

Consolidated Edison Company of New York, Inc.

Small-Medium Business Energy Efficiency Program 2024

Program Manual

January 2024

Program Manual Acknowledgement

("Participating Contractor's Representative")

Name: _____

Sign: _____

Title: _____

Company: _____

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Glossary, Acronyms, & Abbreviations

Bonus Incentive: Additional incentive dollars or rebates added to the SMB Energy Efficiency Program base incentive price. Sometimes referred to as Adder.

BQDM: Brooklyn Queens Demand Management

CAF: Customer Authorization Date

COI: Certificate of Insurance

HVAC-R: Heating, ventilation, air conditioning, and refrigeration

M&V: Measurement & Verification

MWBE: Minority or Woman Owned Business Enterprise

Neighborhood Program: The customer-facing program name for the NWS SMB Adder

NPA: Non-Pipeline Alternatives

NWS: Non-Wires Solution

PC: Participating Contractor

PIOL: Preliminary Incentive Offer Letter

Program: Con Edison Small-Medium Business (SMB) Energy Efficiency Program

SMB: Con Edison Small-Medium Business (SMB) Energy Efficiency Program

SOC: Statement of Completion

TRM: [Technical Resource Manual](#)

Willdan: On behalf of Con Edison, Willdan Energy Solutions (Willdan) oversees the implementation of the SMB Energy Efficiency Program. Participating Contractors work directly with Willdan to process all projects from eligibility through invoicing.

1. Program Overview & Eligibility

1.1 Program Overview

The Con Edison Small-Medium Business (SMB) Energy Efficiency Program provides incentives for Con Edison's small commercial and nonprofit customers to upgrade their existing lighting, refrigeration, HVAC, domestic hot water, and building envelope to be more energy efficient. These incentives make investments in energy efficiency more affordable for small businesses and nonprofits, helping them reduce their monthly energy costs and their greenhouse gas emissions.

In most cases, up to 70% of total project costs can be covered by the Program's incentives. Customers are responsible for the remainder of project costs, which is paid directly to the Participating Contractor (PC) performing the work.

Additional incentives are available to qualified SMB Program participants in the following areas:

- **Brooklyn and Queens neighborhoods that are a part of the Neighborhood Program:** Participants that are installing eligible measures in select neighborhoods where Con Edison is targeting grid strain reduction are eligible for incentives that can cover up to 100% of the total project cost. See Section 1.55 for additional information.
- **Soundview Bronx gas customers that are part of the Non-Pipeline Alternatives (NPA) Program:** Participants that are installing eligible measures where Con Edison is targeting grid strain reduction are eligible for incentives that can cover up to 100% of the total project cost. See Section 1.6 for additional information.

On behalf of Con Edison, Willdan Energy Solutions (Willdan) oversees the implementation of the SMB Energy Efficiency Program. Participating Contractors work directly with Willdan to process all projects from eligibility through invoicing. See Section 1.4 for complete overview of Participating Contractor onboarding process and requirements.

To get started, contact the Willdan Program Team at ConEd-SMB@Willdan.com who will assist you with the short application process and confirm customer eligibility. SMB also provides a virtual onboarding training to help your team become familiar with the project management system and audit tool used to process projects. Incentives are submitted to Con Edison for approval once a project is completed and passes a Willdan post inspection. See Appendix A for a link to the Participating Contractor Application form.

1.2 Customer/Participant Eligibility

- Con Edison commercial customers classified under service classes 2, 9, or 51 with an average peak demand under 300 kW on a rolling 12-month basis are eligible for SMB incentives. All customers with an average peak demand of 300kW and higher, must enroll for incentives through the Con

Edison administered Commercial and Industrial (C&I) program. All multi-tenanted residential customers must enroll projects through the Multifamily Building program.

- SMB offers incentives for gas savings measures for Con Edison customers with firm gas accounts. Interruptible gas accounts do not qualify for gas incentives.
- To receive incentives, program participants must not have applied for or received an incentive from the New York State Energy Research and Development Authority (NYSERDA), Con Edison, or another utility for the same measures.

1.3 Project Eligibility

- Only inefficient existing equipment is eligible for a 1-for-1 upgrade. If it is a new construction project, then local codes must be used as a baseline for HVAC-R projects. Contact an SMB Project Coordinator for existing equipment verification.

Projects must be completed (all documents received in Willdan's work order management platforms (SMART or Viewpoint), and ready for post-inspection) by the program end date communicated by Con Edison, via the following email address: ConEd-SMBProgram@willdan.com. All projects completed after the current program end date may be subject to incentive rates based on the following program year.

1.4 Participating Contractor Eligibility

The onboarding process begins with a general discussion between the prospective PC and a member of Willdan's program staff. This may be conducted in person or over the telephone. The purpose of the discussion is to educate the prospective PC about the SMB program, inform them of ways to participate, answer questions, and address concerns. This will ensure that the prospective PC understands the program's rules and regulations as well as their own expectations and obligations. If the prospective PC intends to move forward, they will request the Participating Contractor Application for completion and signature. Once all the documents described in the "Enrollment Requirements" are received, reviewed, and deemed satisfactory, the contractor receives a copy of the energy assessment tool and schedules a training session with a member of Willdan's program staff.

All contractors who participate in the Con Edison Small-Medium Business program must be approved by an SMB Participating Contractor Manager and meet the following Enrollment Requirements:

- Enroll into the SMB program by completing the Participating Contractor Application and emailing it for approval to ConEd-SMBProgram@willdan.com.
- Provide with the application a current [IRS W-9 form](#) and Certificate of Insurance policy (minimum coverage of \$1M general liability insurance).
- After the application approval, Participating Contractor must send at least two representatives to the virtual onboarding training sessions.
- Adhere to the Participating Contractor participation requirements.
- Adhere to SMB program requirements.
- Maintain approved Participating Contractor status, as described in Section 1.4.2.

1.4.1 Application Process

To become a Participating Contractor, please follow the steps below:

1. **Participating Contractor Application:** Completed and notarized, including 3 customer references
2. **Completed W-9 form:** Attached in this application
3. **Certificate of insurance* (COI):** The COI should have Willdan Energy Solutions listed as the primary certificate holder, with Consolidated Edison Company of New York listed as the additionally insured. Your insurer should list the certificate holder as follows:

Willdan Energy Solutions
61 Broadway, 20th floor, Suite 2010
New York, NY 10006

4. **Contractor Orientation:** Attend a Participating Contractor orientation. Please email ConEd-SMB@willdan.com to receive training materials after completing the steps above.
5. **Include MWBE Certificate if applicable.**

1.4.2 Continued Eligibility

Once onboarded, Participating Contractors must make sure to stay in good standing in the program; as only Participating Contractors in good standing, consistent with the program requirements, will be allowed to accept incentive payments on behalf of the customer.

In order to stay in good standing, Participating Contractors should:

- Maintain insurance coverage as defined on the Participating Contractor application
- Attend SMB Program Participating Contractor Quarterly Meetings and applicable training
- Adhere to the Participating Contractor program requirements described herein
- Maintain satisfactory Sales-to-Install ratio (kWh) throughout the year as outlined in the table below. The Sales-to-Install ratio is determined by the number of projects sold vs the number of projects installed in your pipeline.

TABLE 1: SATISFACTORY SALES-TO-INSTALL RATIOS BY QUARTER

Q1	Q2	Q3	Q4
No ratio enforced	60% For pipelines >500,000kWh	70% For pipelines >500,000kWh	October: 85% November: 90% December: 95% For pipelines >250,000kWh

1.4.3 Requirements/Corrective Actions

Participating Contractors shall meet all program requirements and expectations of Con Edison's customers to a satisfactory level. Based on the findings of Willdan and third-party inspections, the Program will document and inform Participating Contractors of any deficiencies and any corrective actions that need to be taken. Participating Contractors who deliver inconsistent results will be considered for suspension or expulsion. The following is the Program's disciplinary policy:

1. A warning, probationary or suspension period may be used for Participating Contractors as an initial step towards expulsion. The Participating Contractor will be notified in writing that they are now subject to a warning or probationary period. The notification will outline the deficiencies that have been found, the period of warning or probation (time), and any corrective actions that the Participating Contractor must take to be re-instated to full participation status. A warning period is defined as a temporary notice in which the Participating Contractor must take corrective actions while they continue to participate in the program. A probationary period is defined as a temporary removal of a Participating Contractor from participation in the program.
2. If a Participating Contractor does not meet the corrective actions outlined in their probation notification, they will be subject to program expulsion. If a Participating Contractor receives a second probationary period in any twelve-month period, or if they are found to engage in misconduct, they will be subject to immediate program expulsion. The Participating Contractor will be notified, in writing, of their expulsion. The notification shall state the deficiencies found in their performance, the reason for expulsion, and potential steps (if any) the Participating Contractor could take to be reinstated. Reinstatement is never guaranteed and is left to the discretion of the Program.
3. If the Participating Contractor is placed under a disciplinary status within another Con Edison program, then they may automatically be placed on probation/suspension in the Small-Medium Business Program, until the issue in the other program is resolved. The Program will make the determination based on the reason for probation. Participating Contractors must inform the program of probation or expulsion from other Con Edison programs by emailing ConEd-SMBProgram@willdan.com.
4. Program expulsion is defined as the permanent removal of the Participating Contractor from the Program. All the privileges of Program participation will be revoked including but not limited to the use of all marketing materials associated with the Program.

