



Estes Park
Light and Power

Fort Collins
Utilities

Longmont
Power &
Communications

Loveland
Water and
Power

Platte River
Power Authority

Efficiency Works Business Programs Guide 2019

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EFFICIENCY WORKS BUSINESS OVERVIEW

Efficiency Works is a collaboration of common efficiency programs between the utilities of Estes Park Light & Power, Fort Collins Utilities, Longmont Power & Communications, Loveland Water and Power and Platte River Power Authority. Efficiency Works can help improve the comfort of your home or business, save money on your utility bills and support environmental stewardship.

The Efficiency Works Business programs helps identify and implement cost-effective efficiency upgrades for new or existing buildings. Offering the same quality product or service while cutting bottom-line costs is a win-win for any business. The Efficiency Works Business programs can help; we can provide a [free facility assessment](#), connect you with a contractor to perform efficiency upgrades, and best of all - provide rebates for any upgrade that saves energy and/or water. Efficiency Works staff can provide as much or as little help as you want during the efficiency upgrade process. Our goal is to make your project a success.

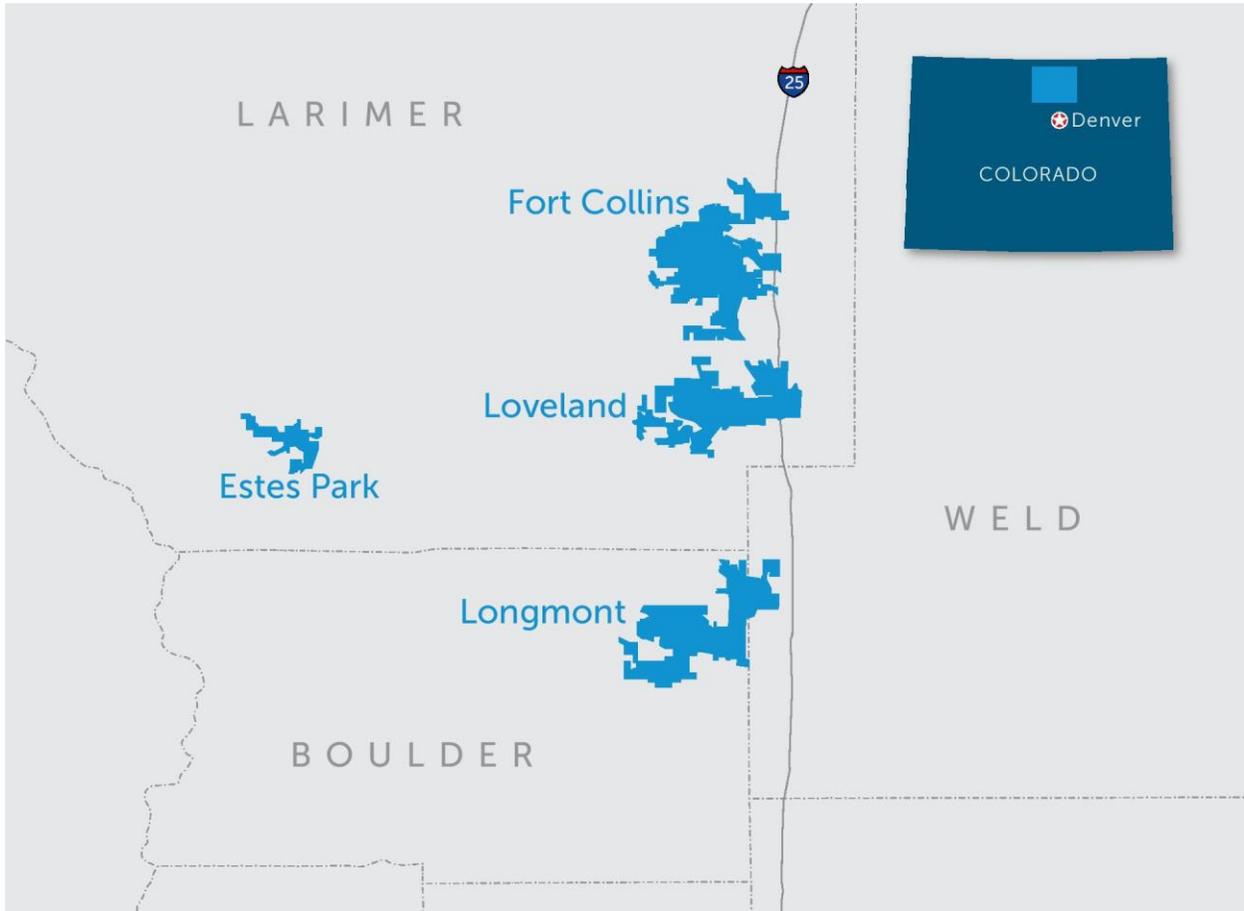
CONTACT INFORMATION

For more information, clarification, or to speak to a member of the Efficiency Works Business Team:

- Visit us at www.EfficiencyWorks.Org
- Email us at Business@EfficiencyWorks.org
- Call us at **970-229-4823**

UTILITY SERVICE TERRITORY

Efficiency Works Business is the efficiency program for commercial customers of Estes Park Light & Power, Fort Collins Utilities, Longmont Power & Communications and Loveland Water and Power (i.e. the owner communities served by Platte River Power Authority), as illustrated below.



For a more detailed and interactive map, visit the [Efficiency Works](#) website to access our [Google Map](#).

GENERAL PARTICIPATION REQUIREMENTS

ELIGIBILITY

A project is eligible to participate in Efficiency Works Business program if all of the following are true. For questions about site eligibility, contact Efficiency Works Business at 970-229-4823.

- Project site is served by one of the four following electric utilities: Town of Estes Park Light & Power, Fort Collins Utilities, Longmont Power & Communications, Loveland Water & Power. If applying for water efficiency rebates, project site water service must be served by Fort Collins Utilities.
- Replacing working existing equipment with new energy or water-efficient equipment or installing new energy or water efficient equipment in a new or existing commercial building or site.
- All equipment meets the specifications required to receive a rebate.
- Rebate must be expected to be higher than \$50 for all projects.
- Rebates cannot exceed 100% of the project cost.

TERMS AND CONDITIONS

By submitting an Efficiency Works Business application, the participant acknowledges that they have read, understand and agree to be bound by all requirements, terms, and conditions of the Efficiency Works Program including, but not limited to, the Terms and Conditions set forth on the Sign Request for Payment pages of the Rebate Application.

COST EFFECTIVENESS

To qualify for rebates, energy and water efficiency measures must be cost effective as solely determined by Efficiency Works. Efficiency Works reserves the right to recalculate pre-approved project rebates (increased or decreased) to reflect changes in project scope of work or other factors.

- Equipment is eligible for rebate based on the final commissioning or installation date not the purchased date. Projects that are submitted for preapproval and preapproved will be governed by the rules of the program at the time of preapproval.
- Efficiency Works reserves the right to adjust rebates in the future as market conditions change.
- Efficiency Works reserves the right to verify sales receipts and cancelled checks.

ON-SITE VERIFICATION

Efficiency Works reserves the right to verify project installations on-site prior, during, or after the installation of the project.

Basic verification guidelines include:

- Efficiency Works will inspect at their discretion based on the project scope, estimated rebate and savings to be achieved, and random sampling. Efficiency Works will coordinate with customer and/or contractor for site access as needed.
- Efficiency Works will be responsible for verifying project implementation, start-up or commissioning details, and other verification activities, including site inspections. Participants and their program partners may be required to provide supporting documentation, information or materials and access to plant and equipment operations to complete the verification process.

On-site verification is defined as an on-site inspection to verify that a project was completed as intended including: all steps were taken to complete installation, equipment was installed as invoiced, assumptions were put in practice, calibrations were completed, etc. Verifications are completed prior to the issuance of a rebate check to the participant; therefore, savings analysis can be adjusted prior to the issuance of the check if changes in scope are observed.

BUSINESS PROGRAMS

1. REBATE PROGRAM

The Efficiency Works Business Rebate Program provides rebates for virtually anything that saves electricity. A description and additional requirements for each of the offered prescriptive rebates is provided in this section. If a prescriptive rebate is not available for your particular technology or project, please refer to the [custom rebate](#) section below. Efficiency Works will review qualifying prescriptive program equipment periodically and may adjust measures and eligibility requirements in the future as market conditions and equipment standards change.

1.1. FREQUENTLY ASKED QUESTIONS

Q: Do I have to use a listed contractor?

A: No, anyone can take advantage of the Efficiency Works Business Rebate program. Efficiency projects can be completed in-house or contracted to a third party. Listed contractors have demonstrated program knowledge through previous project completion and when possible have been rated by customers based on their previous work in the Efficiency Works Business programs.

