



DTE Energy Efficiency Program for Business

2018 Policies and Procedures Manual

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

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1 Program Overview

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

The following sections provide detailed information on the actual measures and specific Program details related to each of the various offerings. Application forms for all programs are available on the DTE **Energy Efficiency Program for Business** website: dteenergy.com/savenow

Prescriptive Incentives are available for energy efficiency equipment upgrades and replacements, such as lighting, HVAC and gas water heating. Incentives are paid based on the quantity, size and efficiency of the equipment. Incentives are provided for one-for-one replacements, retrofits or new installations of qualified equipment. For example, replacing an outdated version of fluorescent lighting (T8) with DLC-listed LED lamps or fixtures is a listed prescriptive measure.


Custom Incentives are available to customers for less common or more complex energy saving measures installed in qualified retrofit and equipment replacement projects. Custom measure incentives are paid based on the first-year energy savings: kilowatt hours (kWh) or 1,000 cubic feet of natural gas (Mcf). Projects involving measures not covered by the prescriptive incentive portion of the Program may be eligible for a custom incentive. For example, adding a variable frequency drive to a primary chilled water pump is not listed as a prescriptive measure, and may therefore be submitted as a custom measure.

Customers can mix prescriptive and custom measures on one Application; however, prescriptive incentives must be applied to the prescriptive portions of the project and custom incentives applied to the custom portions. For example, when installing custom lighting with occupancy sensors, the custom lighting should be applied for as a custom measure, assuming no change in operational hours of the fixtures, and the occupancy sensors should be applied for as a prescriptive measure.

New Construction and Major Renovation Incentives are intended to encourage decision-makers in new construction and major renovation projects to incorporate greater energy efficiency into their building design and construction practices. New construction/major renovations projects must involve facility improvements that result in measurable or verifiable electrical savings (kWh) and/or natural gas energy savings (Mcf) exceeding the requirements set forth in ASHRAE Standard 90.1-2007, LEED or local building codes, whichever is more stringent.

A Reservation Application is strongly encouraged for all New Construction/Major Renovation projects. The project should be at a point where design changes are feasible; preferably in the conceptual or schematic design phase. For this program, new construction and major renovation projects may include any one of the following:

- New building projects wherein no structure or site footprint presently exists.
- Addition or expansion of an existing building or site footprint.
- Major tenant improvements that change the use of the space and/or add new load.

In the main Program Application, New Construction Systems Approach measures are indicated with a small icon:  Those measures can be applied for under either a retrofit or new construction project. Measures that are not eligible under the New Construction/Major Renovation incentive program may be covered by the prescriptive and/or custom incentive portion of the Application. The incentive for LEED Design Review Assistance, offered as part of the New Construction program, can be found at the back of the Program Application.

NOTE: Incentives paid on New Construction/Major Renovation projects will be paid at the rate of the most current applicable Program Year.

2 Program Effective Dates

The DTE **Energy Efficiency Program for Business** will offer incentives for the 2018 Program year until approved funds are exhausted or until Nov. 30, 2018, whichever comes first. Projects must be completed by the Reservation End Date – but all projects

must be completed by Nov. 30, 2018, to receive payment in this Program year. No Final Applications will be accepted or processed after Nov. 30, 2018. Applications submitted on that date without required documentation may be cancelled; Applications submitted after that date may be cancelled. (Refer to Section 13 for more information.)

3 Customer Eligibility

Michigan Public Act 295 (2008), revised by Public Acts 341 and 342 (2017), requires investor-owned utilities, municipalities and rural electric cooperatives to institute energy optimization programs, which will be funded through an “Energy Optimization Surcharge” (on distribution) assessed on all ratepayers’ energy bills.

- A Customer that has opted to receive their energy (electric and/or natural gas) supply from a source other than DTE Energy, must contact that provider for his/her DTE account numbers.

Additional customer eligibility parameters for the **Energy Efficiency Program for Business** are as follows:

- This Program is available to qualified commercial and/or industrial business customers of DTE Energy. Customers that are billed on non-residential rates are classified as business customers.
 - An exception to this policy 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.
 - The agriculture measures are offered both in the Program Application, as well as in a stand-alone Application.
 - DTE customers with a commercial meter, must use the main Program Application.
 - DTE customers with a residential meter, must use the stand-alone Agriculture Application.
- This Program is not available to DTE Energy business customers and/or sites that are participating in a self-directed option for the current Program year.
- Qualified measures must be installed at facilities served by DTE Energy and projects must result in a measurable improvement in energy efficiency.
- Equipment must be new and meet the specifications as set forth in the Program Catalog.
- For each site, there must be at least one meter that is on an eligible rate schedule.
- Customers must be in good standing prior to Final Application being processed. A final check of account status will be completed for all applicants. If a customer is not in good standing, s/he will be advised that they have 30 days, from date of contact to get account into good standing or the Application will be cancelled.

This Program is not available to DTE Energy residential customers (see agriculture exception above) or business customers in multifamily buildings consisting of three or more units in any building. These customers may be eligible to participate in the [Multifamily Program](#) for energy saving upgrades to both tenant and common areas.

4 Project Requirements

A project is defined as a unique energy efficiency measure or set of measures implemented at a building (site ID) in a single time span. Project requirements for the **Energy Efficiency Program for Business** include the following:

- Projects must involve a facility capital improvement that results in a measurable reduction in electrical and/or natural gas energy usage (kWh and/or Mcf), due to an increase in efficiency, for the life of the product.
- Equipment must be new and project savings must be sustainable for a period of five (5) years or for the life of the product, whichever is less.

Projects that are NOT eligible for an incentive include the following:

- Fuel switching (e.g., electric to natural gas or natural gas to electric or purchased steam to natural gas projects).
- Changes in operational and/or maintenance practices or simple control modifications that do not involve capital costs. (Capital investments to improve processes can be included.)
- On-site electricity generation.
- Projects that involve peak-shifting/demand limiting with no kWh savings.
- Power quality improvements.

- Projects involving renewable energy.
- Customers who self-direct (and have opted out of the program).

Any measures installed at a facility must be sustainable and provide 100% of the energy benefits as stated in the Application for a period of five (5) years or for the life of the product, whichever is less.

If the customer ceases to be a delivery service customer of DTE Energy or removes the equipment or systems at any time during the five-year period or the life of the product, the customer may be required to return a prorated amount of incentive funds to DTE Energy.

DTE Energy reserves the right to inspect proposed projects' pre- and post- equipment installation.

4.1 Express Program and "Logical Area" conditions

Contractors who plan to submit projects through the main retrofit program and an Express Program (if offered) for either electric or natural gas projects must adhere to the following requirements and limitations.

- Contractors may not apply for identical or similar measures in both programs simultaneously that are being installed in the same "logical area."
 - A "Logical Area" is defined as a contiguous area without structural separation – such as an overhead canopy, the same room within a suite of rooms, etc. The final determination of what constitutes a "logical area" will be made by DTE Energy or its representatives.
- Applications in both programs for the same customer that apply to two different categories of measures within the same "logical area" are eligible for both program incentives.
 - An example would be installing lighting in a convenience store floor area and also installing motor upgrades to refrigeration units.
- Contractors must inform the **Energy Efficiency Program for Business** Team of their intention to submit applications under both programs for the same "logical area."
- In order to apply for incentives under both programs for the same "logical area" – such as an entire room's lighting fixtures – the following requirements apply:
 - If the main retrofit program measures are installed first: The project must be at the "PAID" status before an Express Program application can be submitted for the remainder of the project.
 - If the Express Program measures are installed first: The proposal must be at the "project notification" stage before a main retrofit program Reservation Application can be submitted for remainder of the project.