1.4.4 Participating Contractor Training and Engagement

Participating Contractor training is critical to the success of the program. Before Participating Contractors begin work, they undergo training to ensure they are familiar with all aspects of the program. The first training session occurs when the Participating Contractor Application is signed, and the Participating Contractor has gathered the appropriate personnel to attend. This training is conducted by program staff and is focused on familiarizing Participating Contractors with the program, sales techniques and functionality of the energy assessment tool and SMART and ViewPoint database. The training may be done one on one with Participating Contractors and their staff or as part of a group training session with several other Participating Contractors. Online training videos are available in Box, a free platform used for file sharing in the program. The videos cover many topics and range

from program basics to specific items (e.g., adding line items to a work order, how to run different reports, etc.). This training option is more flexible since it requires less logistical coordination. Additionally, the videos can be reviewed at the Participating Contractor's convenience.

1.4.5 Tax Liability

SMB Participating Contractors are responsible for consulting with their accounting professional regarding tax liabilities because of participation in this energy efficiency programs. Willdan and Con Edison do not provide advisement or consultation on tax matters.

1.4.6 Use of Name and Press Release

Participating Contractors shall not use the name, seal, logo, and/or web page components, or any variation or abbreviation thereof, of Willdan Group, Inc., Con Edison or of any of their respective subsidiaries, parent companies or affiliates without the prior written consent of Willdan. Such consent shall be obtained for each individual use of the name, seal, logo and/or web page component in any advertisement, press release or publicity with reference to this Agreement, the Project or any product or service resulting from this Agreement. To be granted approval for Con Ed logo usage please adhere to the [Participating Contractor Badge Usage Guidelines](#) and contact your assigned Participating Contractor Manager for further instruction. Participating Contractors shall not prepare photographs, articles, or speeches about the existence of, scope of, or services to be performed under this Agreement without Willdan's prior written consent. Applications for approval must be submitted to Willdan in writing and detail the intended uses thereof. Notwithstanding the foregoing, Subconsultant may distribute a copy of this Agreement to any subsidiary, affiliate, agent, or Participating Contractor for purposes of performance hereunder.

1.5 Small-Medium Business Neighborhood Program

The Small-Medium Business Neighborhood Program, also called the Non-Wires Solutions (NWS) SMB Adder Program, allows Con Edison to maintain reliable electric service during peak periods of energy use by reducing customers' peak electric demand as an alternative to building costly new infrastructure and power lines. The SMB Neighborhood Program offers SMB Energy Efficiency Program participants additional incentive dollars to further reduce the cost to install eligible energy efficient upgrades.

Con Edison currently offers this program in targeted electric network areas in Brooklyn and Queens. There are two areas eligible for the Neighborhood Program in 2024 are BQDM (Brooklyn Queens Demand Management) and Jamaica, as shown by Figure 1. Information on the latest eligible territories can be confirmed on the program's [website](#).

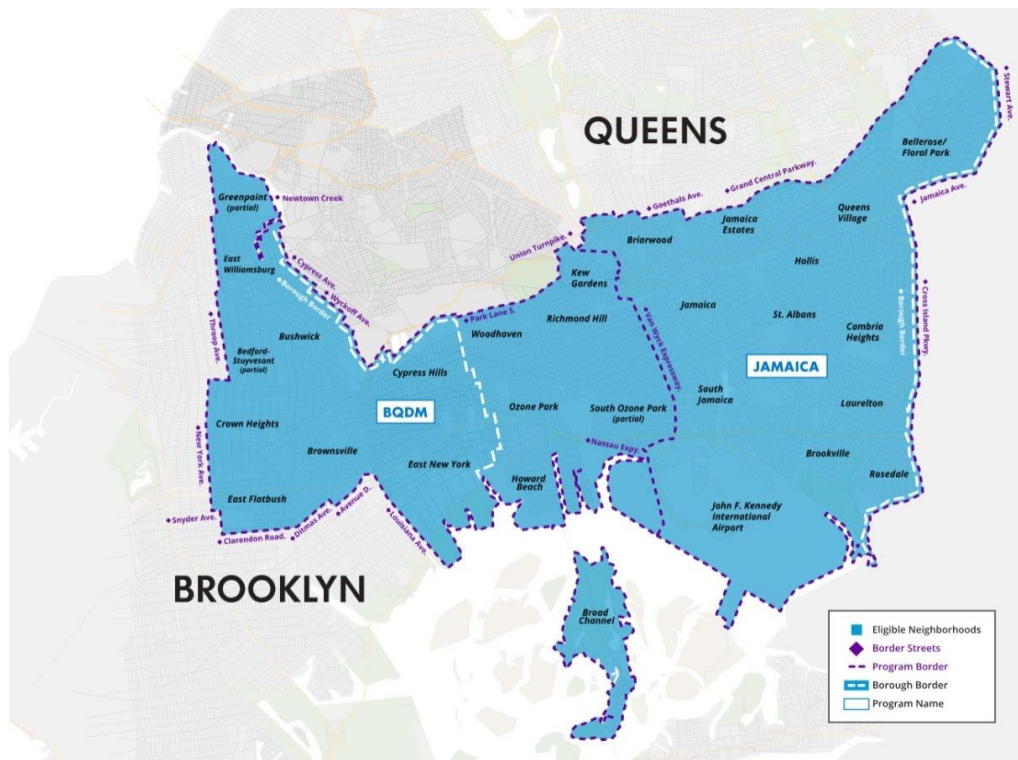


FIGURE 1: MAP OF SMB NEIGHBORHOOD PROGRAM GEOGRAPHIC AREA

1.5.1 Eligibility

Projects providing electric demand savings specifically to Small and Medium Business Customers may be eligible to receive an NWS SMB Adder incentive. These adder incentives are additional to the incentives provided by the broader SMB Program. The NWS SMB Adder may cover up to 100 percent of the cost of installing energy efficiency upgrades for eligible customers when combined the base SMB incentive. That means small-medium businesses and nonprofits can benefit from an immediate return on their energy saving investment boosting their bottom line.

A customer account is eligible if the account is located within a qualifying Neighborhood Program area and receives electric service from a qualifying electric network or area substation. NWS Adder incentives are only offered on measures for which a Neighborhood Program Adder is listed on the incentives list. Eligibility for the NWS SMB Adder will be determined at the same time as eligibility for the broader SMB Program.

Customers' accounts located in the following neighborhoods may be eligible for the Neighborhood Program:

- **Brooklyn:** Bushwick, Brownsville, Crown Heights, Cypress Hills, East Flatbush, East New York, East Williamsburg. Parts of Greenpoint and Bedford-Stuyvesant.
- **Queens:** Bellerose, Briarwood, Broad Channel, Brookville, Cambria Heights, Floral Park, Hollis, Howard Beach, Jamaica, Jamaica Estates, Kew Gardens, Laurelton, Ozone Park, Queens Village,

Richmond Hill, Rosedale, South Jamaica, St. Albans, Woodhaven. Parts of South Ozone Park, and JFK International Airport area.

1.5.2 Measures & Incentives

The incentives available through the NWS SMB Adder allow for the purchase and installation of more energy efficient equipment such as lighting, refrigeration, and HVAC replacements and upgrades.

Eligible measures and associated incentives are listed in the table below. All project measures following the NWS custom pathway must be pre-approved by the NWS Program Team to be considered for the NWS Adder incentive prior to commencing work. These measures may be subject to additional M&V activities, see Section 6: Measurement and Verification (M&V).

