 10 linear feet. Documentation must include the manufacturer's name, insulation material type and the material K-value or R-value rating.

IG-3 – Pipe wrap – hot water boiler

Incentives are available for insulation applied to existing bare hot water boiler piping used for space heating. Insulation must have an applied thickness of at least 1 inch and a minimum thermal resistance of R-4. A minimum of 10 linear feet of pipe must be insulated or a sufficient number of fittings that equal 10 linear feet. The outer diameter of the bare pipe size must be ½ inch or larger.

IG-4 – Pipe wrap – domestic hot water

Incentives are available for insulation applied to existing bare pipe for domestic hot water systems. Insulation must have an applied thickness of at least 1 inch for a minimum thermal resistance of R-4. Pipe must be between ½ inch and 2½ inches nominal diameter. Piping associated with new boiler systems is not eligible. Repair or replacement of existing insulation does not qualify.

IG-7 & IG-8 – Truck loading dock seals (reservation required)

Incentives are available for seals (shelters) added to loading dock doors without seals or with existing degraded seals. Seals must effectively close all gaps between the building and semi-trailer. Dock door seals must cover the "hinge gap" that occurs with outwardly swinging trailer doors. Building interior space must be heated with natural gas.

IG-9 – Truck loading dock leveler ramp air pit seals

Incentives are available for leveler ramp air pit seals added to existing loading dock systems without seals. Seals may be attached to either the building or the ramp. Ramp seals must maintain an effective seal both when ramp is in use or out of use. Brush or whisker-type seals not used in conjunction with air seals do not qualify for incentives.

IG-10 & IG-11 – Roof insulation (flat roofs and attic roofs)

Incentives are available for adding insulation to existing buildings heated with natural gas. Insulation must be installed between conditioned and unconditioned spaces. Insulation installed above dropped commercial ceilings is not eligible. Pre-retrofit insulation levels must be less than R-11 for all eligible roofs. Final assembly insulation levels on flat roofs must exceed R-24. Final assembly insulation levels on attic roofs must exceed R-42. Application will require a scaled plan of the total roof area being insulated, a roof construction statement with R-value of the pre-retrofit roof and specifications of the proposed roof insulation.

IG-12 – Wall insulation (reservation required)

Incentives are available for adding insulation to existing walls in a space that is heated with natural gas. The pre-retrofit walls must not be insulated. The final insulation levels should exceed R-13.

IG-13 – Pool covers

Incentives are available for interior or exterior pool covers between 400 and 4,000 square feet in size.

Process gas specifications

Process gas

Measure ID	Equipment type	Unit
PG-14	Furnace tube inserts	Insert
PG-15	High efficiency process boiler (water)	Input MBH
PG-16	High efficiency process boiler (steam)	Input MBH
PG-17	Tank insulation 1"	Low temp (120°F - 170°F)
PG-18		High temp (>170°F)
PG-19	Tank insulation 2"	Low temp (120°F - 170°F)
PG-20		High temp (>170°F)
PG-21	Air compressor exhaust heat recovery	HP
PG-22 to PG-24	Process boiler stack economizer	Input MBH
PG-25	Modulated boiler control for process	Input MBH
PG-26 to PG-29	Regenerative/recuperative thermal oxidizer	CFM
PG-30 & PG-39	Optimized snow and ice melt controls - with idle mode	Square feet
PG-31 to PG-37	Steam trap monitoring system industrial pressure	Trap
PG-38	Process boiler sequencing	Input MBH

PG-14 – Furnace tube inserts

Incentives are available for spiral ceramic inserts installed in the exhaust leg of heat treating furnace burner tubes. The inserts must be new and replace existing burner tubes.

- PG-15 & PG-16 – High efficiency process boiler (water or steam)
Incentives are available for replacement boilers used in manufacturing processes. Boiler must have a thermal efficiency of at least 82%. A flue gas analysis under full load conditions must be performed and the report must be submitted with the final application.

PG-17 to PG-20 – Tank insulation

Incentives are available for adding insulation to existing hot-fluid storage or process tanks that are not insulated. Replacement insulation is not eligible. Tank must be uninsulated, bare or painted steel, and in use 8,760 hours/year. Insulation must have a thermal resistance of at least R-3.2 per inch.

- PG-21 – Air compressor exhaust heat recovery
Incentives are available for the recovery of waste heat generated by an air compressor system. Waste heat can be utilized for space heating, domestic water heating or other process heating. The horsepower of back-up or redundant equipment cannot be included in this measure. The waste heat recovery system must be controlled by a thermostat, building energy management system or a manual damper to duct the waste heat into a conditioned space (or process) when required.