Q: Do I need to get pre-approval?

A: If your estimated rebate is greater than \$1,000, pre-approval is required. In addition, all VFD and custom projects must also be pre-approved. For rebates sums between the minimum \$50 threshold and \$1,000 no pre-approval is required. The current pre-approval process is in place, so eligibility, energy savings, and rebate amounts can be clarified, and funding can be reserved resulting in mutual benefit for the customer and the Efficiency Works Business Programs. Re-approval from Efficiency Works is required if the final rebate amount is expected to exceed more than 10% of the pre-approved rebate amount, or equal to 110% of the preapproved rebate.

Q: How long does it take to get a project pre-approval?

A: A response to project pre-approval typically occurs within two business days. If the total project rebate exceeds \$10,000 and requires energy advising, gets selected for a random pre-inspection, or comes at a time of high demand pre-approval evaluation may be delayed.

Q: How long does it take to get the rebate?

A: Rebate payments are typically processed and paid within 4-6 weeks of the program receiving the all of the final paperwork. In some cases, post-inspection may be required prior to the release of the rebate payment.

Q: Can I get the rebate before the project is completed?

A: No, in the interest of claiming accurate energy savings rebate payment cannot be made before the project is confirmed as completed. All documents required before payment is disbursed are listed on Page 12 of the [Efficiency Works Business Rebate Application](#).

Q: What qualifies for a rebate?

A: Qualifying energy efficiency equipment is kept up to date on the [Efficiency Works Business Rebate Application](#). On the application equipment is sorted by type and listed in drop down menus. If you have a question about an unlisted energy efficiency upgrade or a custom project, please email Business@EfficiencyWorks.org with the equipment and project details.

Q: Who is eligible for a rebate?

A: To qualify for a rebate through Efficiency Works Business programs one must be an commercial electric customer of one of the following: Town of Estes Park Light and Power Department, Fort Collins Utilities, Longmont Power and Communications, or Loveland Water and Power. Water efficiency rebates are available for Fort Collins Utilities water customers only.

Q: Can my contractor be paid the rebate?

A: Rebate payment can be sent to either the contractor or the customer upon completion. It is the responsibility of the customer and contractor to work out the details of rebate payment prior to any work being performed. If a customer decides to have the rebate paid to the contractor, the amount of the rebate must be shown as a discount on the final project invoice.

Q: Does Efficiency Works guarantee the installation quality?

A: Efficiency Works does not guarantee the accuracy of information or quality of work provided by any contractor, listed or otherwise.

1.2. REBATE APPLICATION PROCESS



1. Identify Project

- Determine project eligibility. The project site must be an electric customer of Town of Estes Park Light & Power Department, Fort Collins Utilities, Longmont Power & Communications, or Loveland Water and Power. For water rebates, the customer must be a water customer of Fort Collins Utilities (i.e. water rebates are not available in the other cities)
- Incentive funds are subject to change without notice. Check the announcements on www.EfficiencyWorks.Org for recent program changes or contact Efficiency Works for more information.
- Download the most recent version of the Rebate application from www.EfficiencyWorks.Org
- Contact a vendor, contractor, consultant, engineer, Utility Representative, or Efficiency Works for help with this application if needed.

2. Submit for Pre-Approval

- Verify site and equipment eligibility
- Submit a Rebate Application, along with project proposal showing eligible equipment via email to business@efficiencyworks.org
- Rebate requests will be reviewed on a first-come, first-served basis until all rebate funding has been committed

3. Get Pre-Approval. If the project meets program rules, a pre-approval code will be issued reserving rebate funds.

- Energy advising, or a facility assessment is required prior to pre-approval if the total rebate is \$10,000 or more.
- Projects are selected for pre-inspection on a random basis.
- Program rebate funds will be reserved for up to 45 days beyond the project completion date listed in the approved Efficiency Works Rebate Application. Extension of the project completion date may be granted, pending available

- budgets and Efficiency Works staff approval. Extension requests shall be submitted in writing and approvals, if offer, will be provided in writing
4. Complete Project. Install products per program requirements and all applicable building and land use codes.
 - Document and inform Efficiency Works of any changes to the product installed or project scope – this may affect the final rebate amount
 5. Submit Final Paperwork
 - Documents required to be submitted for rebate payment are listed on Page 12 of the Rebate Application
 6. Receive Rebate Payment
 - Rebate payment can be sent to the customer or contractor completing the project
 - Rebate Applications are typically processed and paid within 4-6 weeks of submittal
 - Post-project inspections may be required prior to release of rebate payment

1.3. REBATE AVAILABILITY

Rebate requests will be reviewed on a first-come, first-served basis until all rebate funding has been committed. Upon receipt of an Efficiency Works Business Rebate Application, program staff will review the project for eligibility and, if eligible, the participant will be notified by email of project preapproval and receive an approval code. Program rebate funds will be reserved for up to 45 days beyond the project completion date listed in the approved Efficiency Works Rebate Application. Extension of the project completion date may be granted, pending available budgets and Efficiency Works staff approval. Extension requests shall be submitted in writing and approvals, if offered, will be provided in writing.

Rebate caps

Each customer may be limited by an annual cap. The cap may be waived at the discretion of Efficiency Works, depending on funding availability and other factors listed below.

Current rebate caps are:

- 75% of total project cost for custom projects, 100% of project cost for all other projects
- \$5,000 per customer per calendar year for water rebates
- \$50,000 per customer site per calendar year
- \$100,000 per customer per calendar year (across multiple sites/campuses)

For example, a single building site may not exceed \$50,000 per calendar year in rebates. A customer with multiple sites/buildings can receive up to \$50,000 per building/site, but not more than \$100,000 across all buildings/sites per calendar year.

Cap exception criteria:

- Rebate cannot exceed 75% of total project cost
- Simple payback cannot be less than 1 year after the rebate is applied
- Projects may not qualify if the simple payback is greater than 15 years or longer than the product's expected life
- A cost to conserve energy test must be passed
- Project must save a minimum of 150,000 annual kWhs

1.4. EFFICIENCY WORKS BUSINESS APPLICATION INSTRUCTIONS

The most up to date application should always be downloaded from the [Efficiency Works website](#), as updates are made frequently. The application is an Excel workbook and therefore Excel is needed to properly view the application.

How to use the Application:

1. The application has a page (worksheet) listed in tabs at the bottom for each type of rebate (e.g. lighting, grocery, envelope, etc.).
2. Enter the customer information and general project information on Page 1.
3. Fill out the rebate page for each type of project you are doing. Click on the worksheet tabs below (for example, lighting retrofits are on Page 2).
4. Determine the total project incentive and enter the project cost information on Page 11.
5. Note that grey cells are calculations and cannot be overridden. Cells below a blue header need to be filled in.

1.5. LIGHTING EFFICIENCY

Only Light Emitting Diode (LED) lighting upgrades are eligible for rebates. Rebates for upgrading existing lighting systems are calculated in the “Lighting” section of the application. Lighting upgrades for new construction or major renovations are calculated in the Efficiency Works Business New Construction rebate application.

1.5.1. EXISTING BUILDINGS

Rebate categories are divided to reflect the difference in upgrading fluorescent fixtures to LED versus upgrading HID fixtures to LED. Lighting upgrades that incorporate new automatic control systems are eligible for additional incentives. Automatic lighting controls eligible for rebates must improve upon the existing lighting control systems.

For current lighting rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Additional Lighting Rebate Considerations:

- Verification is required if you are claiming fixture wattages that are different than the wattage values automatically populated by the Efficiency Works application; including, but not limited to, incandescent, exit signs, 40W T12 lamp and magnetic ballast input watts, T8 lamps and electronic ballast combined input watt, etc. Verification of equipment and input wattages may be performed by submitting pictures of existing or new equipment showing amperage, volts and/or watts, lamp types, cut sheets, etc.
- All LED products used must be either listed as ENERGY STAR and/or Design Lights Consortium (DLC) qualified. Refer to www.energystar.gov or www.designlights.org for the most updated list.
- These items do NOT qualify for lighting rebates:
 - The installation of high efficiency fluorescent or CFL lighting.
 - The replacement of neon outdoor signs to LED signs. Fluorescent signs (e.g. monument or backlit signs) are still eligible for a rebate when upgraded to LED technology.
- All exterior lighting must be full cut-off and must comply with local codes and land planning requirements based on the jurisdiction they are installed.
- It is recommended to consider the illuminance levels (foot candle) of all new lighting installed. A reference to the recommended illuminance levels as determined by the Illuminating Engineering Society of North America (IESNA) Lighting Handbook is in the reference section of the program guide.