TABLE 2: NON-WIRES SOLUTIONS SMB ADDER MEASURES AND INCENTIVES

	Measure Type		Incentive Amount	Incentive Structure
Prescriptive	Lighting	Fixture Replacement	See 2024 Small-Medium Business Program Incentive Fact Sheet	
		LED Retrofit Kit		
		Lamp Replacement		
		Bi-Level		
		Display Case		
		Controls	920	\$/kW
	Refrigeration	Door Closer	120	\$/unit
		Gasket	920	\$/kW
		ECM Fan	920	\$/kW
		Refrigerated Display Case Replacement	1200	\$/kW
	HVAC	1200	\$/kW	
Custom	HVAC	1200	\$/kW	

1.6 Non-Pipeline Alternatives SMB Bonus

Con Edison offers NPA Bonus incentives to eligible Soundview gas customers located within the approximate bounds of the blue outlined area illustrated in Figure 2 below for measures which provide gas peak load reduction. Gas peak load reduction in this area achieved prior to November 1, 2025, will enable the company to avoid a gas system reinforcement project.

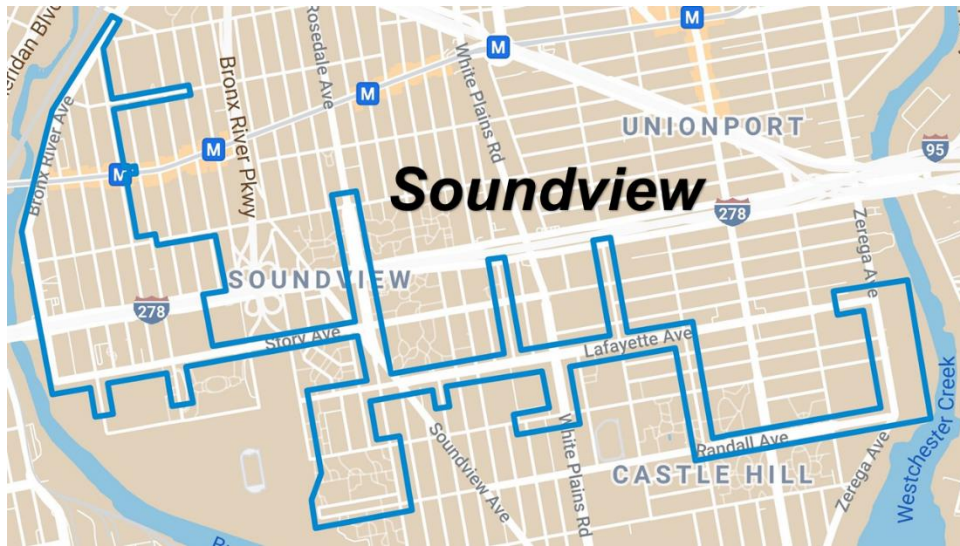


Figure 2: Map of the Soundview Geographic Area

1.6.1 Eligibility

Customers installing eligible Small Medium Business gas energy efficiency measures as described in the table below may receive adder incentives capped at 100% of total project cost, including all offers through the Small Medium Business Energy Efficiency program.

A customer signed NPA Bonus Program Incentive Offer letter will be mandatory to participate in the program with projects undergoing Measurement and Verification (M&V) activities on a case-by-case basis, with incentive payments not necessarily tied to the outcome of the M&V effort. Work should not begin until offer letter is signed, returned and Preliminary Offer Letter is issued.

It is important to highlight that the NPA Adder program follows the same path as the Small Medium Business Energy Efficiency Program with the added expectation that measurement and verification oversight may occur, either via desk review and/or onsite verification. These efforts provide sufficient information to verify expected load relief within the forecasted peak demand period. Con Edison may develop project-specific M&V plans as appropriate. A combination of desk reviews, verifications, ex-ante and ex-post metering, billing analyses, and sampling may be used in all projects.

Generally, both NPA and Small Medium Business program incentives may be paid once the requirements of the program(s) have been met and provided to the project payee in separate checks.

1.6.2 Measures & Incentives

TABLE 3: NON-PIPELINE ALTERNATIVES SMB ADDER MEASURES AND INCENTIVES

NPA Gas Bonus Incentives		
Measure Category	Measure Detail	NPA Bonus Incentive \$
Energy Efficiency Heating Measures	Pipe Insulation - Boiler Pipes	\$2 / Therm
	Steam Trap Replacement	\$2 / Therm
Building Envelope	Window - Film	\$2 / Therm
	Window Skins	
	Window Glazing	
	Air Sealing	
	Insulation - Opaque Shell	

2. Project Process

The following steps highlight the major milestones when processing the projects through the Program:

1. ACCOUNT ASSIGNMENT AND EQUIPMENT ELIGIBILITY

- All customer accounts must be assigned to the associated Participating Contractor in Willdan's [SMART](#) or ViewPoint database. This will allow for projects to be monitored throughout the life of the project.
- All equipment installed in the SMB program must be [UL](#) or [ETL](#) Certified. All lighting equipment also must be either [DLC](#) or [Energy Star® certified](#). All refrigeration equipment that comes into contact with food must also be [NSF](#) certified. All HVAC equipment must be [AHRI certified](#).
- All equipment specification sheets from the manufacturer must be provided for each project, along with proof of product certifications and original survey pictures of the units or fixtures.
- Measures receiving incentives through Con Edison's Instant Lighting Incentive Program cannot be incentivized through the SMB program.

2. PRELIMINARY INCENTIVE OFFER LETTER (PIOL)

- The incentives presented to a customer are valid for 60 days. If the customer does not move forward within 60 days, the offer is no longer valid and subject to new incentive rates, if any.
- For prescriptive lighting and refrigeration, the PIOL is issued once an audit reaches the Submitted phase in ViewPoint.T. For custom projects, the PIOL is issued during the pre-inspection phase.

3. PRE-INSPECTION

- A pre-inspection must be conducted for all projects before the installation can begin.
- If your project receives a failed inspection by Willdan or a third-party inspector appointed by Con Edison, you must alter your project's work scope according to the inspection recommendation within 3 business days after being notified, or you may work with the field inspector to revisit the site.
- If a physical inspection is not possible to conduct, under any adverse circumstances, Willdan, or third-party inspectors authorized by Con Edison, reserves the right to request the Participating Contractors to provide the equipment pictures and videos. In such cases, Participating Contractors should provide time, date, and geo-tagged pictures and/or videos of 100% of the existing equipment.

4. INSTALLATION SCHEDULE

- After a Participating Contractor receives a passed pre-inspection, the project is available for installation once it is put on [SMART](#) or ViewPoint schedule with a start date. Notify your assigned Participating Contractor Manager with the project install date before starting work.

5. PROJECT INSTALLATION

- SMB projects are expected to be installed within 90 days from the pre-inspection date. Any sold projects that are not installed within 184 days of the PIOL, will automatically be cancelled in [SMART](#) or ViewPoint. A new PIOL with the latest available incentives will need to be secured before any work can be done for any cancelled project

6. PROJECT COMPLETION

- All Participating Contractors are required to provide specification sheets and product certifications when submitting project completion paperwork. Upon project installation a Statement of Completion (SOC) can be used to Complete a work order in SMART or ViewPoint.
- Projects must be 100% installed according to pre-inspected work scope and all changes to work must be approved by the Participating Contractor Manager before installing the equipment.
- A Customer Authorization Form (CAF) can be signed by the customer once the post inspection has passed.
- Closeout paperwork must match submitted work scope that is uploaded to [SMART](#) or ViewPoint. Any discrepancies will cause a delay of project approval for billing to Con Edison.

7. POST-INSPECTION

- All projects will conduct a post-inspection (virtual/in-person) to verify counts, installed equipment and product certifications, prior to incentives being “Approved” for billing to Con Edison. All failed inspections by Willdan or Con Edison authorized third party inspector, must be cured within 3-days of notification from the field inspector.
- If a physical inspection is not possible to conduct, under any adverse circumstances, Willdan or third-party inspectors authorized by Con Edison reserves the right to request the Participating Contractors to provide the equipment pictures and videos. In such cases, Participating Contractors should provide time, date, and geo-tagged pictures and/or videos of 100% of the existing equipment.

8. RECEIVE INCENTIVE PAYMENTS

- Only projects that have received an “Approved” status are included on the incentive invoice. The SMB program submits incentive payment request for all “Approved” projects to Con Edison on the 15th and 30th of each month.
- Once SMB program submits payment request to Con Edison, a third-party reviewer, appointed by Con Edison reviews the documents for accuracy. Con Edison payment terms are 30 - 60 days. It includes the time needed to review for the third party, considering that the paperwork and energy savings calculations are correct. Additional time may be required if any revision is needed to the energy savings calculation.
- When Willdan receives incentives from Con Edison, the payments are processed for remittance to Participating Contractors within 10 - business days after receipt. Payments will be remitted according to the information provided on the W9 submitted with your SMB program application.