PG-22 to PG-24 – Process boiler stack economizer

Incentives are available for adding stack economizers that recover flue gas waste heat from existing boilers. Boilers must be used for industrial, manufacturing, agricultural, university or hospital purposes. Economizer must reduce net stack temperature (flue gas exit temperature minus the inlet combustion air temperature) at least 80°F and must use the recovered heat to preheat either combustion air or boiler feed water. Both water and steam boilers are eligible. This incentive can be combined with incentives for new process boilers. Economizers on redundant or back-up boilers are not eligible.

PG-25 – Modulated boiler control for process

Incentives are available for retrofitting existing non-modulating boilers with modulating burner controls. The control must have a minimum turn-down ratio of 5:1. University and hospital boilers that operate year-round also qualify. The manufacturer name and equipment model number of the boiler must be provided.

PG-26 to PG-29 – Regenerative/recuperative thermal oxidizer

Incentives are available for upgrading existing thermal oxidizers/incinerators to include recuperative or regenerative heat recovery by either retrofit or replacement. Incentives are also available for installing a new recuperative or regenerative thermal oxidizer where no oxidizer previously existed. Exhaust gas outlet temperature with heat recovery (post-upgrade) must be at least 1,200°F lower than exhaust outlet temperature without heat recovery (pre-upgrade).

PG-30 & PG-39 – Optimized snow and ice melt controls

Incentives are available for installing optimized snow/ice melt controls on existing or new boiler systems used for melting snow. The new controls must be programmed to setback the slab temperature to at most 35°F during idle time and allow the slab temperature to reset to at least 40°F once moisture sensors in the slab sense precipitation.

PG-31 to PG-37 – Steam trap monitoring system – process heat

Incentives are available for the installation of steam trap monitoring systems. Pre-existing automatic steam trap monitoring systems are not eligible. Supporting documentation must provide characteristics for the steam system, including number of steam traps, boiler efficiency, steam trap orifice size(s), operating pressure. Monitoring systems must provide real time data to identify leaking and failed steam traps.

PG-38 – Process boiler sequencing


Available for process boilers only. Applicable primarily for the industrial sector, agricultural and misc. process uses. Manufacturer name and equipment model number must be provided. Incentive available once per boiler installation. Direct contact water heaters, boilers primarily used for domestic hot water, space conditioning, pool or spa use do not qualify.

Miscellaneous gas specifications

Miscellaneous - gas

Measure ID	Equipment type	Unit
FG-11	Vertical night covers	Linear ft. x hrs/day
FG-12	Refrigeration condenser waste heat recovery	Domestic water heater
FG-13		Space heating
FG-14	Reach-in refrigerated display case door retrofit	33° - 50°F (medium temp.)
FG-15		0° - 32°F (low temp.)

FG-11 – Vertical night covers

 Incentives are available for night covers installed on open refrigerated display cases. Incentive does not include horizontal covers.

FG-12 – Refrigeration condenser waste heat recovery (domestic water heater)

Incentives are available for installing new heat recovery equipment to harvest heat from the refrigeration system. At least 30% of the refrigeration system waste heat must be utilized for domestic water heating.

FG-13 – Refrigeration condenser waste heat recovery (space heating)

Incentives are available for installing new heat recovery equipment to harvest heat from the refrigeration system. Heat that is rejected by condenser is reclaimed by ducting into the HVAC system. The condenser used to reject refrigeration system heat must be located where the heat rejected is not used for building heat or other purposes (>95% wasted). At least 30% of the refrigeration system waste heat must be utilized for space heating.

FG-14 & FG-15 – Reach-in refrigerated display case door retrofit

Incentives are available for installing new vertical glass doors on existing open, vertical (or multi-deck), low temperature (LT) or medium temperature (MT) display cases, or for replacing existing, open, vertical (or multi-deck) display cases with new reach-in glass door display cases. The air temperature inside the cases must range from 0°-32°F (LT), or 33°- 50°F (MT). The case length must be equal to, or shorter than, the original case. Cases must be in a space heated by natural gas.

Boiler/furnace tune-up specifications

Boiler tune-up

To apply for Boiler Tune-ups, click this link: [Boiler tune-up checklist](#), download and complete.

Measure ID	Equipment service	Size	Unit
HG-21	Space heating boiler tune-up	110 – 500 input MBH	Boiler
HG-22		501 – 1,200 input MBH	Boiler
HG-23		> 1,200 input MBH	Boiler
HG-24	Process boiler tune-up	≤ 3,000 MBH	Boiler
HG-25		> 3,000 – < 6,000 input MBH	Boiler
HG-26		≥ 6,000 – < 10,000 input MBH	Boiler
HG-27		≥ 10,000 input MBH	Boiler
HG-28	Domestic hot water boiler tune-up	≥ 199 input MBH	Boiler
HG-50	Process boiler tune-up (pool/spa)		Boiler

HG-21 to HG-23 – Boiler tune-up (space heating boilers only)

Incentives are available for tune-ups to natural gas-fired, space heating boilers. The incentive is available once every two program years. Boiler size must be 110 MBH or greater input. The service provider must perform a combustion analysis both before and after the tune-up and attach the printout to the final application. The tune-up checklist must be filled out per boiler. Other forms that include all the required information are acceptable.