1.5.2. NEW CONSTRUCTION AND MAJOR RENNOVATON

New construction and major renovation interior lighting projects are not eligible for the retrofit rebates described above. Instead, they fall into the [New Construction Lighting](#) rebate category. New Construction exterior lighting is not eligible for rebates. A major renovation as defined in the Efficiency Works Business Program is as follows:

Major Renovation Definition

For the purposes of the Efficiency Works program, a major renovation includes at least three of the five criteria below:

1. The business is undertaking the project primarily due to a change in the use of the space, which requires changes to the lighting or HVAC systems. For example, warehouse space is being converted to office space.
2. The space being renovated will be unoccupied for 30 days or more.
3. Existing light fixtures are being removed and a totally new light scheme with rewiring as the result.
4. The project requires a construction permit.

5. First time install of electric operated equipment in which higher efficient models are available.

1.6. COOLING EFFICIENCY

All heating, ventilation, and air conditioning (HVAC) equipment and controls that are eligible for rebates are listed below; see below for more descriptions on these measures. Incentives for high efficiency DX Air Conditioning are not available due to the collaboration efforts of the local utilities with regional AC distributors and manufactures to help provide high efficiency air-conditioning units at the lowest cost possible to all commercial customers. Contact Efficiency Works for minimum efficiency recommendations.

For current cooling rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Advanced Roof Top Unit Controller (for existing RTUs)

After market controllers that utilize variable frequency drive supply fan control combined with an integrated economizer and demand ventilation controls. See the rebate application for an approved list of controllers.

Evaporative Condensing

Evaporative condensing is a technology that pre-cools the air entering the condenser of a rooftop unit or air-cooled chiller with mist or an evaporative media. This lowers the entering air temperature which lowers the refrigerant head pressure, thus reducing the work the compressor has to do and saving energy. This is a great summer peak reduction measure and achieves energy savings at the same time. We have worked with manufactures of this technology and Xcel energy's savings estimates to develop our own savings estimates and rebate.

Advanced Evaporative Cooling

This rebate applies to direct, direct/indirect, or indirect evaporative coolers. Equipment must guarantee air quality against bacteria, mold, and etc. Continuous 'bleed' systems for sediment or scale prevention do not qualify. Contractor is required to either include a maintenance plan or teach the operator the proper winterization, startup, and maintenance. Similar to evaporative condensing, the (direct) evaporative cooling methodology pre-cools outside air using only the evaporative effect to cool. Indirect evaporative cooling also qualifies for this rebate and is a method of using water and exchanging the cooling energy to the entering outside air without direct contact to water or mist. Evaporative cooling is generally ideal for smaller buildings since it typically requires larger duct work, and the duct work is probably better matched than larger buildings that were initially designed with mechanical cooling and appropriate ducting

Airside Economizer for Packaged Cooling Equipment

An incentive for airside economizers installed on packaged cooling equipment is available when:

- Adding an economizer to existing packaged cooling where no previous economizer existed, or
- Adding an economizer to a new packaged cooling system where the previous system did not have an economizer.

The incentive is not available for economizers in packaged cooling systems 54,000 Btu/hr and up that are being installed in new construction, or where cooling capability is being installed for the first time or required by local Code.

1.7. BUILDING ENVELOPE

Building envelope rebates are available for both new and existing buildings. These rebates and specifications are designed to help offset the incremental cost to improve the buildings envelope with higher efficient specifications.

For current envelope rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Additional Requirements:

- Insulation and product rating must be met or exceeded to qualify; no partial improvement can be applied. R-value is an average across total square footage being insulated.
- Building must have air conditioning and/or electric heat to qualify for envelope incentives.
- Energy savings estimates are based on energy models for a reference building that may or may not accurately predict the savings that will be achieved by your project.
- Existing buildings may have limitations to the amount of additional insulation to meet these requirements. Efficiency Works will accept the total R-value of the assembly that combines existing R-value assemblies and the new addition that increase the overall R-value to meet the required levels. Potential qualifying assemblies will be accepted on a case by case basis.
- **Roof & Wall Insulation**
 - The c.i. designation stands for Continuous Insulation. This is insulated sheathing panels completely covering the exterior side of the steel framing, mass wall, or roof deck thus providing a continuous thermal break to the outside.
 - For metal building roofs the recommended construction is with a Liner system offered by several manufacturers. For metal roofs the recommended construction is standing-seam roofs with two layers of blanket insulation. The

first layer is draped perpendicularly over the purlins with enough looseness to allow the second insulation layer to be laid above it, parallel to the purlins.

- For steel framed walls the first layer is installed continuously perpendicular to the exterior of the girts and is compressed as the metal skin is attached to the girts. The second layer of insulation is installed parallel to the girts within the framing cavity.

1.8. FOOD SERVICE EQUIPMENT

Rebates for foodservice equipment are applied to the purchase of high efficiency equipment that qualifies as ENERGY STAR rated or rated by the Consortium for Energy Efficiency (CEE). Rebates do not apply to used or non-electric savings food service equipment. Note that additional rebates for water savings may be available in the “Water” rebates category. Leasing equipment can qualify for a rebate if lease terms are for a minimum of 4 years.

For current food service rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Vent Hood Controls for Commercial Kitchen

Incentive is for adding variable speed fan controls to the exhaust fan motor serving the kitchen vent hoods, usually accomplished by adding a variable frequency drive (VFD) to the motor with temperature and/or grease sensors to determine the needed exhaust fan speed. Additionally, the makeup air unit (MAU) supply fan speed may need to be interlocked to be controlled as well. The incentive is the same whether or not the MAU is controlled, but the energy savings will be higher if the MAU is controlled as well. Incentive is per controlled horsepower. So, instead of entering the number of controlled fans/motors, enter the total controlled horsepower.

Additional References

The following table lists additional references to find qualifying equipment lists and more ways to save in a commercial kitchen.

Minimum Required Criteria Reference	Website Links	Description
CEE Tier 2 & 3 Qualifying Model Lists www.cee1.org	http://www.cee1.org/com/com-kit/com-kit-main.php3	Visit the Consortium for Energy Efficiency (CEE) website for a list of all CEE qualifying kitchen equipment; including Tiers 2 & 3.

ENERGY STAR Qualifying Model Lists	http://www.energystar.gov/index.cfm?c=products_pr_find_es_products	ENERGY STAR website homepage to find ENERGY STAR qualifying equipment models.
General Energy Savings Calculators www.fishnick.com	http://www.fishnick.com/	Interactive FSTC commercial kitchen equipment interactive web-based tool, displaying estimated savings with energy efficient appliances.

1.9. GROCERY EFFICIENCY

Rebates for high efficiency grocery equipment include many energy savings measures that improve efficiency of grocery and refrigeration operation. Some easy low or no cost improvements up to higher capital improvements that can be implemented on grocery or restaurant refrigeration equipment are listed below.

For current grocery rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Additional Requirements:

Auto Closers: New installation or replacement of non-functioning auto closer (there is no rebate for the adjustment of an existing auto-closer). Must be able to firmly close the door when closed to within one inch of full closure. Door must have a minimum perimeter of 15 feet.

Gaskets: New gasket to replace existing worn or damaged gasket. Replacement gaskets must meet the manufacturer’s specifications regarding dimensions, materials, attachment method, style, compression, and magnetism.

Zero Energy Doors: Triple-pane glass with either heat-reflective treated glass or gas fill and are equipped with no anti-sweat heaters. Anti-Sweat Heater Control rebate is not available with this rebate.

Low Energy Doors: New glass doors replacing existing glass door with an amp draw of less than 0.39 amps per door. Anti-Sweat Heater Control rebate is not available with this rebate.

Anti-Sweat Heater Controls: Controller that reduces the energy use of anti-sweat heater by 50% by sensing humidity, dew point or condensation. Zero energy and low energy glass door rebates are not available with this rebate.

LED Case Lighting: LED fixture must be on the Design Lights Consortium (DLC) Qualified Product List (QPL), and be replacing a T8, T10, or T12 fixture (no rebate is available for retrofitting T5 case lighting). LED case lighting rebates are listed on the Lighting page of the rebate application.

Evaporator Fan Motor Upgrade: New evaporator fan motor must be replacing an existing shaded pole motor, less than 1 horsepower.

EC Compressor Head Cooling Fan Motor: New compressor head fan motor must be less than 20W, replacing existing shaded pole motor (>35W) on a low temperature reciprocating compressor system. Compressor must be an integral part of a refrigeration system with a remote air cooled or evaporative condenser.