- Participating Contractors can view the invoice number and submission date that projects are filed under by looking at their 'Workspace' in [SMART](#) Or "Dashboard" in ViewPoint. For all inquiries about invoice states, send a request with an invoice number included to your Participating Contractor Manager for assistance.

9. PROGRAM COMMUNICATION

- All program communications should go directly to your assigned Contractor Manager. Email and phone communication must always remain professional.
- Program staff aim to respond to all email and phone communications within 24 hours. As a professional courtesy, please refrain from following up before that time.

3. Measure Standards

3.1 Measure Pathways

Measures can be implemented in one of two “Pathways”: (1) the Prescriptive Measures Pathway or (2) the Custom Measure Pathway (see below). See Appendix B for Early Replacement & Extended Life Replacement (ER/EL) guidelines.

3.1.1 Prescriptive Measure Pathways

Prescriptive incentives are offered on systems listed below found in the NYS Technical Resource Manual.

- Heating, Ventilation, and Air Conditioning (HVAC)
- Lighting and Lighting Controls
- Refrigeration
- Domestic Hot Water

3.1.2 Custom Measure Pathway

Projects can be processed through a Custom pathway for **HVAC and refrigeration if the measures being pursued are NOT** found in the NYS Technical Resource Manual. For a full this of custom measure pathways, please see the table below.

Custom measures require additional documentation to verify savings and might require additional measure and verification (M&V) studies.

The following table describes the categories of the Custom Measures Pathways:

TABLE 4: CUSTOM MEASURES PATHWAYS

Category 1	Unique measures/projects
Category 2	Measures including prescriptive measures not in the TRM
Category 3	Measures in TRM but used in a different application and/or setting
Category 4	Whole-building analysis

This document presents all energy conservation measures that are eligible for installation in Con Edison’s Small-Medium Business Program. Detailed descriptions are provided for all eligible measures, along with clear measure specification, warranty requirements and guidelines for installations. SMB Participating Contractors must adhere to the highest standards for quality and workmanship when installing energy conservation measures, and all equipment must be installed in accordance with industry and regulatory standards.

3.2 Lighting Measures

3.2.1 Light Emitting Diode (LED) Fixtures, Retrofit Kits and Lamps (NWS Eligible)

Measure Description

This section covers energy-efficient lighting equipment, such as LED lamps, LED retrofit kits and LED lighting fixtures. Improved lighting fixtures may include reflectors and other optical improvements to lighting fixtures. These technologies, taken separately or combined into an energy-efficient lighting fixture, provide the required illumination at reduced input power.

Effective Useful Life (EUL) Years: The EUL for overhead lighting is determined using a variety of user inputs, including operating hours.

3.2.2 Occupancy Sensors (NWS Eligible)

Measure Description

This measure covers the installation of occupancy sensors on interior lighting fixtures, such as wall mounted, knock-out and ceiling mounted occupancy sensors. Interior spaces are defined as any covered area not adequately lit during daylight hours by sunlight, thus requiring daytime operation of lighting. These systems save energy and peak demand by shutting off power to lighting fixtures when the space is unoccupied, or illumination is not required. They also save energy and demand by reducing power to lighting systems to correct for over-illumination due to excessive lamp output.

Effective Useful Life (EUL) Years: EUL will be determined based on the selection made in the "Configuration" dropdown. Selections as follows:

- **Integrated = EUL of 15**
- **Non-Integrated = EUL of 10**
- **Plug-Load = EUL of 8**

3.2.3 Bi-level lighting (NWS Eligible)

Measure Description

This measure addresses bi-level occupancy control of lighting in stairwells, corridors, parking garages and parking lots via the installation of controls on existing fixtures or installation of luminaires with integrated bi-level occupancy control. Bi-level occupancy control allows for the continuous lighting of spaces at code-mandated minimum illumination levels when the space is unoccupied and at higher light levels when occupied. This measure is only applicable as a retrofit or replacement in existing buildings because multi-level switching at defined lighting power densities and percentages of full connected load is mandated in many space types by federal, state, local and municipal codes, and standards, including but not limited to ECCCNY 2016.752, NYCECC 2016.753 and ASHRAE 90.1-2013.754

This measure is restricted to lighting in parking lots and in spaces that are required by fire and safety code to be illuminated continuously. The post-implementation case must comply with all provisions of

applicable fire, safety and construction code including but not limited to ECCCNY 2016755, NYCECC 2016756, IBC 2015757, IPMC 2015758, NFPA Life Safety Code 759 and NYC Title 27760.

Effective Useful Life (EUL) Years: 15

3.3 Refrigeration Measures

3.3.1 Air-Cooled Refrigeration Condenser

Measure Description

This measure covers the installation of efficient, close approach remote air-cooled refrigeration system condensers typically found in supermarkets.

Effective Useful Life (EUL) Years: 15

3.3.2 Refrigerated Case LED (NWS Eligible)

Measure Description

The SMB program promotes the replacement of T12 or T8 lamps and ballasts in refrigerated cases with LED lighting. The preferred retrofit strategy for refrigerated cases is the installation of LED strip fixtures, rather than a re-lamp/re-ballast using a tubular LED retrofit kit. While both strategies are acceptable, the LED strip fixture with external driver is the preferred option.

Approved Materials

LED Tubes: All LED tubes must meet the following criteria:

- LED tube and driver must be rated for use in refrigeration.
- The LED system must have an external driver and does NOT power the LED tube through only one of the existing fluorescent fixture sockets.

LED Strips: LED strip fixtures must give comparable light output to the fluorescent fixtures they are replacing.

Effective Useful Life (EUL) Years: The EUL for overhead lighting is determined using a variety of user inputs, including operating hours.

3.3.3 Refrigerated Night Case Covers

Measure Description

For open refrigerated cases, plastic or aluminum case covers can be used when the business is closed. These covers block the case opening to reduce cooling losses and conserve energy.

Effective Useful Life (EUL) Years: 5

3.3.4 Cooler and Freezer Door Gasket (NWS Eligible)

Measure Description

This measure covers the replacement of reach-in and walk-in refrigerated display case door gaskets that have become damaged due to normal use and/or the failure of anti-condensate heater elements. When damaged and/or missing, the warmer, more humid air present in the store will infiltrate the case increasing the refrigeration system load while often reducing the efficiency of the evaporator unit as a

result of frost accumulation. This measure applies to gaskets on both reach-in doors and the main door of walk-in units typical of supermarkets, convenience stores, and restaurants.

Effective Useful Life (EUL) Years: 4

3.3.5 Automatic Door Closer for Walk-In Cooler/Freezer (NWS Eligible)

Measure Description

This measure covers the installation of an auto-closer to the main insulated opaque door(s) of an existing walk-in cooler or freezer. Auto-closers on walk-in coolers and freezers can reduce the amount of time that doors are open, thereby reducing infiltration and refrigeration loads. The auto-closer must firmly close the door when it is within 1-inch of full closure. The walk-in door perimeter must be ≥ 16 ft

Effective Useful Life (EUL) Years: 8

3.3.6 Anti-Condensation Door Heater Control

Measure Description

This control is designed to regulate the average power applied to the door glass anti-condensation heating element. The control consists of three primary components: a control module, a combination temperature and relative humidity sensor, and an interconnecting cable.

Effective Useful Life (EUL) Years: 12

3.3.7 Electronically Commutated (EC) Motors for Walk-In Freezer/Cooler and Refrigerated Case (NWS Eligible)

Measure Description

EC motors can replace existing shaded pole or permanent split capacitor (PSC) motors. The EC motor can do the same amount of work as other motor types while using significantly less energy. EC motors are also known as brushless DC motors.

Effective Useful Life (EUL) Years: 15

3.3.8 Evaporator Fan Controls

Measure Description

Evaporator fan controls are applied to the evaporator fan motor on walk-in and reach-in cooler and freezer systems to reduce the speed at which the fan runs. The control only runs the fan at full speed when the unit's thermostat is calling for the compressor to operate, reducing the fan's speed shortly after the desired temperature is reached and the compressor is turned off. This reduces the motor's speed—typically from about 1,600 to 400 rpm. The lower speed is considered the bare minimum required to provide defrosting and prevent air in the cooler from stratifying into layers of higher and lower temperature.