HG-24 to HG-27 – Boiler tune-up (process boilers only)

Incentives are available for tune-ups to natural gas-fired, process boilers. Boilers used primarily for domestic hot water, space heating or pool/spa use are not eligible. The incentive is available once every two program years. The service provider must perform a combustion analysis before and after the tune-up and attach the printout to the final application. The tune-up checklist must be filled out per boiler. Other forms that include all the required information are acceptable.

HG-28 – Domestic hot water boiler tune-up

Incentives are available for tune-ups to natural gas-fired boilers for domestic hot water. Boilers used primarily for pool/spa use, space heating or process load are not eligible. Burners must be adjusted to improve combustion efficiency as needed. The incentive is available once every two program years. Boiler size must be 199 MBH or greater input. The service provider must perform a combustion analysis before and after the tune-up and attach the printout to the final application. The tune-up checklist must be filled out per boiler. Other forms that include all the required information are acceptable.

HG-50 – Process boiler tune-up (pool/spa)

Incentives are available for tune-ups to natural gas-fired, process boilers. Boilers must be used only for pool/spa heating. The incentive is available once every two program years. The service provider must perform a combustion analysis before after the tune-up and attach the printout to the final application. The tune-up checklist must be filled out per boiler. Other forms that include all the required information are acceptable.

Furnace/RTU tune-up

Measure ID	Equipment service	Size	Unit
HG-29	Furnace/RTU tune-up	40 – 300 input BH	Furnace/RTU
HG-30		301 – 500 input MBH	Furnace/RTU
HG-31		> 500 input MBH	Furnace/RTU

HG-29 to HG-31 – Forced air gas furnace or rooftop unit (RTU) tune-up (space heating units only)

Incentives are available for a combustion burner tune-up for indirect fired units with an input of 40 MBH or greater. This includes furnaces, rooftop units, unit heaters and air handling units that are indirect fired. Contractor must complete a tune-up checklist for each unit serviced. A single unit with multiple burners or modules is considered one unit. A rooftop unit is considered one unit. The incentive is available once every two program years. Other forms that include all the required information are acceptable.

Process furnace/burner tune-up

Measure ID	Equipment service	Size	Unit
HG-42	Process furnace/burner tune-ups	≤ 3,000 MBH	MBH
HG-43		> 3,000 – < 6,000 MBH	MBH
HG-44		≥ 6,000 – < 10,000 MBH	MBH
HG-45		≥ 10,000 MBH	MBH

HG-42 to HG-45 – Process furnace/burner tune-ups

Incentives are available for tune-ups to natural gas process burners. A burner tune-up includes reducing excess air and stack temperature, cleaning burners, burner nozzles, combustion chamber and sealing the combustion chamber. Manufacturer name and equipment model number must be provided. The incentive is available once every two years. The service provider must perform a post combustion analysis and record the results on the boiler tune-up incentive application checklist.

Custom electric
& gas specifications



Custom specifications

Reservation applications must be submitted for all custom projects while the existing equipment is still in operation so that existing conditions (baseline) can be verified.

Custom projects must involve a facility improvement that results in a permanent reduction in electrical (kWh) and/or natural gas (Mcf) energy usage due to an increase in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a custom incentive.

Service	Unit
Electric	kWh
Natural gas	Mcf

Custom and prescriptive measures may be included on one application. Mixed measures, those with both prescriptive and custom aspects, must be separated into prescriptive and custom measures. Prescriptive measures, or portions thereof, are only eligible for prescriptive incentives. Custom measures, or portions thereof, are only eligible for custom incentives. For custom measures or portions thereof, incentives are limited to 50% of the sum of all custom measure costs (MC). The MC is the cost of implementing a measure less any costs incurred to achieve non-energy related project benefits. Only costs associated with the incented energy savings measure should be included in the MC. The MC is the basis for determining the simple payback period for custom measures and is defined as either:

1. For end-of-life equipment replacement measures:
the cost differential between equipment meeting program efficiency criteria and equipment meeting the minimum efficiency allowable by code or industry standard. External labor costs may also be included.
2. For retrofit, early replacement or new technology measures:
the cost of new equipment or components added to existing equipment for the purpose of improving energy efficiency. External labor costs may also be included.

For example, when replacing an existing injection molding machine that is at the end of its useful life with a new, high-efficiency model, the price differential between the high-efficiency model and a standard-efficiency model is the MC. However, when adding a variable frequency drive to an existing boiler pump or when changing high intensity discharge (HID) light fixtures to DLC LED fixtures, the MC is the purchase price of the VFD or light fixtures including any external contracted labor for the installation.