5 Contractor Requirements

In order to create a positive customer experience and to ensure that Program funds are being administered correctly and accurately, a participating contractor, Trade Ally or Designated Trade Ally must adhere to standards of acceptable behavior and performance.

This includes, but is not limited to:

- Complete and accurate Program Applications.
- Accurate representations of the Program to customers.
- Submission of original customer signatures on Final Applications.
- Submission of valid product invoices that accurately match the measures submitted for incentives.
- Submission of valid supporting documentation.
- The appropriate removal of equipment/fixtures that comply with an Application's project.
- The complete and accurate installation of new (not used) measures represented in an Application.
- Adherence to other provisions of this manual, such as co-branding (Section 6).

Violation of any one of these standards could result in, notification to customers of concerns regarding the contractor, exclusion from any bonus offers (should they become available), and, if applicable, removal from the Designated Trade Ally Program. Should an alleged violation occur, the contractor will be contacted and, if necessary, a meeting will be called within five (5) business days to discuss the issue and determine possible steps that might be taken.

5.1 Designated Trade Ally Program

Contractors who meet certain training and program participation standards are given the Designated Trade Ally status. The Designated Trade Ally Program is designed to improve contractor familiarity with the Program, increase customer satisfaction and provide the Program Team with a better understanding of how to interact with and support contractors in the marketplace.

To become a Designated Trade Ally, a contractor must meet the following requirements:

- Attend an annual training session
- Submit a signed Designated Trade Ally participation agreement, along with a signed copy of the company's W-9 (W-9 must have a physical address of business; a P.O. Box will not be accepted)
- Submit at least one paid Application per Program Year

Once a contractor completes Designated Trade Ally training **and** submits at least one paid application, they will enter a three-month probationary period. Once the three-month probationary period is met, a contractor will be given Designated Trade Ally status. The Program reserves the right to remove contractors from Designated Trade Ally status should any issues arise with the company.

Existing 2017 Designated Trade Allies will be grandfathered into the Program and be eligible for third-party payment until 2018, at which time they must renew their status. At that time, as long as they have attended training for the 2018 Program Year, and have submitted one paid Application in 2017 their Designated Trade Ally status will be renewed. They will NOT be required to wait the three-month probationary period to renew their status.

A contractor who becomes a Designated Trade Ally has access to certain aspects of the Program that are not available to all contractors, such as:

- Access to the Trade Ally Portal (via the Trade Ally website: www.dtetradeally.com)
- Listing in our online Energy Efficiency Directory
- Opportunity to participate in advisory and focus groups
- Presentations at events with multiple customers
- Large-customer visits with Program Team members
- Supplies of printed marketing materials
- Ability to identify themselves as Designated Trade Allies in the Program
- Third-Party Payment authorization

5.2 Third-Party Payment Authorization

Customers may assign payment of Application incentives to third parties under the following two conditions:

5.2.1 Designated Trade Allies

Customers may assign payment of Application incentives directly to a contractor that performs work included in that Application, but only if the following eligibility requirements and procedures are met:

- The contractor must be a Designated Trade Ally (DTA) that meets all the requirements of that status.
- To receive third-party payment, the DTA must provide the Customer with a **Third-Party Payment Authorization Form** that must be completed and signed by the Customer and submitted with the Final Application.
 - This form is available to qualified DTAs from the Program Team.
- A Designated Trade Ally that violates any of the standards listed above may be removed from third-party payment eligibility following the steps listed above.
 - This removal includes any and all other contractor affiliations, DBAs and other employment relationships.
 - If a contractor has been removed from the DTA program, any assigned incentive payments will be made payable to the customer.
- If a Customer uses more than one Designated Trade Ally on a project and wishes to assign multiple third-party payments to those contractors, s/he must complete and sign a separate Third-Party Payment Authorization Form for each DTA.
 - If any one of those contractors has been removed from the DTA program, that/those assigned incentive payment(s) will be made payable to the customer.

5.2.2 Landlord/Tenant

Customers may assign payment of Application incentives directly to a Tenant, but only if the following eligibility requirements and procedures are met:

- The Tenant must be located within the Landlord's facility identified in the project Application.
 - Being "located" is defined as doing business within the location.
 - An inspection may be required to confirm eligibility.
 - Failure to prove eligibility will result in any incentives being made payable to the Landlord/DTE Customer.
- To receive third-party payment, the Tenant must provide the Customer with a **Tenant Payment Authorization Form** that must be completed and signed by the Customer and submitted with the Final Application.
 - This form is available to qualified Tenants from the Program Team.
 - The Tenant's W-9 must be attached to the form; failure to provide the W-9 will result in any incentives being made payable to the Landlord/DTE Customer.
 - A grace period of five (5) working days after submission of the Final Application **may** be provided to complete and submit the Authorization Form. Failure to submit the form by the end of the fifth business day will result in any incentives being made payable to the Landlord/DTE Customer.

6 Promotion, Advertising, Co-Branding Requirements

DTE Energy reserves the right to associate with your business and include your participation in the incentive Program for promotion and advertising. By participating in the **Energy Efficiency Program for Business**, contractors and customers agree to be contacted by DTE Energy and/or its representatives to participate in the promotion of the Program, including but not limited to: advertising, case studies, testimonials and other marketing materials deemed appropriate by DTE Energy.

In addition, the following rules and conditions apply concerning the co-branding of any marketing materials:

- The DTE Energy logo may NOT be used in any materials by any customer, contractor, Trade Ally or Designated Trade Ally.
- **Only** Designated Trade Allies may use the following explicit language in their materials: "**DTE Energy Designated Trade Ally.**"
- Marketing and other collateral materials created by DTE Energy and/or its representatives may **NOT** be co-branded with any company name and/or logo or other graphic and/or textual representation of a customer, contractor, Trade Ally or Designated Trade Ally business and/or representative of that business.
- Customer, contractors, Trade Ally and Designated Trade Ally websites **MAY** provide a link to the **Energy Efficiency Program for Business** website.

These conditions can only be altered or revised with the express consent of DTE Energy and/or its designated representative.

7 Incentive Caps and Limits

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

7.1 Customer Limits

Program incentives are limited per customer, per year. Customer incentive limits are across all projects under one tax identification number. The total customer cap (across all facilities saving electricity) for installing eligible electric measures is \$1,000,000 for the 2018 Program year. The total customer cap (across all facilities saving natural gas) for installing eligible gas measures is \$300,000 for the 2018 Program year.

Table 5-1: 2018 Program Year Incentive Limits

| Cap Level | Electricity | Natural Gas |
|-----------|-------------|-------------|
| Customer | \$1,000,000 | \$300,000 |

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

7.2 Custom Project Incentive Caps

In addition to the incentive limits above, incentives for custom projects are limited to 50% of the sum of all custom measure costs (MC). Internal customer labor costs cannot be included in the total project cost. Used equipment is not eligible. DTE Energy reserves the right to apply this cap to individual custom measures when measure costs are significantly higher than typical costs seen in this Program.

7.3 New Construction Project Incentive Caps

In addition to the incentive limits above, incentives for New Construction projects are limited to 100% of the sum of all measure costs (MC). Internal customer labor costs cannot be included in the total project cost. Used equipment is not eligible.

7.4 Special Offer Limits and Caps

The Program, at any time, may implement special offers that involve revised incentive limits and/or caps. Such special offers do not apply to any other part of the Program beyond the special offer itself, and may be removed at any time without notice.

8 Prescriptive Incentives

The **Energy Efficiency Program for Business** offers prescriptive incentives for both electric and natural gas energy efficient improvements in areas of lighting, HVAC, processes, compressed air, insulation, food service, boiler/furnace tune-ups and other miscellaneous measures. Prescriptive incentives are available for one-for-one change outs, replacements or upgrades unless explicitly stated otherwise in the Program Catalog and Application.