Effective Useful Life (EUL) Years: 16

3.3.9 Vending Machine Controls

Measure Description

This measure controls the operations of vending machines so that the lighting and refrigeration systems in the machine are operating only when needed. The controls are typically a timer system that allows the machines to be turned on and reach desired temperatures during the hours of business operations but turned off during other times.

Effective Useful Life (EUL) Years: 5

3.3.10 Ice Maker Replacement

Measure Description

This measure covers the installation of ENERGY STAR® qualified ice makers as well as ice making head, remote condensing, and self-contained air-cooled ice makers. Water-cooled ice makers, ice and water dispensing systems, and air-cooled remote condensing units that are designed for connection to remote rack compressors are not eligible for this measure.

Effective Useful Life (EUL) Years: 10

3.3.11 Refrigerated Display Case Replacement (NWS Eligible)

Measure Description

This measure covers the installation of refrigerated display cases that comply with and exceed the minimum requirements set by the 2020 New York City Energy Conservation Code (NYCECC).

Effective Useful Life (EUL) Years: 15

3.4 HVAC Measures

3.4.1 Unitary Air Conditioner (NWS Eligible)

Measure Description

- One or more factory-made assemblies, which normally include a cooling coil, an air moving device, a compressor(s) and condenser combination, and may include a heating function as well.
- The functions of commercial and industrial Unitary Air Conditioners, either alone or in combination with a heating plant, are to provide air circulation, cooling, dehumidification, and may include the functions of heating, humidifying, outdoor air ventilation, and air cleaning.
- One or more factory-made assemblies, which normally include an indoor conditioning coil, an air moving device, compressor(s), and an outdoor coil(s), including means to provide a heating function and may or may not include a cooling function. Such equipment may be provided in one assembly by a single manufacturer (unitary), or separate assemblies designed to be used together (applied).
- Must be like-for-like conversion.
- The baseline efficiency for unitary and packaged air conditioning equipment is defined by International Energy Conservation Code and subsequently adopted by the Energy Conservation Construction Code of New York State (ECCCNYS), and the New York City Energy Conservation Code (NYCECC).
- **Effective Useful Life (EUL) Years: 15**

3.4.2 Variable Frequency Drive (VFD)

Measure Description

- This measure addresses variable frequency drives applied to fans and pumps in commercial and industrial buildings.
- Applications covered in this section are AHU supply and return fans, CHW pumps, cooling tower fans, condenser water pumps and heating hot water pumps.
- The recommended value for the coincidence factor is 0.8
- The baseline system characteristics are VAV system with inlet vane control on supply fans.
- The compliance system characteristics are VAV system with VFD control on supply fans.
- **Effective Useful Life (EUL) Years: 15**

3.4.3 Packaged Terminal Air Conditioner (NWS Eligible)

Measure Description

- Packaged Terminal Air Conditioner (PTAC) — a wall sleeve and a separate un-encased combination of heating and cooling assemblies specified by the manufacturer and intended for mounting through the wall. It includes refrigeration components, separable outdoor louvers, forced ventilation, and heating availability by purchaser's choice of, at least, hot water, steam, or electrical resistance heat.

- Note: Models designated as “cooling only” units need not include heating elements if the physical characteristics and arrangement of the refrigeration system are identical to those of models with heating availability.
- The HSPF is an estimate of the seasonal heating energy efficiency for an average US city. The COP is equal to the HSPF/3.412. Programs should use the manufacturers’ rated HSPF or COP until data can be developed that are more appropriate for NY climates.
- 185 “Caps” = The rated cooling capacity of the project in Btu/h. If the unit’s capacity is less than 7,000 Btu/h, use 7,000 Btu/h in the calculation. If the unit’s capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculations.”
- 186 Nonstandard size units must be factory labeled as follows: “MANUFACTURED FOR NONSTANDARD SIZE APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW STANDARD PROJECTS.” Nonstandard size efficiencies apply only to units being installed in existing sleeves having an external wall opening of less than 16 in. high or less than 42 in. wide and having a cross-sectional area less than 670 in.
- **Effective Useful Life (EUL) Years: 15**

3.4.4 Electronically Commutated Motors (ECMs) (NWS Eligible)

Measure Description

- Horsepower on motors must be less than or equal to one horsepower
- Electronically Controlled Brushless Permanent Magnet Motors, also commonly referred to as electronically commutated motors provide increased efficiency by using a micro-processor to obtain variable speed response and improve both efficiency and reliability by means of eliminating friction attributable to brushes.
- This is a substitute for existing permanent-split capacitor motors.
- This measure addresses the specific application of BPM motors on a retrofit basis for circulating fans of one Horsepower (HP) or less in HVAC air distribution equipment employing heating and/or cooling.
- **Effective Useful Life (EUL) Years: 15**

3.4.5 Wi-Fi Thermostat Replacement

Measure Description

- These Thermostats operate without behavioral learning capability applied to small commercial buildings with natural gas heat boilers or furnaces, electric heat pumps, electric resistance heating or central air conditioners.
- This measure does not apply to Wi-Fi thermostats installed as part of a Demand Response program.
- The recommended value for the coincidence factor is N/A.
- The baseline efficiency is an HVAC system using natural gas and electricity to provide space heating and cooling controlled by a non-Wi-Fi communicating programmable thermostat.
- The compliance efficiency is an HVAC system using natural gas and electricity to provide space heating and cooling controlled by a Wi-Fi communicating thermostat without behavioral learning capability. The thermostat shall not be installed as part of Demand Response program.

- **Operating Hours** HVAC system operating hours are embedded in the deemed savings values associated with Wi- Fi communicating thermostats, which are based on metering results.
- **Effective Useful Life (EUL) Years:** 11

3.4.6 Economizer Controls – Dual Enthalpy

Measure Description

- An air-side economizer is typically integrated into a central air handling system on packaged rooftop units serving small commercial buildings.
- With ducting for both intake and exhaust, the economizer brings outside air into a building to meet ventilation requirements. Mixing of outside air with exhaust air reduces the heating or cooling load requirements of the building.
- The recommended value for the coincidence factor is 0.8
- Baseline condition is assumed to be a rooftop unit with fixed outside air (no economizer)
- Dual enthalpy economizer installed on existing RTU and commissioned to ensure correct operation
- **Effective Useful Life (EUL) Years:** 10

3.4.7 Demand Controlled Ventilation (DCV)

Measure Description

- DCV systems have the capability to automatically reduce the outdoor air intake below design rate when occupancy of spaces served by the system is less than design occupancy
- This measure assumes DCV with CO₂ sensors will be added to an HVAC system with natural gas heating which previously had no DCV installed
- No available recommended coincidence factor
- The baseline system is a natural gas heated return air system with no DCV installed
- The compliance condition is a DCV system added to the return air system to supply air based on occupancy demands.
- **Operating Hours** HVAC system operating hours are embedded in the deemed savings values associated with DCV Systems, which are based on metering results.
- **Effective Useful Life (EUL) Years:** 15

3.4.8 Chiller – Air and Water Cooled (NWS Eligible)

Measure Description

- This measure applies to constant and variable speed electric air-cooled and water-cooled chillers in commercial buildings with built-up HVAC systems.
- The baseline efficiency for air- and water-cooled chillers are defined by the 2020 Energy Conservation Construction Code of New York State.
- NWS incentives for this measure are only available through the NWS custom pathway.
- **Effective Useful Life (EUL) Years:** 20

3.4.9 Chiller – Cooling Tower (NWS Eligible)

Measure Description

- This measure covers the installation of close approach cooling towers applied to water-cooled chillers used for space cooling.
- This measure addresses approach temperature only, which is defined as the difference between the cold water temperature (cooling tower outlet) and ambient wet bulb temperature.
- Changes in condenser water set point control strategies are not included.
- NWS incentives for this measure are only available through the NWS custom pathway.
- **Effective Useful Life (EUL) Years: 15**

3.4.10 Tune-Up – Chiller System

Measure Description

- Chiller system tune-ups are conducted to ensure equipment is operating at optimal performance and are performed as preventative maintenance, extending the life of the equipment. Tune-ups improve the efficiency and performance of chillers and are useful system checks to ensure maintenance is performed to keep the equipment operating.
- The baseline full load and IPLV kW/Ton values shall be based on actual manufacturers' catalog for the existing chiller, where available. If this information is unavailable, the efficiencies listed in the 2020 Energy Conservation Construction Code of New York State shall be used.
- **Effective Useful Life (EUL) Years: 5**

3.4.11 Motor Replacement

Measure Description

- This measure covers the installation of high efficiency, three-phase electric HVAC fan or pump motors of 200 hp or less in commercial and industrial applications.
- The baseline condition is a three-phase electric HVAC fan or pump motor of equivalent type, speed, and horsepower to the efficient case with minimally code compliant full-load efficiency established by the 2020 Energy Conservation Construction Code of New York State in accordance with federal energy conservation standards.
- The compliance condition is a three-phase electric HVAC fan or pump motor with a speed at or below that of the baseline motor and full-load efficiency exceeding the baseline NEMA premium full-load efficiency established by the baseline efficiencies indicated prior.
- **Effective Useful Life (EUL) Years: 15**

3.4.12 Energy Management System (EMS) – Guest Room

Measure Description

- This measure covers the installation of guest room energy management systems that control HVAC units for individual hotel and motel rooms based upon occupancy sensors, passive infrared or key cards that indicate room occupancy.
- Sensors controlled by networked front desk systems must also have occupancy sensors in each guest room.