All final applications must include manufacturers' equipment specification sheets

All custom projects must have a simple payback period equal to or greater than one (1) year to be eligible for an incentive. Project payback is equal to the ratio of the project MC divided by the annual energy savings.

Projects that are not eligible for an energy efficiency 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 load-shifting/demand-limiting (and not kWh savings)
- Renewables
- Power quality improvements

Requirements for custom project electricity and/or natural gas savings calculation:

With the exception of lighting and compressed air projects, each custom project must have a custom incentive calculation plan (CICP) that is agreed to by DTE Energy, the customer and, if applicable, the customer's contractor or other representative.

The annual electricity and/or gas savings for custom projects must be calculated using industry accepted engineering algorithms or simulation models. Acceptable methods of determining custom project energy savings include detailed calculations, equipment or subsystem metering and/or calibrated building energy modeling. The applicant must detail all assumptions used in the calculations and justify or cite a precedent for the assumptions. The applicant must estimate the annual electricity and/or gas usage of both the existing (baseline) and proposed equipment. If the existing equipment is at the end of its useful life, the applicant must substitute the baseline with new equipment that would meet all applicable federal and local energy codes when calculating the annual energy savings.

DTE Energy will review the application and is solely responsible for the final determination of the annual energy savings methodology to be used in calculating the incentive amount. DTE Energy may need to conduct inspections both before and after the retrofit project to verify equipment and operating conditions. DTE Energy also reserves the right to require specific measurement and verification activities, including monitoring, both before and after the retrofit, and to base the incentive payment on the results of these activities.

Agriculture specifications



Agriculture specifications

Process electric - irrigation equipment

Measure ID	Description	Unit
AG-1	VFD on irrigation systems operating ≥ 500 hrs/year (reservation required)	HP
AG-2	Sprinkler to drip irrigation (reservation required)	Acre
AG-3	Low-pressure sprinkler nozzle (reservation required)	Nozzle

AG-1 – Variable frequency drives on irrigation systems (reservation required)

Incentives are available for the installation of variable frequency drives on existing agricultural irrigation systems. Redundant or back-up pumps do not qualify. The new pumps must operate a minimum of 500 hours per year to qualify.

Qualifying existing irrigations systems must either include:

- several center pivots served by one well, or
- have a corner arm center pivot where the water flow rate increases when the corner arms swing out towards the corners of the fields.

Other proposed VFD irrigation systems applications will be reviewed on a case-by-case basis. This incentive cannot be combined with the sprinkler drip irrigation incentive or low pressure sprinkler nozzles incentive.

AG-2 – Sprinkler to drip irrigation systems (reservation required)

Incentives are available for the conversion of an existing high-pressure, impact-type sprinkler irrigation system (50-psi or greater at the sprinkler head) to a low-pressure sprinkler micro-system (35-psi or less at the sprinkler head). The existing sprinklers must be removed. Drip tape systems are not applicable. The incentive application must include an assessor's parcel map or other documentation to verify acreage.

AG-3 – Low pressure sprinkler nozzles (reservation required)

Incentives are available for the conversion of an existing one-to-one high-pressure (50 psi or greater at the sprinkler head) sprinkler system nozzle to a low-pressure sprinkler nozzle (35-psi or less at the sprinkler head). Both permanent (solid set) and portable (hand-move) sprinkler system nozzles are eligible for incentives.

Dairy equipment

Measure ID	Description	Unit
AG-4	Scroll compressor for dairy refrigeration	lb milk/day
AG-5	Variable frequency controller for vacuum pump (reservation required)	HP
AG-6	Variable frequency drive on milk pump (reservation required)	w/existing pre-cooler
AG-7		w/new pre-cooler
AG-8	Milk pre-cooler (heat exchanger chiller savings)	lb milk/day

AG-4 – Scroll compressor for dairy refrigeration

Incentives are available for the replacement of reciprocating compressors only with scroll compressors. The offer is based on one milk pump system per farm; if multiple milk systems exist, the incentive will be based on a ratio of milk processed through each system. Redundant air compressor systems do not qualify.

AG-5 – Variable frequency drive for vacuum pump (reservation required)

Incentives are available for the installation of variable frequency drive for vacuum pumps that result in a reduction in horsepower. Existing pump must be blower-type pump.

AG-6 & AG-7 – VFD on milk pump w/new or existing pre-cooler (reservation required)

Incentives are available for the installation of variable frequency drives on milk pumps either with a new or existing pre-cooler. The installation of a VFD must accompany a plate-type pre-cooler; the pre-cooler may be installed at the same time as the VFD milk pump. To qualify, the minimum daily milk production must be ≥5,000 lbs/day. The incentive cannot be combined with any other VFD incentive. The offer is based on one milk pump system per farm; if multiple milk systems exist, the incentive will be based on a ratio of milk processed through each system. Redundant pumps or systems do not qualify.