For a complete list of prescriptive electric and gas measures and to verify prescriptive incentive amounts or specifications please see the 2018 Program Catalog and Application.

9 Custom Incentives

The **Energy Efficiency Program for Business** allows custom incentives for eligible improvements not included in the prescriptive measure list. Custom measures include measures that result in a reduction in electric and/or natural gas energy due to an improvement in system efficiency, (i.e. a net decrease in energy use without a reduction in the level of service). For example, installing a lower wattage lamp in place of a higher wattage lamp of the same type will not qualify for a custom incentive. However, should the lighting system (i.e., lamp, ballast and fixture) demonstrably improve the total lumens per watt delivered, an incentive will be considered. The decision as to whether an improvement is eligible for a custom incentive is within the sole discretion of DTE Energy. Examples of custom measures include, but are not limited to, the following:

- Exhaust heat recovery.
- Constant volume to variable volume water or air distribution.
- Process improvements (that require capital investments).
- Upgrade of a refrigeration compressor.
- Air compressor improvements.

Incentives for custom measures are based on first-year electrical and/or natural gas energy savings that result from the energy efficiency measure installation. The applicant must provide sufficient project information, equipment performance data, operating assumptions, measurements and calculations to support the energy savings estimates. Guidelines for calculating custom measure energy savings are in Section 16.

Custom measure incentives are limited to 50% of the sum of all custom measure costs (MC) and the simple payback period (SPP) for installing the measures must be equal to or greater than one (1) year and less than or equal to eight (8) years for electric measures; and equal to or greater than one (1) year for natural gas measures. MC includes materials and external labor only. The MC is the cost of implementing a measure less any costs incurred to achieve non-energy related project benefits. Simple payback period is defined as the project MC divided by the annual energy cost savings. Should leased equipment be installed to receive energy savings as a Custom measure, the actual total purchase price of the equipment will be used to calculate total measure costs (MC).

Simple payback period is calculated as follows:

$$\text{Payback Period} = \frac{\text{Aggregate Measure Costs}}{(\text{Annual kWh saved} \times \text{Electricity Costs}) + (\text{Annual Mcf saved} \times \text{Gas Costs})}$$

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:

- For retrofit and new technology measures: the cost of new equipment, components or materials added to existing equipment for the purpose of improving its energy efficiency and external labor costs; or
- For non-functional or 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 and external labor costs.

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 and any external labor costs are the MC. However, when adding a variable frequency drive (VFD) to an existing boiler pump or when changing high pressure sodium light fixtures to fluorescent fixtures, the MC is the installed cost (equipment and external labor installation) of the VFD or light fixtures.

10 Lighting Specifications

The following guidelines and policies apply to various lighting projects that are and are not eligible for incentives through the **Energy Efficiency Program for Business**

10.1 Baseline for T12 Lighting

For energy efficiency reasons, T12 lamps are no longer manufactured or imported into the United States in U-bend or linear 4- and 8-foot configurations. For these configurations, the Standard T8 is the minimum available lighting system. Therefore, the baseline (pre-upgrade) wattages used for replacing U-bend or linear 4- and 8-foot T12 lighting with another lighting system have been adjusted to reflect the energy use of the minimum available Standard T8 lighting system.

10.2 DLC Lighting

For Prescriptive and Custom (see below) measure Applications, only LED lighting that is listed by the DesignLights Consortium® (DLC) on its Quality Products List (QPL) is eligible for incentives. To qualify for an incentive, the fixture must be listed on the DLC website: www.designlights.org and the Product I.D. Number must be entered on the Application. (Use the space provided on the Prescriptive lighting worksheets; on Custom worksheets, enter the Product I.D. Number in the “After Retrofit” field for each item.) No additional incentives will be given for products that meet DLC Premium requirements.

Should a DLC-listed fixture become unlisted on the QLP at the time of Final Application submission – and the installation adhered to the Reservation Application requirements – the DLC incentive will be paid.

10.3 Applications and non-DLC Lighting

Only LED lighting that is listed by the DesignLights Consortium® (DLC) on its Quality Products List (QPL) is eligible for incentives. However, Customers who install non-DLC-listed lighting that falls into a category not listed by the DLC may receive the incentive upon review by Program engineers.

To submit a non-DLC product for consideration, the applicant must complete the **Non-DLC Product Approval Form** for each product being submitted. Such a submission is only valid for that corresponding Application. These reviews will be made on a case-by-case basis. Any products eligible for an incentive through the **DTE Instant Discount Lighting Program** are ineligible for this offer. Other conditions appear below.

The requirements for DLC-listed products include:

- Luminaires, Retrofit Kits or Linear Replacement Lamps must meet DLC standard technical requirements for their category and closest general application.
- Color Tuning luminaires, which adjust the luminaire’s correlated color temperature (CCT), must meet DLC technical requirements across all CCT set points.
- Technical documentation required:
 - Specification sheet
 - Warranty terms and conditions

- LM-79 (includes Efficacy, CCT, and CRI)
- UL/CUL certification
- 8-foot LED Linear Replacement Lamps must be constructed of glass.
- LED modules must have a minimum efficacy of 75 lumens per watt (lm/W). Efficacy for these products will be reviewed annually. If or when a DLC category becomes available, DTE will require submitted products be listed on the DLC QPL.

10.4 Ineligible Lighting

The following screw-in LEDs have been removed from the Program and are ***not*** eligible for Prescriptive or Custom incentives:

- LED A-Line Lamps
- LED MR16 Lamps
- LED/PAR/BR/R Lamps
- LED Candelabra Lamps
- LED Globe Lamps

If your project includes these measures, please refer to the **DTE Midstream Lighting Program** for direct rebates from your distributor.

11 New Construction and Major Renovation Program

The **Energy Efficiency Program for Business** provides incentives for eligible New Construction and Major Renovation improvements as identified in the 2018 Program Application. Such incentives are offered as part of the Systems Approach or the LEED Whole Building Approach. A separate incentive is offered for LEED Design Review Assistance.

11.1 Systems Approach Incentives

The Systems Approach is a simpler method of applying for incentives under this part of the **Energy Efficiency Program for Business**, as it does not require LEED certification, yet encourages designers to optimize the energy efficiency of the individual systems within a building. This approach is most appropriate for less complex projects; those customers whose systems are designed at different times, and for projects in which consideration for energy efficiency occurs later in the design phase.

Available Systems Approach Measures

Measures offered in the Systems Approach include: Lighting Power Density (interior and exterior), HVAC – Electric, Miscellaneous Electric, Process Electric, Food Service Electric, HVAC – Gas, Miscellaneous Gas and Food Service Gas. All such qualifying measures are identified with a special icon in the Application: 

For a complete list of Systems Approach measures and to verify application steps, incentive amounts or specifications, refer to the New Construction and Major Renovation section of the Application.

11.2 LEED Whole Building Approach Incentives

For more complex projects in which the customer pursues Leadership in Energy and Environmental Design (LEED) Certification, the LEED Whole Building Approach is available. The intent of this approach is to validate the savings associated with LEED certified buildings. The only portion of LEED Certification that is valid for this incentive is Building and Construction (B+C). The incentives will be paid upon receiving LEED Certification and will be based on the level of energy savings reported in the energy model and verified by GBCI (Green Building Council; first year only). The following LEED Certification Levels will be used to determine each incentive rate: Certified/Silver, Gold and Platinum.