Smart Defrost Controls: Automated controls on a system with a condensing unit of 1.5 horsepower or greater. Controls should use temperature and pressure sensors to determine when to initiate an evaporator defrost cycle. Timers are not eligible.

Evaporator Fan Controls: Automated controls on an evaporator fan of 1/20 horsepower or greater. Must reduce evaporator fan runtime by at least 70% when the compressor is not running. Must automatically reduce fan speed when refrigerant is not flowing. **NOTE:** Savings may be significantly reduced in undersized systems.

Outside Air Economizers: For walk-in coolers or freezers that are 1,000 cubic feet or larger. Outdoor air and exhaust dampers must close automatically for summer isolation. Must be capable of using outdoor air of less than 34° F while maintaining the set point of the cooler. Provide dimensions of the walk-in with rebate application.

1.10. OFFICE EQUIPMENT AND APPLIANCES

Rebate are available to control and improve the efficiency of office equipment and appliances. For current office equipment and appliance rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Additional Requirements:

Server Virtualization must submit virtualization software agreement and provide proof the consolidated servers have been removed and fully decommissioned. Offsite virtualization hosting not eligible for this incentive.

Thin Client incentives are available in Fort Collins only, due to funding provided by Fort Collins Utilities. Thin clients must be ENERGY STAR rated. Customer must provide the following information: plans for old PCs; number, location, and power requirements for virtual desktop servers; project cost. Customers may wish to consult the Fort Collins e-waste guidelines and resources web page at: <http://www.fcgov.com/ewaste/>.

1.11. VARIABLE FREQUENCY DRIVES (VFD'S)

Prescriptive variable frequency drive rebates are available up to 75 horsepower for compressor, fan, and pumping systems. For current VFD rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the

application. For VFD equipment greater than 75 horsepower rebates may be applied for through the custom rebate application process.

Additional Requirements:

- All VFD incentive applications must be pre-approved.
- Incentives are only available for new VFDs installed where none were previously used.
- Incentives are not available in new construction or renovation projects if the VFD is required by ASHRAE 90.1-2013.
- Incentives are not available for redundant or stand by pumps or fans.
- Incentives are not available for VFDs installed in unitary cooling equipment if the VFD is required to achieve the AHRI cooling efficiency rating and if the equipment is receiving a cooling efficiency incentive.
- Customer acknowledges that he or she has been made aware of the potential for VFDs to cause harmonic distortion on the facility's electric distribution system and that harmonic distortion can sometimes negatively impact the operation of sensitive electric equipment interconnected with the distribution system.
- VFD must be automatically controlled.

1.12. WATER EFFICIENCY

Rebates for water efficiency improvements to your facility and site are available to save water inside and out. These rebates are only for Fort Collins Utilities commercial water customers. Rebates are available for NEW equipment only. Used or refurbished equipment does not qualify. For current water rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

1.13. CUSTOM EFFICIENCY

Rebates promoted through Efficiency Works serve to reduce the cost of implementing energy and water reducing measures and upgrading to high-efficiency equipment. Due to the nature of a custom efficiency rebate, a wide variety of measures and measures are eligible. For current custom rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

Custom Measure Eligibility

All electric energy and water efficiency projects are potentially eligible for the custom efficiency rebate. However, any measure eligible for prescriptive rebates through Efficiency Works are ineligible for the custom efficiency rebate.

The program does not explicitly specify eligible measures in the custom efficiency offering to provide maximum flexibility in identifying potential projects. However, to be eligible, measures must meet the following requirements:

- Measures must produce a measurable and verifiable reduction in energy or water consumption.
- Measures must produce savings through an increase in equipment energy or water efficiency or better utilization of energy through the use of improved production equipment or controls.
- Measures must have an implementation cost premium to achieve the energy or water efficient aspects of the project to qualify for rebate (i.e., if there are no costs to improve energy efficiency, then it is not eligible for a rebate).
- Measures must have a minimum useful life of 10 years to qualify for standard rebates. Reduced rebates may be available for measures with shorter lives.
- Measures must meet minimum cost-effective requirements with simple payback between 1 and 15 years or determined remaining useful life of the project and equipment by Efficiency Works.
- Measures that save both energy and water will be evaluated on the savings of both in which the rebate shall be the additive of the two as long as the total is within any payback limits.

Minimum Equipment Efficiency Standards and Requirements

Custom efficiency rebates are designed to promote projects that improve efficiency above and beyond the industry standard, code, or pre-determined baseline consumption. Efficiency Works reserves the right to determine the appropriate baseline for all custom efficiency projects. For example, Efficiency Works will not award rebates to participants to simply update systems and equipment from outdated technology to standard technology.

Examples of Projects Eligible for Rebates:

- Lighting upgrades for new construction or major renovations (Not including new construction exterior lighting)
- Installation of plate in frame heat exchanger to allow for water side economizer operation
- Building Automation System (BAS) installations or upgrades and proposed energy efficient control sequences
- Building envelope improvements, when not covered by prescriptive measures in rebate application.
- Refrigeration compressor and condenser replacement with more efficient units
- Compressed air equipment and system upgrades
- Industrial process, controls and/or operational reconfigurations or improvements
- Water efficiency measures including: irrigation, restroom and kitchen fixtures, industrial water use, cooling towers, and ozone systems, when not covered by prescriptive measures in rebate application.

Examples of Projects Ineligible for Rebates*:

- Measures where project installation commenced (including but not limited to executing contract agreement, demolition of existing equipment, purchasing new equipment, installing new equipment) prior to the submittal of an Efficiency Works Rebate Application and written notification from Efficiency Works of project pre-approval.
- Measures that achieve savings through routine equipment maintenance (e.g., cleaning HVAC coils or grills, repairing steam leaks, fixing or replacing steam traps, etc.)
- Measures that are solely demand management and/or load control
- Measures that rely solely on changes in participant behavior or system operation
- Measures that are required by state/federal law, building or other codes and standards
- Measures that generate electricity, including cogeneration or renewable energy generation
- Diagnostic equipment (e.g., thermal imaging equipment to identify loose electrical connections, ultrasonic leak detectors, etc.)
- Projects that result in non-electric savings
- Measures which are eligible for a rebate through the existing prescriptive rebate programs

***Note** that these measures may not be eligible for custom efficiency rebates but may be eligible in other Efficiency Works rebate offerings. Contact Efficiency Works for more information.

Measure Savings and Costs

In general, energy and water savings and project costs are calculated in comparison to the equipment inventory and operation prior to implementing qualified projects, specifically:

- If the project is an elective retrofit and the equipment is still operable (i.e., early replacement), the baseline is the existing equipment and operation; and therefore the energy and/or savings is the difference between the existing equipment usage and the new high-efficiency equipment or process energy or water usage and the eligible project cost is the full cost to implement the project.
- If the project is replacement of equipment at the end of its useful life (i.e., replace on failure or has exceeded useful equipment life), the baseline is equipment with efficiency levels that are equivalent to those in applicable building code requirements or standard industry efficiency levels; therefore the energy and/or water savings is the difference between the standard-efficient equipment energy or water usage and the new high-efficiency equipment energy usage and the eligible project cost is the incremental

difference between the standard equipment and the high-efficiency equipment.

Calculations of the Participant's cost savings will use the applicable energy and demand rate (\$/kWh and \$/kW) or make use of a blended energy rate that is appropriate for the load factor and demand coincidence factor of the energy savings. Water efficiency project cost savings will be based on the rate per gallon.

Eligible Measure Costs

Project costs are based upon either the actual or incremental expenses incurred by the participant in connection with determining the baseline. This may include costs associated with the construction, installation and/or implementation of an eligible project.

Eligible Costs May Include:

- Design fees / Labor and installation cost / Engineering and consulting expenses / ESCO (energy service company) fees
- Material equipment costs / Demolition and disposal fees / Financing fees
- Participant labor expenses (calculated as hourly rate x hours) for pre-approved, qualified Participant staff to provide labor for project implementation.

All project expenses are subject to review and approval by Efficiency Works. Participants shall provide cooperation and access as is reasonably required for the determination of eligible costs. Acceptable documentation of eligible costs may include: invoices, work orders, cancelled checks, and accounting system reports. These costs must be included with the submitted finalized Efficiency Works Application with a signed Request for Payment document and W9 tax form from rebate recipient.

Rebate Guidelines

For current custom rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application. In special cases, the maximum rebate may be exceeded, subject to approval by Efficiency Works. Efficiency Works will reserve the right to waive or adjust the rebate amounts and caps on a case by case basis and determine at their sole discretion the program year to which a rebate is attributed.