AG-8 – Milk pre-cooler

Incentives are available for pre-cooler heat exchanger ahead of the milk storage tank. This measure applies only to new heat exchangers. Replacement of existing heat exchangers does not qualify. This incentive can be combined with incentives for VFD on milk pump with new pre-cooler.

Grain dryers

Measure ID	Description	Unit
AG-9	Grain storage temp/moisture management controller	HP

AG-9 – Grain storage temp/moisture controller

Installation of grain storage temperature/moisture management controller is eligible for this incentive. The existing non-controlled fan aeration system must operate a minimum of 1,000 hours per year. The proposed system must consist of hanging multiple temperature and/or moisture sensors within the grain storage bin. Outdoor air temperature and relative humidity must also be monitored. Data sensors must be digital; analog sensors do not qualify. The grain data must be sent to a controller to evaluate the internal bin conditions, as well as, outside air temperature and outside air relative humidity, to control the aeration fans. Replacement of existing grain storage management controllers do not qualify. Bi-weekly bin inspection is still recommended. Aeration fan equipped with VFD's do not qualify for this incentive.

Dairy refrigeration tune-up

Measure ID	Description	Unit
AG-10	Dairy refrigeration tune-up	lb milk/day

AG-10 – Dairy refrigeration tune-up

Incentives are available for the tune-up of existing commercial grade, on-farm dairy refrigeration equipment. A dairy refrigeration tune-up checklist/worksheets must be completed by the service provider for each unit (see Page 7 of the agriculture application for more information). The incentive is available once every two program years.

Agriculture specifications

Miscellaneous electric

Measure ID	Description	Unit
AG-11	Low-energy livestock waterer	Waterer
	Energy Star dehumidification units	Unit

✂ AG-11 – Low energy livestock waterer

Incentives are available for the replacement of an existing open waterer with sinking or floating water heater with new low-energy equipment. The new waterer must have a minimum of 2-inches of insulation and must be electrically heated and thermally insulated. The new waterer must serve same herd size as waterer being replaced. A thermostat is required on units with heating elements that are >250 watts.

HVAC electric - fans

Measure ID	Description	Diameter	Minimum efficiency: exhaust & ventilation fans	Minimum efficiency: circulation fans	Unit
AG-13	Circulation, exhaust & ventilation fans	24" - 35"	14.0 CFM @ 0.10" WG SP	12.5 lb/kW	Fan
AG-14		36" - 47"	17.1 CFM @ 0.10" WG SP	18.25 lb/kW	
AG-15		48" - 71"	20.3 CFM @ 0.10" WG SP	23 lb/kW	
AG-16 to AG-20	High-volume, low-speed fans				Fan
AG-21	Fan thermostat control (reservation required)				HP

✂ AG-13 to AG-15 – Circulation, exhaust or ventilation fans

Incentives are available for the replacement of existing circulation, exhaust and/or ventilation fans. The replacement fans must be new and must meet the specifications listed in the table above.

✂ AG-16 to AG-20 – High-volume low-speed fans

Incentives are available for the installation of high-volume low-speed fans that replace high-speed box fans that traditionally are used in the ventilation of livestock facilities. To qualify, the minimum fan diameter must be at least 16 feet.

✂ AG-21 – Fan thermostat controller (reservation required)

Incentives are available for the installation of a new fan thermostat controller for existing circulation, ventilation or exhaust fans that operate continuously from May through October. The replacement of existing thermostat fan controller does not qualify. The new controller must have thermostat functions that disable the fans when the outside air temperature drops below a predetermined set-point temperature, typically 70°F.

VFDs for fans and pumps

Measure ID	Description	Unit
AG-22	VFD on fans ≤ 50 HP	operating 750-2,000 hours/year
AG-23		operating more than 2,000 hours/year
AG-24	VFD on pumps ≤ 50 HP	operating 750-2,000 hours/year
AG-25		operating more than 2,000 hours/year

✂ AG-22 to AG-25 – VFDs for fans and pumps ≤ 50 HP

Variable frequency drives (VFD's) installed on existing or new applications of agricultural fans and pumps are eligible for this incentive.

Applicant is to provide a summary statement explaining:

- what the motor is used for;
- motor's annual run time;
- how the motor is currently controlled; and
- proposed motor VFD control method.

The installation of a VFD must accompany the permanent removal or disabling of any throttling devices such as inlet vanes, bypass dampers, bypass valves, or throttling valves. The VFD speed must be automatically controlled by humidity, temperature, differential pressure, flow, or other variable signal. VFD's installed on irrigations or HVAC systems do not qualify for this incentive, but may qualify elsewhere. Motors greater than 50 HP do not qualify for this incentive, but may qualify for a custom measure. Redundant or back up units do not qualify. The replacement of existing VFD's does not qualify for this incentive. The motor must operate more than 750 hours/year.