For all specifications and guidance on this incentive, refer to LEED – EA Prerequisite Minimum Energy Performance (usgbc.org). For more information on the Energy Savings Analysis and supporting documentation required and the LEED Whole Building Approach Worksheet, see the 2018 Program Application.

11.3 LEED Design Review Assistance

To encourage LEED design/certification of energy-efficient buildings, the Program offers a LEED Design Review Assistance incentive. This incentive can be found in the Program Application. For incentive payment, Applicants must provide the following

items: a signed Final Application Agreement, a completed, Final LEED Design Review Assistance Application and the LEED design review decisions.

12 Equipment Specifications

All Final Applications must include manufacturers' specification sheets. Lighting applications must include manufacturer's specification for lamps (light bulbs). All prescriptive incentives are for one-for-one replacements except as noted. All specification sheets, forms, illustrations and other supporting documentation must be in English. Foreign language documents will not be accepted.

- Each Program Application measure is identified by a reference code; the code for each measure should be entered on all specification sheets, clearly identifying which piece of equipment is related to which measure being installed. The specification for each qualifying measure can be found in the Program Catalog. A sample of a specification sheet and an invoice can be found in the back of the Catalog.

NOTE: All replaced equipment must be recycled/disposed of according to federal, state and local regulations. Information about the requirements for the state of Michigan can be found at the Michigan Department of Environmental Quality website: <http://www.michigan.gov/deq/>

12.1 Prescriptive Measures

To verify prescriptive measure specifications – including requirements for a Reservation Application for certain measures, refer to the Program Catalog and Application.

NOTE: For prescriptive measures that require a Reservation Application, a Reservation Application must be submitted at least three weeks prior to starting work on the project in order to allow time for the Program Team to review the Application and, if necessary, schedule and conduct a pre-inspection. (See Section 13.2 for the definition of a Reservation Application.) If you have not been contacted to schedule an inspection or have not received a Reservation Letter within three weeks of Application submission, contact the Program Team prior to starting work.

12.2 Custom Measures

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. However, projects that involve an automated control technology, such as energy management system programming, may be eligible for an incentive.

All final incentive amounts will be based on the estimated first-year energy savings documented in the Final Application, and may be greater or less than the incentive amount originally estimated in the Reservation Application. Once 100% of Program funds have been allocated, final incentive amounts cannot be greater than the reserved or applied for amount. See Section 16 for additional details on approaches to energy modeling for custom incentives.

NOTE: All custom projects must have a Reservation Application submitted at least three weeks prior to starting work on the project in order to allow time for the Program Team to review the Application and schedule and conduct a pre-inspection. (See Section 13.2 for the definition of a Reservation Application.) If you have not been contacted to schedule an inspection or have not received a Reservation Letter within three weeks of application submission, contact the Program Team prior to starting work.

12.3 New Construction Measures

New Construction/Major Renovation projects must involve facility improvements that result in measurable or verifiable electrical (kWh) and/or natural gas (Mcf) energy savings exceeding the requirements set forth in ASHRAE Standard 90.1-2007, LEED or local building codes, whichever is more stringent. Specifications for qualifying measures can be found in the Program Catalog.

13 How to Apply

The process of applying for an incentive under the **Energy Efficiency Program for Business** is designed to be simple and to involve no more than four steps: 1) identify a project and the equipment involved, 2) review the Program Catalog and Application for

such equipment and related incentives, 3) submit a Reservation Application (if required) applying for incentives on the equipment and 4) submit a Final Application when installation work is completed.

The Program Team is available during normal business hours, 8 a.m.-5 p.m., Monday-Friday, to facilitate the application process. For assistance, call the Program Team at 866.796.0512 (press option 3).

13.1 Applications

There is one Program Application document for Prescriptive, Custom and New Construction/Major Renovation incentives offered by the **Energy Efficiency Program for Business**. This Application serve two purposes:

- It can be submitted as a Reservation Application, which refers to an Application that is submitted prior to starting work on the project for the purpose of assessing the proposed project for conformity and reserving incentive funds.
- The same document can also be submitted as a Final Application, which refers to an Application that is submitted for the payment of incentive funds after a project has been completed and reviewed by Program staff. The applicant is to submit a copy of the Final Application with any information not submitted with the Reservation Application.

The Reservation Application should not include a DTE Energy account holder's signature and may still require certain supporting documentation, such as quotes, manufacturers' specifications, measurements and verification (custom), W-9 tax form(s) and Michigan-Made affidavit(s) (if applicable). If submitting a Reservation Application, use the Incentive Application Checklist to identify the relevant documents being submitted with the Application.

The Final Application must be complete and submitted with an original (or electronic) DTE Energy account holder's signature on the summary page and dated **after** project completion, and must include all required supporting documentation, such as dated, itemized invoices and/or receipts, cut sheets, commissioning (operation) reports and manufacturers' specifications. All required documents listed on the Application Checklist must be attached for review at the time of submission before incentives will be paid. Both the Reservation and Final Application – and all required documentation – can be submitted one of several ways:

- **Submit:** The applicant can use the "submit" button on the last page of the Application. This will launch the applicant's email, automatically enter the Program's email address and automatically attach the Application. Other documents can be attached to the email at the same time before sending.
- **Email:** The applicant can attach the Application and other documents to his/her own email.
- **Fax:** The application can fax the Application to the Program office at: 313.664.1950.
- **Mail:** The applicant can mail the Application to: P.O Box 11289, Detroit, MI 48211.

NOTE: On invoices and specification sheets, applicants should identify all equipment by the measure reference code found on the Application. A sample of a specification sheet and an invoice can be found in the back of the Catalog.

A further description of documentation requirements can be found in Sections 15, 16 and 17. To request payment for a completed project, submit the Final Application with all relevant attached documents checked off under the "Final Application" heading on the Incentive Application Checklist. Signed applications received by fax or email will be treated the same as original applications received by mail.

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

13.2 Reservation Application

A Reservation Application is required for all custom projects and for certain prescriptive measures (see Catalog and Applications for requirements). A Reservation Application is strongly encouraged for all prescriptive projects and New Construction/Major Renovation projects.

Annual Program funding is limited and Reservation Applications are not a guarantee that incentives will be provided. Actual incentives are based on Final Applications. DTE Energy will review all Final Applications for eligibility and completeness.

A Reservation Application reserves funds for a specific project, provided that:

- Work commences on the proposed measures within 30 days of project approval.
- Measures are completely installed within 90 days of project approval or by Nov. 30, 2018, whichever comes first.

NOTE: The Final Application (and all supporting documentation) must be submitted within 60 days of project completion, but no later than Nov. 30, 2018. Final Applications received after that date may be cancelled.

It is the responsibility of the applicant to contact the Program Team if a project is delayed, substantially changed or cancelled. Funds that have been reserved for specific applications are not transferable to other projects, facilities/campuses and/or customers. A completed and electronically submitted, faxed or mailed copy of the Reservation Application initiates the review process. Funds are only reserved for a given project when the project details have been approved and a Reservation Letter has been issued.

The Reservation Application for prescriptive and New Construction/Major Renovation Systems Approach (non-LEED) measures must include sufficient information (quantities, etc.) to estimate the incentive amount. The Reservation Application for custom measures must include a project description, equipment performance data, specification sheets, operating schedules, quote for proposed change, load profiles and an estimate of the annual energy savings.

NOTE: Periodically, special incentive offers may be made to help promote specific areas of energy savings. Under such offers, specific timelines, deadlines and other requirements may apply to Application submission, work schedule and completion.

13.3 Detailed Program Steps

Step 1. Eligibility Check. Verify that your project is eligible and meets the project requirements as set forth in Customer Eligibility (Section 3), Project Requirements (Section 4) and Incentive Caps and Limits (Section 7).