- During unoccupied periods, the default setting for controlled units must differ from the operating set point by at least five degrees Fahrenheit or shut the unit fan and heating/cooling off completely.
- The existing (baseline) HVAC system must be manually controlled within each guest room.
- The baseline is a hotel or motel guest room with manual heating/cooling temperature set point with or without instruction to the housekeeping staff to manually setback the temperature.
- **Effective Useful Life (EUL) Years: 15**

3.4.13 Switch Reluctance Motors

Measure Description

- A High Rotor Pole Switch Reluctance Motor (HRSRM) is a type of brushless DC electric motor that runs by reluctance torque. Unlike other DC motor types, power is delivered to windings in the stator rather than the rotor.
- The HRSRM motor is comparable or more efficient than an RTU equipped with a variable speed drive supply fan. It results in fan-energy savings and can also include cooling savings if coupled with compressor or ventilation control, compared to a baseline scenario of constant-volume, constant-ventilation operation that is typical of single-zone, packaged HVAC units.
- The baseline is defined by a single-zone, packaged HVAC unit (with an existing functional integrated economizer) that lacks demand-controlled ventilation controls and lacks supply-fan speed control via a variable-frequency drive.
- **Effective Useful Life (EUL) Years: 12**

3.5 Heating Measures

3.5.1 Pipe Insulation

Measure Description

This measure covers the installation of fiberglass, rigid foam and cellular glass pipe insulation on uninsulated copper or steel piping with a nominal diameter between 0.75" and 4.00" in hot water and steam space heating and domestic hot water (DHW) distribution systems in residential buildings. Estimation of energy savings depends on the type and size of the pipe, type and thickness of the insulation, hot water temperature and ambient temperature.

This measure is applicable in retrofit applications only and must be installed by a qualified contractor complying with all relevant construction and safety codes and standards. Only insulation materials certified and rated in accordance with all pertinent ASTM thermal insulation standards may be installed under this measure. This measure is restricted to lengths of existing uninsulated piping in unconditioned spaces only.

Effective Useful Life (EUL) Years: 15

3.5.2 Boiler Clean and Tune

Measure Description

This measure covers tune-up of fuel-fired space heating boilers to improve seasonal heating efficiency. A tune-up involves the inspection, cleaning, and/or adjustment of boiler appurtenances per manufacturer's recommendations.

Effective Useful Life (EUL) Years: 5

3.5.3 Boiler Replacements (Gas to Gas Replacement or Oil to Firm Gas)

Measure Description

This measure covers the replacement of an existing boiler with a new boiler used for space heating or combined DHW. The baseline case shall be minimally code compliant equipment of the same type and capacity as in the efficient case, which shall be sized in accordance with federal, state, local and municipal codes and standards.

Effective Useful Life (EUL) Years: Varies based on boiler type

3.5.4 Steam Traps

Measure Description

This measure covers the repair or replacement of steam traps in low-pressure (≤ 15 psig) steam space heating applications on existing residential steam systems served by fuel-fired boilers. Steam systems distribute heat from boilers to satisfy space heating requirements. Steam distribution

systems contain steam traps, which are automatic valves that remove condensate, air, and other non-condensable gases, while preventing or minimizing steam loss. Steam traps that fail may allow excess steam to escape, thus increasing the amount of steam that must be generated to meet end use requirements.

This measure does not apply to municipal steam systems.

All traps are susceptible to wear and dirt contamination and require periodic inspection and maintenance to ensure correct operation. Faulty steam traps (leaking or blow-through) can be diagnosed with ultrasonic, temperature, or conductivity monitoring techniques. Regular steam trap maintenance and faulty steam trap replacement are steps that minimize steam production. There are three major types of steam traps that are applicable: 1) thermostatic (including float and thermostatic), 2) mechanical, and 3) thermodynamic.

Effective Useful Life (EUL) Years: 6

3.5.5 Thermostatic Radiator Valves

Measure Description

This measure covers the installation of thermostatic radiator valves (TRVs) on one-pipe steam radiators. TRVs are self-contained, self-operated valves that do not require ancillary power. They provide local control of room temperature by controlling the venting of air out of the radiator. TRVs are available for a variety of installation conditions utilizing either remote-mounted sensors or integral-mounted sensors by means of remote or integral set point adjustment. This measure is specifically a TRV in combination with an air vent installed at one or more radiators in a one-pipe steam space heating system.

TRVs demonstrate the greatest potential for energy savings and financial viability when overheating is exhibited in zones throughout the system and when combined with other steam system best practices improvements. Therefore, prioritization of this measure is recommended in zones that are overheated by 3°F or greater when installed as part of system inspection, balancing and commissioning including, but not limited to: burner tuning, boiler cleaning, recalibration of boiler control set points, inspection and repair/replacement of leaking inlets and air vents, installation of properly sized air vents, main line steam trap repair/replacement, recalibration of system operating pressure, insulation of bare steam lines and installation of radiator orifice plates in two-pipe systems.

Effective Useful Life (EUL) Years: 15

3.5.6 Ozone Generators

Measure Description

This measure covers the addition of an ozone (O₃) generator to on-site commercial-grade laundry equipment, such as those found in hotels, nursing homes, health fitness centers and correctional facilities. Ozone helps break down soils into smaller molecules allowing simple agitation to release them from fabrics. As a result, ozone is a good alternative to conventional

detergents and bleach and allows washing machines to clean effectively using significantly less hot water.

Effective Useful Life (EUL) Years: 10

3.5.7 Outdoor Reset Schedule

Measure Description

This measure covers the installation of outdoor temperature setback control for fuel-fired boilers. Outdoor temperature setback control adjusts the hot water setpoint temperature of the boiler in response to outdoor air temperature. This measure is only applicable to retrofit of existing boiler systems. One outdoor temperature setback measure may be applied to each boiler.

Effective Useful Life (EUL) Years: 5

3.5.8 Thermaxx Boiler Jackets (For Fire Tube Boilers)

Measure Description

Please review the Thermaxx training video located in the online Box Folder: Once all measurement videos are accumulated, an introduction to Thermaxx can be made or you can reach out directly to the manufacturer and tell them SMB sent you. Thermaxx will assist you with calculators and tools from there.

Effective Useful Life (EUL) Years: 15

3.5.9 Wi-Fi Thermostats

Measure Description

This measure covers Wi-Fi communicating thermostats applied to small commercial buildings with fossil fuel-fired heat boilers or furnaces, electric heat pumps, air conditioners, or electric resistance heating. These communicating thermostats allow set point adjustment via a remote application. To claim cooling savings, HVAC systems must have an air conditioner component or be a heat pump system.

Effective Useful Life (EUL) Years: 11

3.5.10 Guest Room EMS

Measure Description

This measure covers the installation of guest room energy management systems that control HVAC units for individual hotel and motel rooms based upon occupancy sensors, passive infrared or key cards that indicate room occupancy. Sensors controlled by a networked front desk system must also have the occupancy sensors in each guest room. During unoccupied periods, the default setting for controlled units must differ from the operating set point by at least 5 degrees Fahrenheit or shut the unit fan and heating/cooling off completely. The existing (baseline) HVAC system must be manually

controlled within each guest room. The control system may also be tied into other electric loads, such as lighting and plug loads, to shut them off when occupancy is not sensed however, energy savings of additional equipment is not considered under this measure.