Agriculture specifications

HVAC gas - grain dryers

Measure ID	Description	Unit
AG-26	Grain dryers	Bushel per year

✂ AG-26 – High efficiency grain dryers (reservation required)

Existing grain dryer must be at least 20 years old and not utilize heat recovery. New dryer must be natural gas heated, permanently installed, and have a minimum grain dryer efficiency of 1,590 Btu/lb-water. Applications must include the manufacturer’s name, model number, and a specification sheet for the proposed grain dryer’s operating efficiency. Applications must include documentation identifying the proposed annual volume (bushels/year) of grain to be processed.

✂ AG-42 & AG-43 – Total ERV indoor ag, LED or HID base

Incentives are available for total heat energy recovery ventilators (ERV) (e.g. enthalpy wheels) with an LED or HID base. Both whole unit replacements with integrated ERV and retrofits to existing HVAC units are eligible. Total heat ERV should have a total recovery effectiveness of 70%. The space being served by the ERV must be heated with natural gas. This incentive can be combined with incentives for high efficiency HVAC units when performing a whole unit replacement with qualifying efficiency. If an ERV does not meet the total recovery effectiveness requirement, but it does meet the sensible recovery effectiveness requirement, then it is eligible for measure HG-35.

Greenhouses

Measure ID	Description	Unit	
AG-27	Greenhouse environmental controls	Square foot	
AG-28	Greenhouse Under-Floor/ Under-Bench Hydronic Heating	without Thermal Curtain	Square foot
AG-29		with Thermal Curtain	Square foot
AG-42	Total ERV indoor ag	HID base	CFM
AG-43		LED base	CFM

✂ AG-27 – Greenhouse environmental controls

Incentives are available for the installation of automated environmental controls system to an existing greenhouse space which does not have any automatic, scheduled temperature setback controls. The environmental control system must, at the very least, control greenhouse space temperature set points with an hourly control configuration. This measure does not apply to greenhouses that are manually set back. A minimum setback space temperature of at least 5 °F is required. A floor plan must be submitted verifying square footage.

✂ AG-28 & AG-29 – Greenhouse under-floor/under-bench hydronic heating

Incentives are available for installing under-floor (within concrete or direct contact) or under-bench hydronic heating loop for agricultural greenhouse applications. If the plant’s root temperature is maintained at 67°F, the air temperature surrounding the plant may be allowed to decrease 10°F to 12°F down to approximately 55°F. The existing heating system must be a forced air heating system (i.e., unit heaters). The forced air heating system may be retained for secondary, supplemental heating or for backup; however, it may not be utilized as the primary heating means. Proposed boiler system must be high efficient with a minimum efficiency of 90%. The temperature sensor(s) serving the underfloor or under bench hydronic heating system must be located within the growing media. The incentive is based on the area served by the underfloor hydronic heating system. The under-bench’s incentive is based on the area of the benches served by the hydronic heating system.

Agriculture specifications

Insulation

Measure ID	Description	Unit
IG-5	Green house heat curtains	Square foot
IG-6	Greenhouse infrared film	Square foot

✖ IG-5 – Greenhouse heat curtains

Incentives are available for heat curtains that are required to be installed for heat retention in an existing gas-heated commercial growing greenhouse for agricultural use. Must be designed for and installed as a heat curtain. Curtain should meet or exceed an energy savings rating of 40% or better (U-value=0.6). The incentive applies to either a new curtain where a curtain was not previously in place or to replace an existing curtain that is no longer functional and is at least 5 years old. Floor plan must be submitted verifying square footage.

✖ IG-6 – Greenhouse infrared film – new or replacement

Incentives are available for greenhouse film which must be infrared, anti-condensate, polyethylene plastic with a minimum thickness of 6 mils. Incentive is for use in an existing gas heated greenhouse. The IR poly must be put in place of regular poly or as a replacement for IR poly that has been in place at least 5 years. Coating applied onsite to existing film does not qualify. Floor plan must be submitted verifying square footage.

Farm energy audit

Measure ID	Description	Unit
AG-12	Farm energy audit	Farm

AG-12 – Farm energy audit

Incentives are available for an audit of a facility that operates primarily as an agricultural business. Audit must be a tier II energy audit as defined by the US Department of Agriculture.

LEED & design
review assistance

LEED & design review

LEED (Leadership in Energy and Environmental Design) design review assistance

To encourage LEED design/certification of energy-efficient buildings, a \$1,500 incentive for LEED design review assistance is available.

Payment of the design review incentive will be made in one payment, upon the submission and approval of a final application, which must be accompanied by required documents. The final application should be submitted within 60 days of receiving the LEED certification or by November 30, 2023, whichever comes first.

This design review assistance corresponds directly to the LEED NC v2009 and LEED BD+C v4 rating systems.

The whole building energy simulation is tied directly to the energy and atmosphere prerequisite 2 – minimum energy performance prerequisite (Option 1).