Step 2. Obtain, Complete and Submit a Reservation Application. Obtain an electronic version of the Energy Efficiency Program for Business Application online at dteenergy.com/savenow. The interactive electronic version is strongly recommended, since it automatically will perform all calculations and allow for an electronic submission of the Application. Or the Application can be printed and completed manually. Complete all the required information as listed on the Incentive Application Checklist. A Reservation Application is required for custom projects and some other specific measures (see Application for requirements), and is strongly recommended for all projects. Contractors may complete the form on behalf of their customers, but all of the required information and a DTE Energy customer name and contact information (phone and/or email) must be provided.

For **prescriptive** measures that require a Reservation Application, a Reservation Application must be submitted at least three weeks prior to starting work on the project in order to allow time for the Program Team to review the Application and, if necessary, schedule and conduct a pre-inspection. If you have not been contacted to schedule an inspection or have not received a Reservation Letter within three weeks of Application submission, contact the Program Team prior to starting work.

NOTE: All **custom** projects must have a Reservation Application submitted at least three weeks prior to starting work on the project in order to allow time for the Program Team to review the Application and schedule and, if necessary, conduct a pre-inspection. If you have not been contacted to schedule an inspection or have not received a Reservation Letter within three weeks of application submission, contact the Program Team prior to starting work.

Following Application review, a Reservation Letter will be provided for all reserved projects. A Reservation Letter is not a guarantee that incentives will be provided. Actual incentives are based on Final Applications that meet all Program criteria.

Step 3. Project Installation. Install the new equipment or systems within 90 days of the Reservation Letter date or by Nov. 30, 2018, whichever comes first.

13.4 Final Application

The Reservation Application and the Final Application can be the same document for the same project. If the project was submitted as a Reservation Application, update all information previously submitted then submit the document as a Final Application. If a Reservation Application was submitted, be sure that the Final Application reflects the actual type and quantity of equipment installed. If you are submitting only a Final Application, download the document, complete and submit it.

In all cases, complete the Final Application checklist, all customer and contractor information and Final Application Agreement before submitting. A DTE Energy account holder's signature is required on the Final Application Agreement for payment.

Submit the Final Application – signed by the account holder – only after all equipment has been installed and the project has been completed. Submit the Final Application along with all required supporting documents identified on the Checklist, such as manufacturers' specifications, itemized invoices and any additional documentation. (Identify all equipment on invoices and

specification sheets by the measure reference code found on the Application. See the back of the Catalog for examples.) The documents should clearly indicate the equipment model numbers, quantities and energy performance that is indicated in the Reservation Application. All specification sheets, forms, illustrations and other supporting documentation must be in English. Foreign language documents will not be accepted.

Labor and material costs should be shown separately. If the project equipment is included on several invoices, it will be helpful if the applicant prepares a summary sheet that totals the quantities and shows how the quantities match the quantities in the Application.

Final Applications must be received within 60 days after project completion, by reservation end date or by Nov. 30, 2018, whichever comes first. Program funds are limited and submission of a Final Application does not guarantee an incentive payment unless funds were set aside previously, based on an approved Reservation Application and resulting Reservation letter, and all criteria of this document are met. NOTE: Applications received after Nov. 30, 2018, may be cancelled.

13.5 Final Application Review

The Program Team will review the Final Application and the final project documentation. A post-inspection may be required for verification purposes. Please note that the actual incentive amount paid will be based on review of the Final Application and supporting project documentation of equipment installed and will be subject to Program specifications, terms and conditions. It is essential that both customers and contractors understand and comply with all specifications and Program terms and conditions.

Equipment specifications and Program terms and conditions can be found on dteenergy.com/savenow. Please note that a Reservation does not guarantee an incentive payment. Multiple projects and reservations for projects at the same facility or customer may be subject to an annual cap.

Incentive payments will be sent within four-to-six weeks from the time that the Final Application and all documentation are received and the field inspection is completed.

13.6 Measurement & Verification

Some projects will be chosen for measurement and verification (M&V) independent from **Energy Efficiency Program for Business** purposes. If so, the customer will be contacted by a utility representative. M&V may include obtaining logged data on individual project components.

13.7 Incomplete Application Process Timeline

If an Application is found to be incomplete, the following process timeline will be used to contact the applicant and, if possible, resolve the issue(s).

1. Within two (2) days of receipt of the Application, the first notification is emailed to the applicant that the Application is incomplete. A list of missing information is provided. A response is required within two (2) days of the email.
2. Two (2) days after the two-day email response time has elapsed, a second notification (reminder) is emailed to applicant listing missing required documents. A response from the applicant is required within two (2) days.
3. A final notification will be sent within two (2) days after this second response time has elapsed. If no response is received within two (2) days of this final notification, the project is cancelled.

13.8 Discrepancies

If it is determined that there are significant discrepancies between the Reservation Application and DTE Energy's on-site analysis, the Program Team will contact the customer to review these differences. This provides an opportunity for the customer (or contractor) to dispute the inspection results. If the customer (or contractor) disputes the inspection results, DTE Energy's representatives and the customer (or contractor) shall thereupon attempt in good faith to resolve such dispute promptly. If the customer (or contractor) has not contacted the Program Team within five (5) business days to discuss inspection results, incentive levels will be revised to coincide with DTE Energy's on-site findings and will be determined final.

If there is any misrepresentation of information —intentional or otherwise — that results in unjustified and/or unsubstantiated incentives being awarded to the customer, DTE Energy and/or its agent will initiate action to recoup such funds from the customer; steps that may include additional legal action commensurate with the seriousness of the event. A statement to this effect is part of the Final Application Agreement found on all Program applications.

13.9 Reservation Extension Process

If the customer receives approval to move forward with a project but requires more than 90 days to complete the project, the customer may provide proof the project is progressing towards completion and request an extension of the reservation. The Program Team may, but is not required to, grant an extension after reviewing project details. Length of extensions granted will depend on project type. The granting or denial of an extension is within the sole discretion of DTE Energy.

Up to two (2) 30-day extension requests can be granted. When the second extension expires, the customer must immediately provide the Final Application along with all required final documentation to claim reserved funds. DTE Energy may not grant subsequent reservation extensions, and incentive payments will be subject to funding availability.

NOTE: No Reservation extensions will be granted that will take a project past Nov. 30, 2018.

13.10 100% Funds Fully Allocated Status

If the 2018 Program Year becomes oversubscribed (100% of Program Funds have been Fully Allocated) – which means an amount greater than all the budgeted funds are reserved – in either the electric and/or gas portion of the Program, any new Applications submitted in electric/gas will be held for possible future available funding, in the order in which they were received. If reserved projects are cancelled, not completed or completed for less than their reserved amount, those funds become available and projects being held will be approved for funding in the order received.

As a project is approved for released funding, Program administrators will send an email notifying the customer that his/her project has been approved for funding prior to sending to the engineer for processing. If a project is still being held for possible funding at the end of the Program Year and all funds have been paid, the project may be cancelled.

Note: When funds become fully allocated, projects will only be paid out at the amount for which they were reserved. We will not approve any increases, including instances in which non-DLC lighting became DLC listed between the time of the Reservation Application and the Final Application.

14 Payment Process

The **Energy Efficiency Program for Business** incentives will be paid directly to a DTE Energy account holder or to a Designated Trade Ally identified by the account holder. If the account holder is to be paid, the exact name and Tax ID number as shown on his/her W9 form must be indicated on the Customer Information page of the Application. If the payment recipient is a Designated Trade Ally, the Optional Third Party Payment Authorization section of the Application is to be checked and initialed by the account holder and the process outlined in Section 5.2 must be followed.