Effective Useful Life (EUL) Years: 15

3.5.11 Advanced Boiler Controls

Measure Description

This measure covers the installation of advanced boiler control systems in commercial buildings with a boiler system. An advanced boiler control system is designed for the automated control of the boiler's cycling time based on both indoor and outdoor temperatures. These systems utilize both indoor and outdoor temperature sensors along with remote monitoring to provide a real-time operating and energy consumption data on the building. Utilizing this data, the controls optimize the cycling operation to better meet the demand for heat within the building.

These systems also have a built-in communication software capable of connecting building operators to service providers in order to read, change, monitor, and analyze the system settings as well as receive diagnostic alerts in regards to equipment malfunctions, poor sensor readings, combustion inefficiencies, and other corrective actions needed. These services may be included up to a certain term, after which a service agreement is required.

This measure is only applicable to the retrofit of existing boiler control systems. An advanced boiler control system must be an upgrade over existing minimally code-compliant boiler control systems. Minimally code-compliant boiler control systems include an outdoor temperature setback control that controls the boiler's cycling time based only on the outdoor temperature. This measure must include a minimum of 25% apartment sensors as well as temperature sensors for the stack, DHW supply, outdoor weather, heating water supply or return, and condensate (steam). The advanced boiler control system must allow multiple boilers to have staging capability.

Effective Useful Life (EUL) Years: 15

3.6 Hot Water Measures

3.6.1 Salon Valves

Measure Description:

This measure covers the retrofit of salon valves, often used at hair salons and at pet grooming facilities, with low-flow spray heads. Salon valves are handheld devices that are designed to wash and rinse hair. Retrofitting existing standard-flow salon valves in locations where service water is supplied by electric or natural gas fired hot water heaters with new low-flow heads reduces hot water consumption, which results in corresponding energy savings. DHW Heater Replacements and Upgrades

Effective Useful Life (EUL) Years: 10

3.7 Envelope Measures

3.7.1 Cool Roof

Measure Description

This measure covers the installation of roofing material with reduced solar absorptance. Cool roofs reduce heat gains and alleviate HVAC loads. Due to negative impacts on space heating, this measure is only applicable to buildings with air conditioning and gas heat only. This measure is only applicable to existing buildings constructed before 2012 that have not undergone roof improvements since 2012.

Effective Useful Life (EUL) Years: The EUL is determined using a variety of user inputs

3.7.2 Window Film

Measure Description

This measure covers the installation of window films with reduced solar heat gain coefficient applied to single pane clear glass. Windows with lower solar heat gain coefficient lead to less required cooling loads within a conditioned space. Due to negative impacts on space heating, this measure is only applicable to buildings with electric AC and gas heat only. This measure is applicable to uncovered, single pane clear glass windows in existing buildings only.

Effective Useful Life (EUL) Years: 10

3.7.3 Window Skins

Measure Description

The Con Ed SMB program offers 2 different types of window insulation panels that snap-on to windows:

- Type 1: increases thermal insulation at the window and
- Type 2: increases thermal insulation at the window and reduces solar heat gain at the window.

These measures allow a cost-effective way to improve the energy performance of windows at a fraction of the cost of window replacements. They keep the heat inside during the winter and outside during summer. The panels are mounted to the inside of the windowpane. No tools are required nor any construction.

Effective Useful Life (EUL) Years: The EUL is determined using a variety of user inputs

3.7.4 Window Glazing

Measure Description

This measure covers the installation of high efficiency windows with reduced thermal conductance and solar heat gain coefficient. For the purposes of this measure, a window is defined as an assembled unit consisting of a frame/sash component holding one or more pieces of glazing functioning to admit light

and/or air into an enclosure and designed for vertical installation in an external wall of a commercial building.

Effective Useful Life (EUL) Years: 20

3.7.5 Air Leakage Sealing

Measure Description

This measure covers methods of sealing air leakage paths to reduce the natural air infiltration rate of a building through the installation of products and repairs to the building envelope, including but not limited to, caulking, gasketing, and weather stripping. Sealing the thermal envelope reduces passive convective heat transfer between conditioned and unconditioned spaces or outside air, thereby reducing heating and cooling loads and improving occupant comfort. This measure is only applicable as a retrofit to existing buildings. This measure is not applicable to gut rehab/major renovation projects, which entail whole-building envelope alterations that trigger more stringent code provisions, limiting potential incremental savings.

The exterior envelope, as well as interior walls/partitions between conditioned and unconditioned spaces should be inspected and all gaps sealed. At a minimum, the following items shall be inspected, and sealing measures may be implemented based upon inspection results:

- Caulk and weather strip doors and windows that leak air
- Repair or replace doors leading from conditioned to unconditioned space
- Seal air leaks between unconditioned (including unconditioned basement and attics) and conditioned spaces, to include, but not limited to, plumbing, ducting, electrical wiring, wall top plates, chimneys, flues, and dropped soffits.
- Use foam sealant on larger gaps around windows, baseboards, and other places where air leakage, either infiltration or exfiltration may occur.

Effective Useful Life (EUL) Years: 15

3.7.6 Insulation – Opaque Shell

Measure Description

This measure covers the installation of wall and ceiling insulation to reduce the thermal conductance of the building envelope. Energy and demand savings are realized through reductions in the building’s heating and cooling loads. Existing (baseline) and installed (qualifying) shell R-values must be captured in order to estimate energy savings. This measure is not applicable to gut rehab/major renovation projects which entail whole-building envelope alterations that trigger more stringent code provisions, limiting potential incremental savings.

Effective Useful Life (EUL) Years: 30

4. Custom Measures

Other energy efficiency upgrades not listed in this document or the NYS TRM may be eligible for a performance-based incentive at the rate \$0.65/kWh. Final custom measure eligibility, savings and incentives are determined at the sole discretion of Con Edison. All custom projects must submit the following information to ConEd-SMBProgram@willdan.com :

- List of all proposed measures with related technical specifications and estimated savings.
- An unlocked spreadsheet (PDFs not accepted) with all equations, parameters, and assumption values used to calculate savings.
- All calculations must be clear and transparent utilizing standard engineering methodologies.
- Must list source of values.
- Complex energy modeling, including where trade-offs among disciplines are calculated, should use the following software including updates: DOE2.1E, eQuest, EnergyPlus, Trane TRACE, Carrier HAP, IES or OpenStudio.
- All other applicable data and supporting documentation used to calculate savings and/or assumptions.

5. Incentive Rates

Currently Con Edison offers incentives for the following systems:

- Lighting Systems
- HVAC Systems
- Refrigeration Systems
- Gas Measures

[Please Click this Link to View
The Incentive Rates](#)

6. Measurement and Verification (M&V)

Measurement and Verification (M&V) may be required for projects in which the technology or project has a high degree of savings uncertainty, is an unknown or unique application, or is comprised of a complex group of measures. The overall intent of M&V is to mitigate risk to the program by reporting more accurate savings through metering and data collection. It involves a more robust approach to measuring the energy conservation measure and its application. Project-specific M&V may be triggered when a project meets any one of the following criteria:

- Projects with high savings, as defined by the Con Edison team
- Projects proposing to install new technologies
- Unique, complex, or risk applications as determined by the Con Edison team

The M&V approach will utilize various methods to obtain insights into energy conservation measures (ECMs), assess their application as well as their impact on savings. The International Performance Measurement and Verification Protocol (IPMVP) provides options for assessment of the SMB M&V Projects.

TABLE 5: IPMVP ASSESSMENT OPTIONS

IPMVP	Description	Definition	Savings Calculations
A	Retrofit – Isolation: Key Parameter Measurement	Measurement of a key parameter that defines energy consumption and demand of the ECM’s affected system.	Calculation with baseline period energy and reporting period energy from measurements of key parameters and estimated value
B	Retrofit- Isolation: All Parameter Measurement	Field measurement of the energy consumption or demand of related variables of the ECM affected system.	Calculation with baseline and reporting period energy or engineering computations using measurements of proxies of energy consumption and demand with routine or non-routine adjustment.
C	Whole Facility	Utility level measurement of whole facility consumption and demand.	Analysis of whole building baseline and reporting period meter data including routine and non- routine adjustments as required.
D	Calibrated Simulation	Simulation of energy consumption and demand with utility billing data.	Energy consumption and demand model calibrated with utility billing data.