The DTE Energy Efficiency Program for Business strongly recommends sharing the LEED online project in order to keep the entire program team updated on progress of the project. Please enter the program email address – dtesaveenergy@dnv.com – in order to share with the program team.

LEED (Leadership in energy and environmental design) whole building approach

The intent of this approach is to validate the savings associated with LEED certified buildings. Incentives are available for new construction projects that receive LEED certification. The incentives will be paid upon receiving LEED certification at the saving values validated by LEED. The LEED whole building approach incentives directly correspond to the LEED NC v2009 and LEED BD+C v4 ratings systems.

The following incentives are paid to DTE Energy customers based on the energy savings reported in the energy model and verified by the Green Building Certification Institute (GBCI) (first year only). These LEED certification levels will be used to determine each incentive rate:

Certified/Silver
Gold
Platinum

See the application for incentive amounts

For all specifications and guidance on this incentive, please reference LEED – EA prerequisites minimum energy performance (usgbc.org).

Energy savings analysis

Applicants must utilize one of the GBCI approved software tools to provide a whole building simulation energy model. The proposed model must reflect the designed system, and be verified to match the mechanical, architectural, and electrical drawings and schedules. Ultimately, incentives will be paid upon receiving LEED certification at the savings value that is validated by GBCI during the certification process.

Electrical energy savings =
1 kWh per GBCI validation = 1 kWh savings

Natural gas fuel savings =
1 Mcf per GBCI validation = 1 Mcf savings

Projects are not allowed to take credit for savings above baseline for systems utilizing renewable energy.

Supporting documentation

In addition to required documentation as described in the policies and procedures manual, please attach supporting documentation including, but not limited to, the following

- LEED certification project review report and LEED reviewers comments
- LEED – EA prerequisites minimum energy performance
- All supporting documentation submitted with the LEED template for this energy and atmosphere prerequisite.

Trane TRACE	Carrier HAP	DOE2, eQuest or visual DOE	Energy plus
LEED summary report	Building simulation report: LEED summary report	Building energy performance (BEPS)	Annual building utility performance summary (ABOPS)
Energy cost budget/ PRM summary	Unmet load reports (for all plants and systems)	System design parameters (SV-A)	System summary (showing the unmet load)
Energy consumption summary reports	Systems energy budget by energy source	Details for exterior surfaces (LV-D)	
Performance rating method details	Systems input data reports	For all projects, provide the above reports corresponding to the modeling software used on your project.	
Equipment energy consumption	Wall constructions		
Entered values report (for all rooms and systems)			

Appendix



LED T8 - Linear replacement lamp



Product description

LED T8 Linear replacement lamps are the ideal energy savings choice when upgrading traditional linear T8 or T12 fluorescent lamps in fixtures containing standard G13 (medium bi-pin) sockets. The LED T8 lamps are designed to provide appropriate light levels while utilizing a dedicated internal driver and require non-shunted G13 medium bi-pin lamp holders.

Features:


- 2' & 4' lamps are DesignLights Consortium[®] (DLC) qualified
- Universal Voltage: 120V-277V applications
- Color rendering index (CRI): >82
- 50,000 hour life, 100,000 hours (10 year warranty)
- THD <20%
- High power factor: >.90
- Easy retrofit into most common linear fluorescent fixtures
- Simple ballast bypass
- Instant on
- Mercury free and virtually no UV or IR light
- Non-dimmable
- Suitable for enclosed fixture
- Half aluminum, half plastic construction
- Five year limited warranty (10 year optional)

Typical order example:

Please be sure to underline/highlight the specific model being installed

Family	Wattage	Lamp type	Power connection	Length	CCT	Warranty
<u>L = LED linear</u>	10 = 10W (2ft & 3ft only) 15 = 15W (4ft only) 18 = 18W (4ft only) 22 = 22W (4ft & 5ft only) 31 = 31W (6ft only)	<u>T8 = T8 Tube</u>	<u>SE = Single end</u>	2 = 2ft 3 = 3ft 4 = 4ft 5 = 5ft 6 = 6ft	35 = 3500K 41 = 4100K 50 = 5000K 65 = 6500K	(Omit) = 5 years -10 = 10 years

Accessories:

Order code	Model number	Description	Accessories image
59249	P65GHTD	P65 Low profile non-shunted lamp holder	

Sample lighting invoice

XYZ Lighting Co.