15 Documentation

For prescriptive and custom measures, the required final project documentation includes detailed, itemized invoices listing specific equipment model numbers and quantities purchased. Copies of invoices must be itemized with the costs for equipment, labor, supplies and other costs. (Identify invoices by the appropriate reference code of that measure as listed on the Application.) Location or business name on the invoice must be consistent with the Application information. Incentives can only be submitted for eligible expenses incurred during the term of the Program. (See the back of the Catalog for an example.)

Applicants may be asked to provide more detailed information on the equipment location to aid in the pre- and post-inspection process. Manufacturer's product literature, product brochures, cut sheets or other certified performance data for the specific model numbers and sizes of the equipment installed (that documents the performance factors used as a basis for the incentive) must be submitted with the Final Application. (Identify specification sheets by the appropriate reference code of the measure on the Application.) If the documented capacity or performance differs from the performance in the Reservation Application, the incentive will be adjusted accordingly. Failure to provide the documentation will delay the payment process and may result in no incentive payment. (See the back of the Catalog for examples.)

For custom measures, final documentation may include scope of work, energy use history plans or specifications for the equipment or systems that are modified, paid itemized invoices, equipment specification sheets or other information indicating performance over the full range of operation, documentation of operating schedule and loading profiles, commissioning reports or other

documentation required by the Program Engineering Team. All specification sheets, forms, illustrations and other supporting documentation must be in English. Foreign language documents will not be accepted.

Power or other operating measurements or monitoring may be required for verification of estimated energy savings prior to approval of incentive payments. See Sections 16 and 17 for guidelines on calculating and documenting energy savings.

All Final Applications must be complete with all required documentation and have an original signature of the DTE account holder. Final Applications must be received within 60 days after project completion, by reservation end date or by Nov. 30, 2018, whichever comes first.

16 Calculating/Documenting Custom Energy Savings

These guidelines provide suggestions for submitting project documentation to demonstrate that your project qualifies as an **Energy Efficiency Program for Business** custom measure(s), and that the savings estimates and incentive applied for are actually realized. This section provides information to assist you in calculating and measuring energy savings associated with your project.

These analysis methods and documentation details are recommendations, not requirements. Following these guidelines will help speed our review of your project and help you meet the program requirements.

The incentives for custom projects are based on the calculated first-year kilowatt-hour (kWh) or 1,000 cubic feet of natural gas (Mcf) savings. To be accepted as a basis for the incentive, the savings calculations must be developed using acceptable engineering calculation techniques supported by site-specific operating and equipment performance data. The final incentive payment may be different from the reserved amount if the post-retrofit system operation or performance is not in agreement with the assumptions and models used to set the reserve amount.

Before submitting an Application for a custom project, confirm that the measures are not included as prescriptive measures listed in the Program Catalog and Application.

For certain projects, in addition to energy savings calculations, the Program may require measurement and verification (M&V) in order to qualify for an incentive. We encourage custom incentive applicants to review the International Performance Measurement and Verification Protocol (IPMVP) available at www.evo-world.org. Any operational data available to support the energy usage claims for your project and validate your savings calculations can be submitted with your Application. If you need assistance in identifying appropriate M&V procedures, contact the Program Team for assistance.

16.1 General Guidelines

To estimate first-year energy (kWh or Mcf) savings for retrofit projects, calculate the difference between the pre-retrofit (or base case) system energy (kWh or Mcf) use and the anticipated post-retrofit (or efficient case) system energy (kWh or Mcf). The applicants must define and describe the base case and efficient case system as well as operating conditions. Here are the general requirements common to all custom projects:

- Provide the name and contact information of the person(s) conducting the savings calculations so that the Program Team can discuss any questions.
- Provide a concise project description: Describe **both** the existing (pre-retrofit or “base case”) system and the proposed (post-retrofit or “efficient-case”) system. Be as precise, yet concise, as possible in the descriptions: include specific quantities and equipment descriptions.
- Identify equipment using the terminology or numbering system used by the customer. (e.g. “Replace compressor #3 with a new variable speed compressor” or “install a VFD on VAV AHU #3, 5, 7, 8, 9.”).
- Provide copies of sketches, drawings, equipment lists or inventories that help to clarify the scope of the project.
- Describe **both** the facility operating hours and the equipment operating schedule for each day of the week. Where equipment operation varies with days of the week or seasons, you must enter a description of the operation for all days of the week and all seasons.
- Indicate on the Application whether the “after retrofit” electric equipment will be in operation during the hours of 3-6 p.m., Monday-Thursday in the month of July. (Check box.)
- Describe equipment load conditions for the hours the equipment typically operates.

- Provide the quantity, make, model number and rated capacity of both the existing and the new equipment that is being installed. Also provide other nameplate information, such as operating voltage and rated full load amps where appropriate. The scope of work from the proposal to the customer is often helpful to describe the new equipment.
- Describe the location(s) where the equipment is installed.
- Provide copies of the manufacturer's specification sheets and/or performance rating sheets and the website address where further technical information about the equipment performance might be found. (Identify the specification sheets with the reference code from the related custom measure on the Application.)
- Use accepted engineering algorithms and procedures from recognized technical organizations such as ASHRAE, SMACNA, ANSI, etc.
- Annotate all assumptions or constants used in engineering calculations.
- Use rated performance factors tested under accepted procedures specified by recognized rating agencies, such as ARI, AGA, ANSI, ASTM, etc. Provide an explanation when equipment performance rating conditions vary from standard conditions.

Acceptable Calculation Methods

Whole Building Metering

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

If an executable whole system or building model is used, be sure to provide sufficient documentation or annotation so that the differences between the base case and high-efficiency case can be understood and verified by the reviewers. Executable whole building metering models must be calibrated to actual energy use (electric or natural gas bills) and be normalized for weather and other known variances.

Equipment or Process Sub-Metering

When measures are installed that affect large individual systems or sets of equipment (for example an air-compressor, chiller, process blower or induction molding machine), sub-metering may be the best way to document the savings.

This may require the installation of temporary portable monitoring equipment that measures and records the equipment power at short intervals over several days or weeks. When sub-metering is used, a method must be developed to extrapolate the savings for the measurement period to a full year of operation. Component sub-metering may often include observation of other variables like outside air temperature, operating hours or production quantities during the measurement period to allow for this extrapolation.

Engineering Calculations

For measures with impacts over small and simple systems, sub-metering may not be feasible. For these measures, an engineering calculation method is best to document savings. For most equipment and efficiency measures there are well-established engineering procedures and there are a number of publicly available performance models that are available to calculate pre- and post-energy use.

Whole Building Modeling

For measures that have building-wide impact or impact a number of systems, the following executable engineering models are acceptable: Trane TRACE, Carrier HAP, eQUEST, DOE2 and Energy Plus. When using any model, the applicant must provide a report showing both the pre- and post-upgrade input and output data in addition to an executable model of the building simulation. Models that do not reflect the actual systems and their operation (i.e. defaults instead of building-specific equipment) are not acceptable.

Initial savings estimates that are submitted based on manufacturers' proprietary performance models may be acceptable for initial estimates of savings, but additional information and actual on site operating data or measurements verifying the model assumptions will usually be required to confirm the final savings. Applicants planning to use whole building models to estimate savings as a basis for the incentive should contact the Program Team early in the project development process.