In cases where the final project delivers energy or water savings in excess of the preapproved values, final rebate payments will be based on the original verified or calculated energy or water savings. In cases where the final project delivers energy or water savings are less than the preapproved values, final rebate payments will be based on the lower adjusted verified or calculated energy or water savings. Final

rebates may change based on actual installation of the equipment and project. Re-approval from Efficiency Works is required if the final rebate amount is expected to exceed more than 10% of the pre-approved rebate amount, or equal to 110% of the preapproved rebate.

Project Development Assistance

Efficiency Works will provide participants with development assistance on eligible measures; however, the scope of the assistance is limited. Participants are expected to work with trade allies to develop initial project savings and cost estimates. Participants must provide estimated energy or water savings and calculations when they submit the Efficiency Works Rebate Application. Efficiency Works will then work with both the participant and their service provider to refine the estimated energy or water savings and pre-approve eligible projects.

2. NEW CONSTRUCTION REBATE PROGRAM

The Efficiency Works New Construction Rebate Program provides rebates to offset the cost of energy efficient designs. A description and additional requirements for each of the offered prescriptive rebates is provided in this section. If a prescriptive rebate is not available for your particular technology or project, please refer to the [custom rebate](#) section. Efficiency Works will review qualifying prescriptive program equipment periodically and may adjust measures and eligibility requirements in the future as market conditions and equipment standards change.

2.1. FREQUENTLY ASKED QUESTIONS

Q: How long does it take to get a project pre-approval?

A: Project pre-approval typically occurs within two business days. If the total project rebate exceeds \$10,000 and requires energy advising, gets selected for a random pre-inspection, or comes at a time of high demand pre-approval evaluation may be delayed. Re-approval from Efficiency Works is required if the final rebate amount is expected to exceed more than 10% of the pre-approved rebate amount, or equal to 110% of the preapproved rebate.

Q: How long does it take to get the rebate?

A: Rebate payments are typically processed and paid within 4-6 weeks of the program receiving the all of the final paperwork. In some cases, post-inspection may be required prior to the release of the rebate payment.

Q: Can I get the rebate before the project is completed?

A: No, in the interest of claiming accurate energy savings rebate payment cannot be made before the project is confirmed as completed. All documents required before payment is disbursed are listed on Page 12 of the [New Construction Rebate](#)

[Application](#). Depending on the size and scale of the project the rebate application may be broken into phases with the incentive paid as portions of the upgrades are completed, contact Efficiency Works for more details.

Q: What qualifies for a rebate?

A: Qualifying energy efficiency equipment is kept up to date on the [New Construction Rebate Application](#). On the application equipment is sorted by type and listed in drop down menus. If you have a question about an unlisted energy efficiency upgrade or a custom project, please email Business@EfficiencyWorks.org with the equipment and project details.

Q: Who is eligible for a rebate?

A: To qualify for a rebate through Efficiency Works Business one must be a commercial electric customer of one of the following: Town of Estes Park Light and Power Department, Fort Collins Utilities, Longmont Power and Communications, or Loveland Water and Power. If the project deals with water efficiency only Fort Collins Utilities commercial water customers are eligible.

Q: Can my contractor be paid the rebate?

A: Rebate payment can be sent to either the contractor or the customer upon completion. It is the responsibility of the customer and contractor to work out the details of rebate payment prior to any work being performed. If a customer decides to have the rebate paid to the contractor, the amount of the rebate must be shown as a discount on the final project invoice.

Q: Does Efficiency Works guarantee the installation quality?

A: Efficiency Works does not guarantee the accuracy of information or quality of work provided by any contractor, listed or otherwise.

Q: Do new construction and major renovation projects qualify for the rebate on the Efficiency Works Business rebate application?

A: No, all eligible new construction and major renovation rebates are listed in the [New Construction Rebate Application](#).

Q: What is the definition of a major renovation?

A: Please see the [Major Renovation](#) definition.

2.2. APPLICATION PROCES

Please see the [Rebate Application Process](#) but substitute the New Construction Rebate Application where it references the Rebate Application.

2.3. APPLICATION INSTRUCTIONS

Please see the [Rebate Application Instructions](#) but substitute the [New Construction Rebate Application](#) where it references the Rebate Application.

2.4. NEW CONSTRUCTION REBATES

For up to date new construction rebate values, please see the [New Construction Rebate Application](#). For expanded definitions or additional requirements not listed in the application, see the corresponding rebate section under the rebate program:

- [Cooling](#)
- [Envelope](#)
- [Food Service](#)
- [Grocery](#)
- [Office & Appliance](#)
- [Motor VFD's](#)
- [Water](#)
- [Custom](#)

2.5. NEW CONSTRUCTION AND MAJOR RENNOVATON LIGHTING

Rebates for new lighting systems in new buildings or renovations are based on the proposed or design lighting power density (LPD, watts/sq ft). The design LPD must be at least 10% lower than the ASHRAE Lighting LPD (90.1 - 2013 Building Area Method) design and be more efficient than standard market conditions. The rebate is based on the total wattage reduction of the building or space by using the ASHRAE 90.1 – 2013 LPD as the baseline and the lower design LPD as the new wattage, or market available products. The difference is multiplied by \$0.10 per kWh saved annually. The ASHRAE 90.1 – 2013 LPD table is in the New Construction Rebate Application. Lighting retrofits in existing buildings where no significant building renovation is being performed should refer to retrofit lighting rebates for [existing buildings](#).

New Construction exterior lighting is not eligible for rebates. A major renovation as defined in the Efficiency Works Business Program is as follows:

Major Renovation Definition

For the purposes of the Efficiency Works program, a major renovation includes at least three of the five criteria below:

1. The business is undertaking the project primarily due to a change in the use of the space, which requires changes to the lighting or HVAC systems. For example, warehouse space is being converted to office space.
2. The space being renovated will be unoccupied for 30 days or more.

3. Existing light fixtures are being removed and a totally new light scheme with rewiring as the result.
4. The project requires a construction permit.
5. First time install of electric operated equipment in which higher efficient models are available.

New Construction and Major Renovation Lighting Rebate Example:

A new building has a lighting power allowance of 20,000 Watts (per the design /permitting ComCheck). However, the actual lighting design only uses 15,000W. The building operates 3,000 hours/year. The annual energy savings are calculated as follows:

Annual Energy Savings = (20,000 W – 15,000 W) x 3,000 hours = 15,000 kWh.

Potential Rebate = (15,000 kWh) x (\$0.10) = \$1,500.

How To Use Application

The New Construction Rebate Application lighting tab will do the calculation described above for you, if you complete the following steps:

1. Select the most relevant building area type from the area category drop down menu
2. Enter the floor area in square feet of the affected areas
3. Enter the annual operating hours of the affected lights
4. Enter the designed watts from the ComCheck

This will allow the potential rebate to be calculated on the lighting tab. In order for the potential rebate to appear on the rebate summary (Tab 11), the incremental cost of upgrading the lighting from what code requires to the new lighting design will need to be entered on the lighting row.

2.6. TECHNICAL SUPPORT

Our efficiency experts are available to help every step of the way. Contact us with questions related to your new construction or major renovation project.

If it's early enough in the design phase of your project, you may be eligible to participate in the Integrated Design Assistance Program (Fort Collins Utilities customers only).

3. BUILDING TUNE-UP (BTU) PROGRAM

Most buildings have never gone through a formal, systematic commissioning or quality assurance process, and are likely performing below their potential. Efficient operation of existing major building systems presents a significant opportunity for energy and demand savings, usually with little or no capital investment. Recommissioning or retrocommissioning is a “building tune-up” that not only identifies problems due to system operation deficiencies or design flaws that occurred during construction, just as traditional commissioning of a new building does, but it also identifies and recommends solutions to problems that have developed during the building’s existence.

Retrocommissioning seeks to assist with equipment and system functionality and optimizing their integrated operation to reduce energy waste and improve building performance and occupant comfort.

One of the primary objectives of Efficiency Works is to offer our Customers every opportunity to help manage their energy expenses. Efficiency Works suite of available program initiatives provides rebates for many energy efficient technologies and products available in today’s market. The Efficiency Works BTU program is uniquely suited to fit within existing rebate programs by offering energy analysis services to identify low-cost and no-cost energy and water efficiency measures through retrocommissioning (RCx). In addition to being the electric utility, Utilities are also the water utility for most facilities in their electric service territory. Each municipality may have additional water efficiency rebates for retrocommissioning measures (RCMs) identified in the RCx project that target water savings.