123 W. 7 Mile Road
 Detroit, MI 48111
 313.123.4567

Invoice

98765-43

Date:

August 1, 2017

Customer ID:

17-53013

Purchase Order #

Ship To (If Different):

Sold to:

John Hancock
 123 Happy Street
 Detroit, MI 48123

Ref #	QTY	Description	Unit Price	Total Price
L-1A	64	4 ft. 18W LED (32 2-lamp fixtures)	\$10.00	\$640.00
L-1B	40	4 ft. 22W LED (10 4-lamp fixtures)	\$12.00	\$480.00
L-2A	14	150W LED High Bay	\$150.00	\$2,100.00
LL-22D	8	80W Exterior LED Wallpack	\$80.00	\$640.00

Special Notes and Instructions

Subtotal	\$ 3,860.00
Discount	\$ -
Tax	
S & H	\$ -
Total	\$ 3,860.00

Thank you for your business!

XYZ Lighting Co.
 123 W. 7 Mile Road • Detroit, MI 48111 • 313.123.4567 • xyzlighting@gmail.com

Terms & conditions

The energy optimization measures listed within are being/have been installed in a qualifying time frame, at a qualifying facility and are not for resale. Additional program terms and conditions can be found in the Policy and Procedures Manual.

I understand that in the event this application received a reservation, that reservation is not a guarantee of payment. Incentive payment will be based upon the final application meeting the program terms and conditions, and the availability of funds.

Selected terms and conditions include:

1. Final applications and all required documentation must be received within 60 days of project completion or by Nov. 30, 2023, whichever comes first. Incomplete applications, missing documents or applications submitted after that date will result in the project being cancelled.

2. The program has a limited budget. Applications will be processed until allocated funds are reserved or spent.

3. All equipment must be purchased and installed prior to submitting the final application.

4. Applicant agrees to inspection and measurement activities by the utility company or its representative of both project payment and equipment installation for up to five years from the date of equipment installation.

5. Incentives may be taxable and the applicant is solely responsible for the payment of any resulting taxes. Incentives will be reported to the IRS, unless the applicant is exempt.

6. The applicant may be required to refund some or all of the incentives if the measures do not remain (or were not) installed for a period of five (5) years or the end of the product life, whichever is less.

7. Materials removed, including lamps and PCB ballasts, must be permanently taken out of service and disposed of in accordance with federal and state laws or regulation and local codes and ordinances. The applicant is responsible for being aware of any applicable codes or ordinances. Information about hazardous waste disposal can be found at www.epa.gov/wastes.

8. For certain measures, the incentive amount will be determined based on the estimated energy savings. The applicant may be required to provide documentation on energy savings calculations and assumptions. The utility company will make the final determination of the energy savings and thus the incentive amount to be paid.

9. The utility company 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.

10. Payment of incentives under the program and/or evaluation of applications for incentives shall not deem the utility company or any of its affiliates, employees or agents to be responsible for any work completed in connection herewith. Applicant fully releases the utility company from any and all claims it may have against the utility company in connection with this application, the incentives or the work performed in connection with them. In addition, applicant agrees to defend, indemnify and hold the utility company harmless from and against any and all claims, losses, demands or lawsuits by any third parties arising in connection with this application, the payment or nonpayment of incentives or any work performed in connection with them.

11. The utility company reserves the right to associate with your business and participation in the incentive program for promotion and advertising purposes. See the Policies and Procedures Manual for more on promotional co-branding.

12. Applicant acknowledges that Federal Energy Regulatory Commission (FERC) Order issued on June 1, 2012, at Docket No. ER11-4081-000 ("FERC Order") approves of the inclusion of energy efficiency resources as planning resources in a utility's resource adequacy plan (all italicized terms as defined in the FERC Order). Accordingly, applicant and the utility company agree that all such rights afforded with respect to energy efficiency resources, including but not limited to the right to identify them as a planning resource so as to include them in a resource adequacy plan, shall inure exclusively and fully to the utility company. Applicant agrees that it will not claim ownership in such energy efficiency resources for purposes of identifying them as a planning resource in accord with the FERC Order or include them in a resource adequacy plan.

I have read and understand the measure specifications and Program Guidelines set forth in the application and the Program Policy and Procedures Manual and agree to abide by those requirements. Furthermore, I concur that I must meet all eligibility criteria in order to be paid under this Program and not receive incentives from any other utility for the same project.

I certify that the information on this application is true and accurate. I understand that any misrepresentation of information – intentional or otherwise – that results in unjustified and/or unsubstantiated incentives being awarded to me (the customer) will prompt action by the utility company and/or its agent to recoup such funds from me and may include additional legal action commensurate with the seriousness of the event.

I acknowledge and understand that it is necessary for the utility company to store, use and share the information contained in this application, as well as information collected in connection with this project, including but not limited to my business name, address, account number and energy consumption data ("Customer Data") for various purposes. Therefore, I hereby authorize the utility company to collect, store and use the Customer Data for internal purposes and to present me with other energy saving opportunities. I further authorize the utility company to share the Customer Data with third party vendors/contractors who are doing work on the utility company's behalf.

To apply online, visit:
mienergyrebates.com

For assistance, call
866.796.0512 (Press Option 3)
or email
dtesaveenergy@dnv.com