16.2 Custom Lighting Measures

The following is an example of what should be provided when submitting a custom lighting measure:

| <u>DESCRIPTION</u> | |
|--|--|
| <u>Before Retrofit</u> | <u>After Retrofit</u> |
| 220 (quantity) – 400 watt HID lighting fixtures (455 watts each) in the warehouse, <i>Annual hours of operation*</i> | 160 (quantity) – DLC-listed LED fixtures* (150 watts each) in the warehouse <i>Annual hours of operation**</i> |
| <i>*For a non-DLC fixture, submit a Non-DLC Product Approval Form for review (see Section 10.3).</i> | |
| <i>**Where equipment operation varies with days of the week or seasons, you must enter a complete description of the operation for all days of the week and all seasons.</i> | |

Provide a detailed lighting inventory that includes the following:

- Location (area, aisle #, etc.)
- Existing and new fixture description
- Existing and new fixture wattage
- Existing and new fixture quantity
- Existing and new controls
- Annual operating hours
- Interior or exterior fixtures
- Provide the electrical plan sheet that shows the existing and proposed lighting layout or a reflected ceiling plan and the lighting fixture schedule, when available.
- The use of standard default fixture wattages is acceptable. Default fixture wattages for common fixture/lamp types are available upon request.

Use the following equations to calculate the Annual Savings:

Before-Retrofit Lighting kW = Quantity before retrofit fixtures X kW per fixture X fraction of fixtures that are typically operating

Before-Retrofit Lighting kWh = before retrofit lighting kW X before retrofit annual operation hours

After-Retrofit Lighting kW = Quantity after-retrofit fixtures X kW per fixture X fraction of fixtures that are expected to be operating

After-Retrofit Lighting kWh = after-retrofit lighting kW X after-retrofit annual operation hours

Annual Savings kWh = before-retrofit lighting kWh – after-retrofit lighting kWh

NOTE: If you are completing the Application electronically, the Annual Savings kWh will be calculated automatically.

Other Guidelines

When preparing project information, consider:

- Operating hours may or may not always be the operating hours of the facility. Where equipment operation varies with days of the week or seasons, you must enter a description of the operation for all days of the week and all seasons.
- Indicate on the Application whether the “after retrofit” electric equipment will be in operation during the hours of 3-6 p.m., Monday-Thursday in the month of July. (Check box.)
- Exit signs, emergency lighting and many hallway and stairway fixtures are typically on 24 hours a day, 7 days a week; and therefore, are in use 8,760 hours per year.
- Installing a lower wattage lamp of the same type is NOT considered an eligible measure unless it can be established that the replacement fixture is more efficient (the lumens per Watt must be the same or greater than) than the fixture that it replaces.

NOTE: The Program Team will check for inconsistencies between the quantities of fixtures used in the savings calculation, shown in the invoice documentation and observed in the post-inspection.

16.3 Custom HVAC Measures

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

- Water-side economizer (e.g. plate and frame heat exchanger, closed-loop tower, or “glycoler”).
- Exhaust heat recovery equipment (heat exchangers).
- Conversions from constant volume to variable volume for water or air distribution.
- Adding variable-speed control to centrifugal equipment (other than HVAC fans or pumps) that is throttled by less efficient means.

Most (but not all) HVAC system measures are weather-dependent. As such, the acceptable methods of estimating energy savings are building or system models that integrate local weather conditions with system loads and performance or “temperature bin” models. This section includes several acceptable methods for providing the savings analysis for HVAC measures.

In all cases, it is important to document the pre- and post-retrofit conditions thoroughly. For most projects, the analysis will need to be calibrated and adjusted to reflect the weather variances, occupancy variations and/or internal load changes.

The following techniques may be employed for calculating project savings:

- For measures that have building-wide impact or impact a number of systems, the following executable engineering models are acceptable: Trane Trace, Carrier HAP, eQUEST, DOE2 and Energy Plus.
- ASHRAE-based simplified calculation methodologies, including the “bin methods,” are usually useful to estimate the savings of many weather-dependent strategies, such as economizer systems (water and air), heat recovery, ventilation control or even VAV conversions.
- Simple spreadsheet analysis may be used for certain stand-alone retrofits such as carbon monoxide sensors for parking garages.

These methods can be calculated in a spreadsheet format so that the underlying assumptions can be easily followed. In many retrofit projects, the existing building energy use and energy use patterns can provide the basis for calibration for these methods.

For certain projects, a monitoring/metering approach may be the best means to document savings. The applicant should remember that it is simpler to verify the post-case, but it is the base case condition that requires documentation for Program verification. Be sure to consider pre-project measurements when planning a future project. The following are some suggested parameters to be measured pre- and post-retrofit:

- Power (kW), energy (kWh), natural gas use (Mcf).
- Air flows, temperatures, water flows.
- Outdoor temperatures and humidity (may be available from other sources).
- Building activity (people, hours, etc.).

16.4 Custom Building Envelope Measures

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

- Door or window opening treatments that reduce infiltration.
- Shading (windows or building).

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

However, setting up a whole building model to estimate the savings for envelope improvements is often not practical. There are a number of simplified degree-day or weather-based “bin analysis” methods that are sufficient to estimate the impacts of these measures. These methods are described in detail in the ASHRAE Handbooks. ASHRAE combined with local weather data files will

provide most of the information and calculation procedures necessary to estimate savings resulting from building envelope measures.

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

16.5 Custom Process and Refrigeration Measures

Some typical measures that may fall in this category are:

- “Tower-free cooling” for process cooling (e.g. plate and frame heat exchanger, closed-loop cooling tower, or “glycooler”).
- Waste heat recovery equipment (heat exchangers).
- Constant volume to variable volume water or air distribution.
- Upgrade of a refrigeration compressor.
- Some air compressor improvements.
- Injection molding replacement.

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

Short-term pre- and post-retrofit measurements extrapolated by production. Energy use for process systems can sometimes be correlated to production output. One method to document annual savings is to compare the pre- and post-retrofit systems over a representative production period (which may include multiple shifts) and then extrapolate the results to a full year.

The method is as follows:

- Determine the pre-retrofit system kWh per unit of production per shift, production run or equipment cycles, as appropriate.
- Determine the post-retrofit kWh per unit of production per shift, production run or equipment cycles, as appropriate.
- Adjust the baseline using the post-retrofit production levels.
- Extrapolate to a full year by multiplying the difference by the annual production.

Short-term measurements extrapolated by shifts or operating time. In some cases, the energy use does not relate to production, but to equipment operating time. In this case, the savings are similar to the above except the time in days or number of shifts is the factor used to extrapolate the savings to the full year.

Short-term monitoring extrapolated to a full year. A short term pre- and post-monitoring of a week or two can be carried out and the results extrapolated to a full year based on time. The difference is then multiplied by the ratio of annual hours to the monitored hours.

Post-retrofit energy monitoring and calculated base case energy, extrapolated to a full year. This method is useful when the performance or efficiency of the base case equipment is known, but the load profile was not monitored prior to the project. This method often applies to compressed air systems or large refrigeration systems. In this case, the post-retrofit system power and output (Cfm or tons) is measured for a period of a week or more. The base case power for the same period is then calculated by multiplying the output by the base case equipment performance. The savings are then calculated to a full year by extrapolating based on the projected loading pattern.

16.6 Unacceptable Documentation

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

- Vendor-specific or proprietary analysis software will not be accepted unless the methods used are available for review and the input parameters are specific to the site.
- Simple percent of total kWh or Mcf savings or percent of end use energy savings are not acceptable.
- Factors or percentages of savings achieved at other sites are not acceptable as documentation for custom savings unless there is an extensive body of statistically valid results.

- Using rules of thumb for calculating savings is not acceptable.
- Marketing materials from the manufacturer or distributor, their company's case studies, or savings claims based on non-standardized methods are not acceptable. For example, a manufacturer or distributor product savings claim that has not been verified by a certified third party will not be accepted.
- Operating hours may or may not always be the operating hours of the facility. Where equipment operation varies with days of the week or seasons, you must enter a description of the operation for all days of the week and all seasons.