The Efficiency Works BTU program is an energy efficiency offering that provides Customers with expert building analysis and RCx services at a discount for services defined in this manual to help lower Customers’ energy and water costs by optimizing a facility’s energy using systems. Efficiency Works BTU program does not provide detailed engineering support or rebates for capital equipment measures – rebates for these types of measures may be available under other Efficiency Works programs. Savings are realized through the systematic evaluation of facility systems and Customer’s implementation of cost-effective measures targeted to improve facility operation that, in many cases, also improve occupant comfort and production efficiency. The focus is no- and low-cost RCMs that save energy and water.

Tier 1 of the BTU Program is designed to improve energy and water efficiency for simple building systems in commercial buildings. These simple systems are normally found in smaller to medium sized buildings less than 50,000 square feet (sq ft) but can be found in larger buildings as well. These building systems typically last 15 to 25 years with periodic preventative maintenance designed to keep the systems running, not necessarily in an efficient manner. The Tier 1 Option uses a direct implementation,

prescriptive approach to enhance the performance of the building energy and water systems, allowing them to operate at their highest efficiency while maintaining occupant comfort and potentially extending the life of the building equipment. The Tier 1 Option also offers free technical services and minimizes the upfront studies, reporting, and paperwork usually associated with large building tune-up projects, instead focusing the majority of the costs on implementation (of those costs, 75% will be covered by the program). This option combines the Planning and Implementation/Investigation Phases (Phases defined below) into one comprehensive step. The program provides a rebate up to \$0.15 per sq ft of building and Customer must commit to \$0.05 per sq ft up to \$12,000 for implementation services.

Major Renovation Definition

To participate in BTU program, Customers must purchase electricity from one of the four Utilities of Platte River (Town of Estes Park Light & Power, Fort Collins Utilities, Longmont Power & Communications and Loveland Water and Power) on an eligible non-residential retail electric rate schedule. Table below lists eligible Customer price plans.

Utility	Town of Estes Park Light & Power	Fort Collins Utilities	Longmont Power & Communications	Loveland Water and Power
ELIGIBLE RATE SCHEDULES	Large Commercial	E400 Series	CCD CC	Loveland – PS
	Small Commercial	E300 Series	CD	Loveland – LG
	Municipal	E250 Series	CE	Loveland – SG
		E200 Series	GFE (municipal energy) GFD (municipal demand)	

Customers can verify their rate schedule by looking on a recent bill. Refer to the Customer electric bill for Town of Estes Park, Fort Collins, Longmont or Loveland. Customers with questions regarding their account should contact their utility Account Manager.

For the purposes of Efficiency Works energy efficiency programs, a Customer is defined as a company or organization that receives electric service from one of the Utilities of Platte River: Town of Estes Park Light & Power, Fort Collins Utilities, Longmont Power & Communications and Loveland Water and Power under an approved rate schedule. A

Customer is a holder of a single account, multiple accounts in aggregate or corporate accounts. Multiple accounts or corporate accounts with a single Customer identification number will be considered a single Customer. An organization of this type can participate in multiple efficiency programs but will be subject to any applicable Customer rebate caps.

The delivery of Program services follows a Phase schedule (detailed below) that scales in scope based on the Tier that eligible participants fall into. The table below represents an overview of each activity per phase, and its applicability per Tier; more detailed Phase explanations follow in subsequent sections.

Phases	Tier 1	Tier 2	Tier 3
Application Phase (No Cost to Customer)			
Buildings <50,000 sq ft of conditioned space	✓		
Buildings with >50,000 sq ft, but <100,000 sq ft of conditioned		✓	
Buildings >100,000 sq ft of conditioned space; including			✓
Building owner must authorize work to be performed if applicant is not the owner of the building,	✓	✓	✓
Free of major problems requiring costly repairs or replacements, with no planned major system renovations or retrofits	✓	✓	✓
Building must have a functioning BAS with trending/storage capabilities or ability to substitute this function with data logging equipment (if approved by Platte River)		✓	✓
System receives periodic preventative maintenance (e.g., filter replacement, coil cleaning, refrigerant charge, and belt tension checks) and demonstrates general functionality	✓	✓	✓
Provide facility access, personnel time to meet with RSP	✓	✓	✓
Provide and assist with the reporting and collection of		✓	✓
Application is submitted to Platte River with signed agreement	✓	✓	✓
Planning Phase (No Cost to Customer)			
Fully funded technical services	✓	✓	✓
Must be performed by a qualified RSP	✓	✓	✓
RSP conducts a technical review, building and system conditions are further gauged, potential tune-up opportunities		✓	✓

RCx Plan Report is developed for presentation to customer and inputted into BTU Plan Approval Form of the application (Page 4 – Addendum #1)	✓	✓	✓
BTU Work Order is completed for presentation to customer and inputted into BTU Plan Approval Form of the application (Page 4 – Addendum #1)	✓		
BTU Plan Approval Form including the Customer Selection Form are submitted to customer for review and approval of RCMs for implementation	✓	✓	✓
Commitment to fund at least \$0.05 per sq ft (up to \$12,000), based on building size in the tune-up measures, with an estimated total project simple payback of two years or less	✓	✓	✓
Investigation / Implementation Phase			
Immediate implementation and completion of selected measure tabs in BTU Application. BTU Work Order is adjusted based on actual implementation of the measures	✓		
Vendor quotes or staff work load estimates obtained, if		✓	✓
Field data collection and functional testing			✓
Activities minimized to focus on implementation		✓	
Facility staff or vendor and RSP engaged to help facilitate the tune-up activities		✓	✓
Tune-up testing of the systems completed, incorporating measured and verified data, estimating the potential energy savings for identified measures using custom calculators, and documenting the work			✓
Diagnostic and Calculation (D&C) plans developed; measures implemented after they are identified and/or summarized in the D&C plans			✓
Verification Phase and completion of project (No Cost to Customer)			
Verification sampling of entire building group (i.e., not all buildings get M&V), pre- and post-monitoring after the measures have been implemented	✓		
RSP, staff, and vendor (if applicable) revisits the site to verify that the measures have been properly installed		✓	✓

Final BTU Report is completed and submitted to customer (located in BTU Application) – check mark needed monitoring after the measures have been implemented	✓		
Updated RCx Plan submitted to customer for review and		✓	
Verification report submitted to customer for review and			✓
RSP conducts a technical review of all verification reports		✓	✓

Eligible Customers include existing facilities that are:

- Planning no major renovation or large capital investments for the facility shall be pending, and owner/O&M staff shall express a commitment for active involvement in the process.
- Considered to have energy and water savings opportunities and measures that result in less than two-year simple payback.

Platte River retains the right to make final determination of Customer eligibility and which Tier is most applicable to the building.

The facility owner and O&M staff must express a commitment to be actively involved in the RCx process. Active involvement will include:

- Providing access to the facility.
- Providing time for facility personnel to interface with the Retrocommissioning Service Provider (RSP).
- Providing and assisting with the reporting and collection of information pertaining to the RCx of the facility.
- A commitment to spend at least: \$0.05 per sq ft up to \$12,000.

Program Dates

The Efficiency Works BTU program became effective on April 1, 2010 and is on-going. RCx rebates are not eligible for prior Customer-funded RCx activities or without necessary pre-approvals.

Rebate Availability

Participant applications to participate in Efficiency Works BTU program will be reviewed on a first-come, first-served basis until all rebate funding has been committed. Current availability of rebate funds can be checked by contacting Platte River or your Utility.

Partnership with Xcel Energy (Tier 3 only)

Efficiency Works BTU program is partnering with Xcel Energy's RCx program in order to maximize program benefits. Xcel Energy offers rebates for both RCx studies and for gas measures implemented during a RCx project. Xcel Gas Customers that participate in the program will be required to submit applications to Xcel Energy's RCx program and should follow Xcel's requirements for submitting and obtaining the RCx rebate.

Efficiency Works will work with Xcel RCx rebate to supplement the total cost of the RCx Study. For example, if the cost of the RCx is \$20,000 and Xcel's rebate for the gas portion is \$2,000, Efficiency Works will supplement the remaining \$18,000 for the cost of the study. Any rebates obtained from Xcel for implementation of gas saving measures will not be factored in Efficiency Work's program, and will be handled directly through Xcel Energy.

Frequently Asked Questions

Q: Do I have to use a listed contractor?

A: Yes, contractors must be pre-approved by Efficiency Works. A current list is available on our website.

Q: How much does it cost?

A: The customer commits to paying at least \$0.05 per square foot (of their building). It is always an option to select additional upgrade options, which would increase the cost. The program pays the lesser of \$0.15 per square foot and 75% of the project cost.

Q: What else is required of the customer?