The standard M&V process entails 3 difference reviews that take place throughout a project's lifecycle including:

1. **M&V Plan:** This M&V plan outlines the necessary steps to perform the M&V on a project and includes a timeline for all milestones, the equipment necessary to acquire all data, a contingency plan if data is incorrect or unavailable, and other project specific material. After Con Edison review of the M&V plan is complete, the plan is provided to both the customer and the participating contractor, as applicable, for signatures. Once the M&V Plan is signed off, the Con Edison M&V team will proceed with the Pre-Installation Site Visit.
2. **Pre-Installation M&V Report:** The purpose of the Pre-Installation Site Visit and Pre-Installation M&V Report is to verify the existing conditions of the site, conduct interviews with site personnel on equipment and schedules, and determine what metering or measuring equipment will be necessary to capture all relevant energy data. After the Pre-Installation Site Visit is performed, Con Edison will provide a Pre-Installation Report detailing all site visit findings and revise the energy savings estimates based on these findings. In cases where logging and metering equipment have been deployed to determine the project baseline, a second site visit at the end of the baseline measuring period may be needed to remove the equipment. To adequately verify baseline conditions, project construction must not begin until after the associated M&V pre-installation site visit and data collection are completed
3. **Post Installation Final M&V Report:** Once the proposed equipment is installed, Con Edison will perform a post-installation site visit to verify equipment installation, ensure all phases of the project are complete and active, and collect any energy use data for the site. In certain cases, logging and metering equipment may be deployed to capture the post- installation energy use data. If metering is deployed, a second site visit will be performed at the end of the post-installation measuring period to remove the metering equipment. Once post-installation data has been collected and analyzed, Con Edison will prepare a Post- Installation Final-Report which will contain the verified savings for the measure(s) installed.

For projects subject to M&V, the incentive and savings will be based on the results of the desk engineering analysis conducted by the Con Edison engineering team.

7. Quality Assurance and Quality Control (QAQC)

In addition to Con Edison's routine process, a small percentage of projects will be selected for QAQC activities, such as a secondary inspection or an additional engineering review. The goal of QAQC is to protect the program team against fraud and provide actionable insights for program improvement and efficiency. QAQC is performed by a third-party contractor on behalf of Con Edison. Project may be selected based on the following criteria: project savings/incentive sizes, geographic location, measure type or participating contractors' performance. QAQC activities are not optional, and the participant is expected to cooperate fully with any effort by Con Edison or its contractors and subcontractors to make follow-up visits to customer facilities, provide supporting documentation, and other requests in support of this effort. If a project is selected for QAQC, a representative from the third-party contractor will reach out to a customer or contractor on behalf of Con Edison. If you have any questions about the QAQC process or are concerned about a project being delayed or behind schedule, please contact us at ConEd-SMBProgram@willdan.com. Neither QAQC nor their contractors can resolve a timing issue.

Appendix A: Program Application

[Please Click this Link to View
The Program Application](#)

Appendix B: Early Replacement & Extended Life Replacement Measures Guidelines - Small-Medium Business (SMB) Program

Project Eligibility:

Early Replacements [ER]

The following is the minimum information required for energy conservation measures (ECM's) related to Early Replacement of equipment.

For a measure to be eligible for Early Replacement incentives:

1. At the time of application, the existing equipment cannot exceed its Effective Useful Life (EUL) and should have at least 1 year of its EUL remaining.
2. The existing equipment must be fully functioning.

Extended Life [EL] Replacements

The following is the minimum information required for energy conservation measures (ECMs) related to Extended Life Replacements.

For a measure to be eligible for Extended Life equipment incentives:

1. At the time of application, existing equipment must exceed its Effective Useful Life (EUL) by at least 25%, **OR** Existing equipment's energy consumption must exceed that of the new high efficiency model by at least 35% for chillers, and 20% for all other measures to do the same amount of work.
2. There must be a history of significant repair or replacement with existing equipment.
3. The existing equipment must be fully functioning.
4. Evidence that the "next repair would have been less expensive than replacing the equipment." The existing equipment must not be at burnout stage

Required Project Documentation:

Summary: All projects pursuing Early Replacement or Extended Life Replacement incentives require the submission of the following documentation:

For Existing Equipment:

1. **Inventory of Existing Equipment**
2. **Proof of Age of the Existing Equipment**
3. **Proof of Equipment functionality along with a Combustion Test performed at Low & High Fire.**
4. **Maintenance Records and records of historical of Repair Costs** for past 18 to 24 months.**

For Proposed Equipment:

5. **A Scope of Work [SOW]**
6. **A Cost Proposal**
7. **An Engineering Analysis**

****Only required for Extended Life [EL] replacements; not Early Replacements [ER].**

For Existing Equipment:

1. Inventory of Existing Equipment:

- a. Equipment Specs of existing units including make, model number, and sequence of operation
- b. Cooling and/or heating capacity of the existing equipment and its energy efficiency rating
 - i. Supported by manufacturer's equipment data sheets or industry standard performance testing results

2. Proof of Age of the Existing Equipment

- a. Supported by original invoice, bill of sale, construction permit, service log, or nameplate date

Note: *In cases where the installation date of the existing equipment cannot be determined, regardless of manufactured date, the Energy Use Rule per NYS TRM 6.1 Appendix N ("Special Circumstance") can be applied but will require verification that the existing equipment of most types consumes at least 20% more energy than the new high efficiency equipment to do the same amount of work, and at least 35% more for chillers. Whenever possible, this verification should be accompanied by a manufactured date or nameplate date.*

3. Proof of Equipment Functionality

- a. Supported by program pre-inspection verification, BMS trend data, or equipment service log

4. Maintenance records and historical repair Costs, including any component replacement, for the past 18 to 24 months

- a. Supported by invoices, proof of payment, equipment service log

Note: *In cases where the customer pursuing the replacements has not been operating in the facility in question for the required 18 to 24 months, or have another justifiable explanation for why they are not able to provide the required proof of cost repairs for the requisite time horizon, exceptions can be considered on a case-by-case basis, at the discretion of the Program Management Staff*

For Proposed Equipment:

5. A Scope of Work [SOW]

- a. Must contain all equipment for the proposed measure(s) and sequence of operation(s) for the proposed system(s)
- b. Cooling/heating capacity of the new equipment and its efficiency rating, if applicable
 - i. Supported by manufacturer's equipment data sheets or AHRI certificate

6. A Cost Proposal

- a. Must contain cost proposals for the proposed energy efficient equipment; and
- b. Must contain cost proposals for the code-compliant equipment
 - i. All cost proposals must include make and model number of the proposed equipment, on company letterhead, as provided to the customer
 - ii. All cost proposal must provide to total costs associated with each measure that incentives are being pursued for, including the labor and material costs

7. An Engineering Analysis

- a. Estimated energy consumption of the existing equipment,
- b. Estimated energy consumption of the code compliant equipment and
- c. Estimated energy consumption of the new proposed energy efficient equipment
 - i. Each engineering analysis must include both summer peak kW load and annual kWh usage, or the annual gas usage (in therms) for gas projects.
 - ii. Each analysis must be provided in a datasheet format such as Excel with savings calculations and algorithms. Calculations in PDF format are not acceptable.

A clear and detailed engineering analysis showing energy consumption before the implementation of the proposed ECM's and after the implementation of the proposed ECM's, including:

- a) All calculations must be provided in Microsoft Excel format. **PDFs are not accepted.** "Copy and Pasted" analyses in Microsoft Excel will not be accepted. Please provide worksheets containing formulas and links.
- b) All calculations must have a summary table depicting kWh, kW, Therms and Cost: Material, Labor, Total. Projects without cost displayed will delay the review process.
- c) Calculations must clearly define the baseline energy usage and the proposed energy usage.
 - a. Multiple measures to the same system should be interactive.
 - b. If the measure is a unit replacement that is not defined in the NYS TRM, New York State Energy Code must be used as baseline. Please refer to Extended Life/ Early Replacement if you meet the requirements for using existing equipment as baseline.

- d) All assumptions in the analysis must be cited for reference
 - a. If the assumption is based on trend data, please provide the trend data as well.
 - b. Assumptions without evidence will delay the review process.
- e) It is recommended to provide an explanation of the calculations used in the analysis.
- f) Any project that has peak demand savings should meet the NYISO peak coincident hours as defined in the NYS TRM. According to the NYISO, system peaks generally occur during the hour ending at 5 pm on the hottest non-holiday weekday. The peak day can occur in June, July, or August, depending on the weather.

NOTE: It is recommended to keep calculations simple and direct as overly extensive calculations and algorithms will cause review delays. In some cases, baseline performance data may be adjusted by Willdan to reflect current NYS Code compliant performance. Willdan reserves the right to request clarification of submitted calculations. Willdan also reserves the right to adjust incentive calculations based on standard engineering methodology and equipment/building performance.