If documentation is not provided, technical reviewers will use conservative estimates. Spot measurements as documentation of power or energy use are typically not acceptable for variable load equipment. Amperage can often be used as a proxy for true power (kW) measurements EXCEPT for systems where the power factor may vary significantly, as in variable speed drive situations (where the voltage may vary as well as the amperage). Contact the Program Team to verify monitoring needs where VSDs are installed.

17 Calculating/Documenting New Construction Savings

These guidelines provide suggestions for submitting project documentation to demonstrate that your project qualifies for incentives offered through the **Energy Efficiency Program for Business** New Construction/Major Renovation program, and that the savings estimates and incentive applied for are actually realized. This section provides information to assist you in calculating and measuring energy savings associated with your project.

17.1 Systems Approach

The Catalog provides specifications and methods of calculations for certain prescriptive measures found in the Program Application; Lighting Power Density savings must be at least 10% but no more than 50% greater than the maximum-allowed baseline. The applicant must complete and submit a lighting compliance document (COMcheck) for interior and/or exterior Lighting Power Density.

17.2 LEED Whole Building Approach

Incentives offered under the LEED Whole Building Approach will be paid upon receiving LEED Certification at the saving values validated by LEED. The only leg of LEED certification that is valid for this incentive is Building and Construction (B+C).

Incentives are paid to DTE Energy customers based on the level of energy savings reported in the energy model submitted to and verified by LEED (first year only). LEED Certification Levels will be used to determine the incentive rate: Certified/Silver, Gold or Platinum.

Applicants must utilize one of the approved software tools to provide a Whole Building Simulation energy model. The proposed model must reflect the designed system, and is 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 LEED during the certification process. Projects are not allowed to take credit for savings above baseline for systems utilizing renewable energy.

Electrical Energy Savings = 1 kWh per LEED validated = 1 kWh savings

Natural Gas Fuel Savings = 1 Mcf per LEED validated = 1 Mcf savings

18 Satisfaction

The Program Team will take every possible step to ensure a high level of satisfaction with all aspects of the Program. However, if any problems or concerns should arise, we encourage customers and contractors to call 866.796.0512 (press Option 3). If they have questions that the Program Team cannot answer, its members can provide the appropriate contact information or other resources to help answer questions.

19 Tax Implications

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

20 Disclaimer

Neither DTE Energy nor any of its affiliates guarantees the energy savings or makes any warranties associated with the measures eligible for incentives under this Program. DTE Energy has no obligations regarding, and does not endorse or guarantee any claims, promises, work or equipment made, performed or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures.

Payment of incentives is for the installation of energy-saving equipment only and does not guarantee or imply that the equipment installation complies with any state or local code. DTE Energy has no obligation to pay any incentive described herein unless the minimum requirements of the Program have been met and funds allocated for such incentives are available for distribution.

21 Definitions

Applicant: The entity, either the customer or the customer's representative, submitting the Application.

Btu: British Thermal Unit; a measure of energy.

Btu/h or Btuh: British Thermal Units per hour; a measure of power.

CEE: Consortium of Energy Efficiency®; the consortium of EE program administrators develop initiatives to promote the manufacture and use of EE products.

CFM: Cubic Feet per Minute; a measure of volumetric flow.

COP: Coefficient of Performance; measure of efficiency for HVAC equipment measured in $\text{Btu}/h_{\text{out}} / \text{Btu}/h_{\text{in}}$.

CRI: Color Rendering Index; the measure of the ability of a lamp to accurately render colors.

Customer: The utility customer-of-record responsible for paying the utility bill(s) for the principal account (the account with the largest kWh or Mcf consumption) that is affected by the project. The primary criterion for determining the customer is the Account Name and Tax ID Number.

Custom Project: A project comprised of efficiency improvement measures that are not included in the prescriptive Measures found in the Catalog or Application.

DLC: Design Lights Consortium (www.designlights.com).

DTE Account Holder: See Customer.

EER: Energy Efficiency Ratio; measure of rating point efficiency for small HVAC equipment measured in $\text{Btu}/h_{\text{out}} / \text{Watts}_{\text{in}}$.

Facility: A single meter or multiple meters on a single property for which a single customer is responsible for paying the DTE Energy electric and/or natural gas bill.

Final Application: This term refers to a program Application that is submitted, after a project has been completed, for the payment of funds. The Applicant is to submit a copy of the Application with any information not submitted with the Reservation Application. The Final Application must include a DTE account holder's signature and all appropriate supporting documentation, including dated, itemized invoices and manufacturer's specifications.

GBCI: Green Building Council Institute.

HVAC: Heating, Ventilation and Air Conditioning.

Incentive: The amount to be paid to the customer or contractor once the Final Application has been approved.

IPLV: Integrated Part Load Value; measure of efficiency for larger HVAC equipment during a cooling season.

LED: Light Emitting Diode; type of lamp.

LEED: Leadership in Energy and Environmental Design.

Lighting Fixture: Apparatus attached to a building to hold lamps and ballasts. The fixture is defined by the number of lamps it holds, regardless of the number of ballasts used.

LPD: Lighting Power Density; Watts per square footage of area being illuminated.

LPW: Lumens per watt; lamp efficiency or efficacy.

MBtu/h or MBH: 1,000 Btu/h.

MMBtu/h or MMBH: 1,000,000 Btu/h.

Measure Cost: The Measure Cost (MC) is the cost of implementing a measure less any costs that would have been incurred to achieve all of the project benefits, except those resulting in the rebated energy savings. MC is:

- For retrofit and new technology measures: the cost of new equipment, components or materials added to existing equipment for the purpose of improving its energy efficiency; or



- For non-functional or 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.

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 pressure sodium light fixtures to fluorescent fixtures, the MC is the installed cost (equipment and installation) of the VFD or light fixtures.

Mcf: 1,000 cubic feet; a unit to measure natural gas usage.

Mixed Project: A project comprised of efficiency improvement measures, some of which are prescriptive measures and some of which are custom measures.

MLPW: Mean Lumens per Watt.

PF: Power Factor; ratio of (electrical) working power to total power measured in kW/kVA.

Prescriptive project: A project comprised solely of prescriptive measures.

Program Year: The duration of the Program: Begins Jan. 1, 2018; ends Nov. 30, 2018.

PTAC: Package Terminal Air Conditioner.

Reservation: The process of submitting a Reservation Application form for approval of your project plans. A reservation is required for all custom projects and strongly encouraged for prescriptive projects.

Reservation Application: This term refers to a Program Application that is submitted prior to project completion for the purpose of assessing the proposed uncompleted project for conformance and reserving incentive funds. The Reservation Application does not include a DTE account holder's signature and may be lacking some supporting documentation, including dated, itemized invoices and manufacturer's specifications. A Reservation Application is required for all custom projects and strongly encouraged for prescriptive projects.

Reservation End Date: Date on which a customer's Reservation is cancelled unless an extension has been granted. If a reservation spans more than one Program year, eligible incentives are paid according to the incentive schedule in place at the time the completed Final Application is submitted along with all required supporting documentation.

THD: Total Harmonic Distortion; a measure of the relative distortion of the fundamental current/ voltage caused by lighting ballasts and other non-linear loads.

TMY: Typical Meteorological Year.

VFD: Variable Frequency Drive; a system for controlling the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supplied to the motor.

VSD: Variable Speed Drive; an electronic device that controls the rotational speed of a piece of motor-driven equipment (e.g., a blower, compressor, fan, or pump). For this Program, VSD is synonymous with VFD.

22 Contact Information

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