A: The customer commits to implementing one or more of the recommended upgrades, and providing access to the building as needed for the installing contractor.

Q: How long does a project take?

A: Every project is a little different, but it usually takes 1-3 months from beginning to end.

Q: How do I get started?

A: If you haven't started working with a contractor yet, fill out an assessment application online. It's free for you, and we'll come evaluate whether or not your building is a good candidate. If you've already had one of these, fill out the BTU application to the best of your ability, and submit it to the email address contained therein. We'll contact you about selecting a contractor to perform the work.

Q: What types of recommendations might be made?

A: Common recommendations include installing or programming programmable thermostats, adding an economizer to a rooftop unit, or repairing/adjusting an existing economizer, or adding demand control ventilation. This program doesn't include more capital-type measures, such as replacing a rooftop unit.

3.1 BTU PROGRAM TIER 1

The following section describes the targeted buildings, rebate structure and phases associated with the Tier 1 Buildings.

Targeted Buildings

The following typical characteristics are associated with the Tier 1 buildings:

- Conditioned floor area: up to 49,999 sq ft
- HVAC equipment shall be between 2-20 years old and must not be at the end of their useful life
- Typically, single zone thermostats – manual or programmable
- Single zone packaged equipment or split systems
- Other systems targeted: water fixtures, PCs, Domestic Hot Water, lighting and plug load controls, custom measures.

Example of other unique circumstances that may target a building for this tier:

- Building is a 60,000+ square foot building conditioned only with Roof Top Units (RTU's) with economizers and single zone thermostats.
- Building is 30,000 sq. ft and is conditioned by two constant or variable volumes, built up, air handling units with DX cooling, economizers, and terminal units. Building may have single zone thermostats (or sensors and central control) per terminal unit with no trending capability and/or front-end customer access

Rebate Structure

In this option, services are performed exclusively by qualified RSP that specialize in services that are offered through the Tier 1 Option. To encourage participation of small buildings in the Tier 1 Option, Efficiency Works and its Utilities offer 75% of the measure implementation cost as a rebate. Once Efficiency Works screens a facility for the Tier 1 Option, the customer will select and schedule the RSP to perform the Tier 1 RCx services. The RSP will submit the final paperwork to Efficiency Works on behalf of the customer for the rebate equal to 75% of the cost of the services performed, or \$0.15/sq ft. If the customer chooses, Efficiency Works will pay the rebate directly to the RSP and the RSP will invoice the remainder to the customer; which is \$0.05/sq ft. Efficiency Works will send the rebate check directly to the contractor (or the authorized third party) within 4-6 weeks of the receipt of the contractor invoice. If tune-up costs exceed this amount, written approval is required by Efficiency Works and the participant and the participant agrees to pay the additional cost. Work is performed by the qualified RSP with some engineering support available by Efficiency Works.

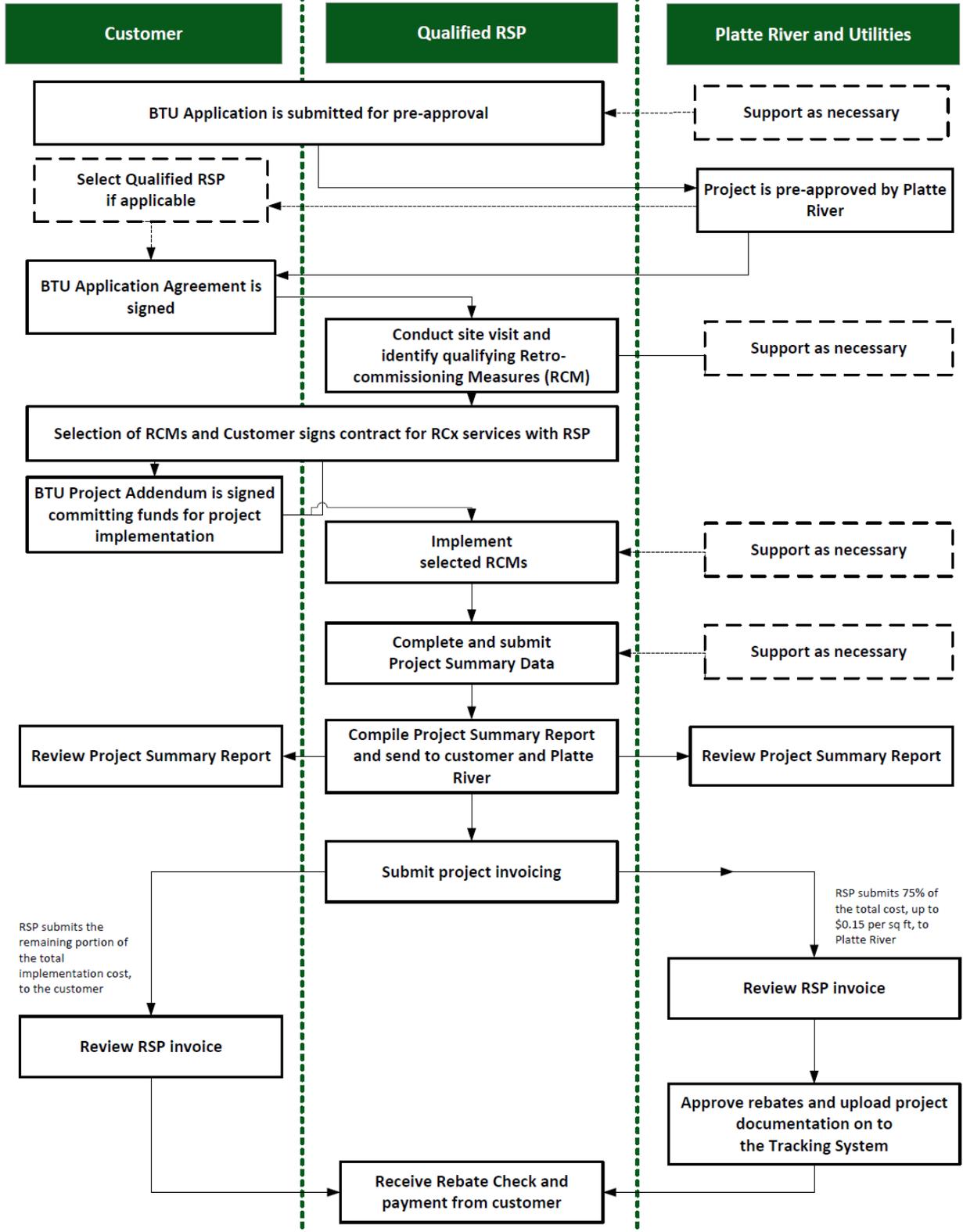
The Participant will have to complete and show clear documentation (like invoice, maintenance log sheet, building maintenance records, etc.) of preventative maintenance before tasks pertaining to the Tier 1 Option can be implemented. If Efficiency Works or the selected RSP discover that preventative maintenance has not

been performed according to the evidence provided or condition of the equipment, the services will cease, and the participant will be responsible for a \$200 charge to cover the contractor's time for the assessment.

The customer may pursue additional measures that are identified during the Retrocommissioning process and will be responsible for the costs of these measures that exceed the \$0.15 per sq. ft rebate offered by Efficiency Works. Other identified energy and water efficiency measures may qualify for rebates through other Efficiency Works or the service area Municipality rebate programs.

Participation Process

The Tier 1 Option participation process is outlined below.



Application Phase

Contact a qualified RSP or Utility or Efficiency Works Representative for help with application to get started. Pre-approval is required for all projects to be considered for funding in the Efficiency Works BTU program. To receive pre-approval, submit completed Efficiency Works BTU application and agreement prior to work being performed; including the following required pages: Page 1 - Customer Info, Page 2 - Project Pre-screening, and Page 3 - signed Building Tune-up Program Agreement. Electronic submittals are allowed by emailing the application and signature pages to buildingtuneup@efficiencyworks.org. Note that Alternative Payment Recipient and second signature on the Agreement page are to be completed after the selection of the RSP if customer prefers the rebate to be paid directly to the qualified RSP. If RSP is already selected for the project, then this may be signed at the time submitting the application for pre-approval.

Once the application is received, Efficiency Works will verify customer account number, installation address for submitted account number, valid equipment installation date, equipment eligibility and capacity, and potential incentive amount. Applications which are incomplete or are not eligible to participate will receive an email, letter, or phone call describing to the customer the changes necessary to qualify for the program. Once the project is pre-approved, the customer or party submitting the application will receive an approval code to authorize the initial preliminary site assessment to begin (or Planning Phase).

RSP Application phase deliverables are as follows:

- Completed BTU Application and signed agreement are submitted to Efficiency Works.

Planning Phase

The customer will select an RSP, if one has not already been selected, to conduct a preliminary site assessment and verify the operation of HVAC equipment and preventive maintenance status (see Section 3.6.1. Preliminary Maintenance Check for details) are used to generate an initial list of measures to assess overall project feasibility. The RSPs are trained to look for the prescriptive RCMs to provide a list of potential RCMs to the customer. This initial work establishes the general framework – or plan – for the balance of the tune-up activities.

RSP Planning phase deliverables are as follows:

- Complete site assessment walk-through and the project “BTU Work Order” tab (located in the BTY Application).
- Attendance at Project Planning Meeting and proposal of potential RCMs.
- Complete Customer Selection Form in BTY Plan Approval Form.
- Customer signs BTU Plan Approval Form to authorize the implementation of the selected RCMs and committed funds prior to the Implementation Phase.
- Customer and selected RSP enter into an agreement and/or contract for scope of RCx services.

RSP then thoroughly discusses the potential RCMs in detail with the customer. Customer will select the RCMs that are to be implemented by the RSP based on general simple payback criteria of less than 2 years.

Implementation Phase

The investigation and implementation work is considered one phase because the activities are linked to cost-effectiveness. For Tier 1, as noted above, the RSP will proceed with the Implementation Phase right after the Planning Phase.

RSP Implementation phase deliverables are as follows:

- Revised and complete BTU Application and Addendum #1 (if changes were made from the original pre-approved application), including customer report and measure tabs.

Potential Measures

The prescriptive measures described below are inexpensive ways to achieve significant energy savings. A detailed description of each measure is given below. These measures are all listed in the BTU Application and require the following protocols to meet program specifications; RSP is required to complete each tab in the workbook as it applies to the selected RCMs in the Planning Phase. Some common RCMs include the following:

- Preliminary maintenance check
- Scheduling existing controls equipment
- Installing and scheduling programmable thermostats
- Adjusting or adding economizers
- Calibrating or replacing economizer sensors
- Repairing/replacing economizer damper actuators
- Demand control ventilation (DCV) controls
- Installing or adjusting direct expansion (DX) outside air lockout controls
- Adjusting minimum outside air fraction
- Measuring total airflow of RTU or split systems
- Split system cooling and heating efficiency
- Installing low flow water faucet aerators and per-rinse spray valves
- Installing or adjusting occupancy sensors or other lighting controls
- De-lamping of light fixtures
- Installing controls for plug load devices
- PC power management
- Domestic hot water temperature adjustment
- Domestic hot water pump timer adjustments or new installation
- Heating adjustments for furnaces and boilers
- Advanced controls
- Custom measures

For more information about each of the potential measures contact your RSP or Efficiency Works.

Verification Phase

For Tier 1, verification will be done on a sampling basis (i.e., a percentage of all the small buildings that participate in the program), and will need to be carefully planned to allow for pre- and post-monitoring after the measures have been implemented. The results of the data collected and analyzed will be compared to the deemed savings for the measures proposed for Tier 1, and the savings will be adjusted accordingly. To streamline costs, a "good" candidate will be identified during a site walk-thru and observations made of the building systems. Before the trade ally proceeds with implementation, data loggers will be placed on the building systems for at least a week before the implementation, left on during implementation, and will remain for a week after implementation is complete. These collected data will be used to verify the deemed savings used in the Tier 1 projects.

3.2 BTU PROGRAM TIER 2

The following section describes the targeted buildings, rebate structure and phases associated with the Tier 2 Buildings.

Targeted Buildings

The following typical characteristics are associated with the Tier 1 buildings:

- Typical building size: 50,000 to 100,000 sq. ft
- The facility shall be at least 2 years old
- The facility must have an existing and fully functional energy management system or building automation system (BAS), and direct digital control.
- BAS system requirements as follows
 - Ability to trend multiple data points and store them for a minimum of 2 weeks
 - Ability to monitor real-time operation on a graphical user interface (GUI)
 - EMS/BAS controls most of the facility's high energy consuming equipment
- Facility must have packaged rooftop units or air handle units with variable air volume terminal units; possibly reheat.
- Facility may have central plant – typically one boiler and chiller or DX cooling/furnace in air handling units; or combination of both.

Example of other unique circumstances that may target a building for this tier:

- Building is a 30,000 sq. ft and is conditioned by variable volume, built up; air handling units with DX cooling, economizers and VAV boxes and reheat. Building may have single zone temperature sensors controlling each VAV and Bas system with trending capability.

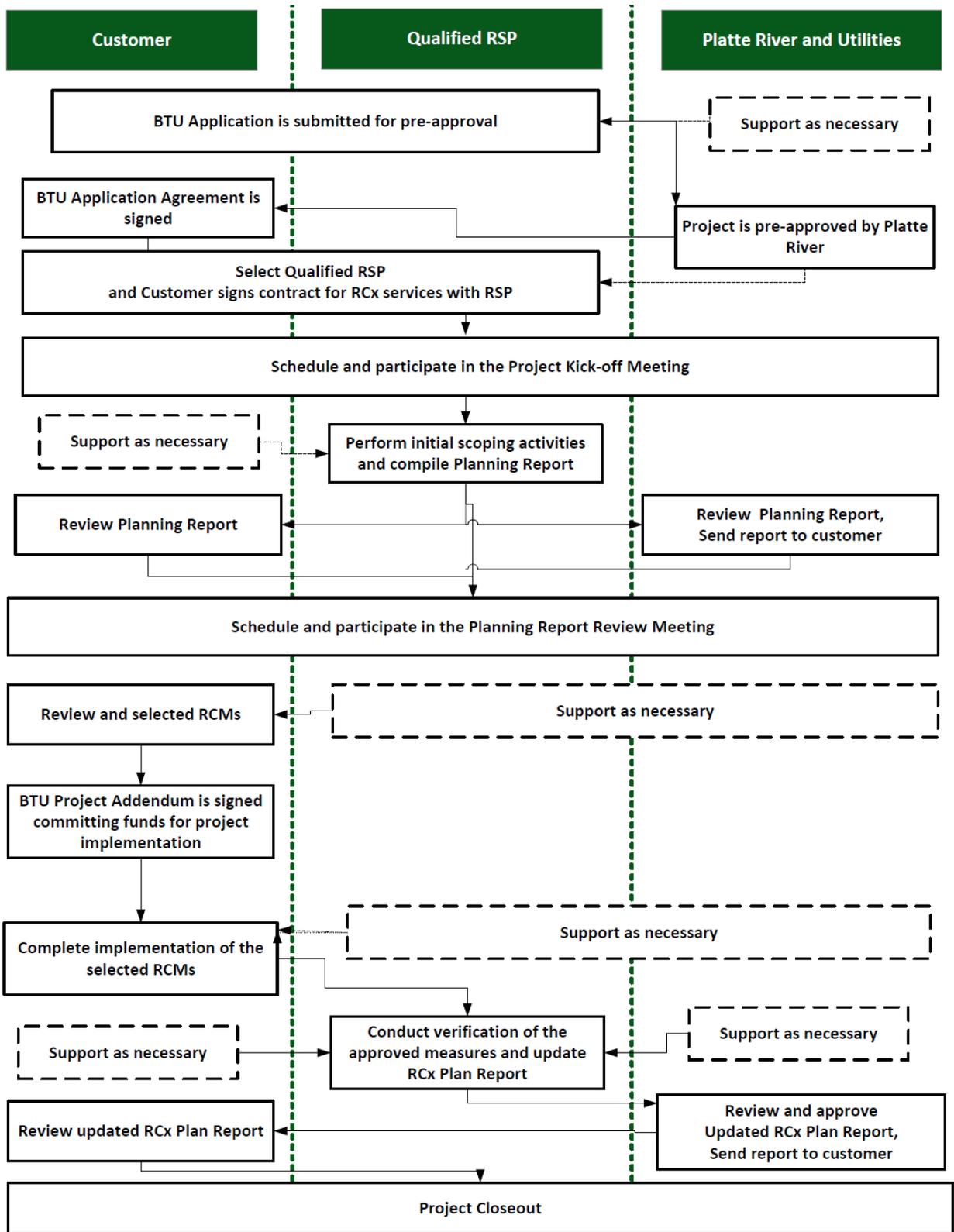
Rebates

Efficiency Works pays 100% of the cost for the RSP to assemble the retro-commissioning plan, implementation support, and a brief updated RCx Planning Report, but not direct implementation of selected RCMs. The RSP costs depend on scope and size of facility. The customer is required to hire and pay for a contractor or use in house staff to implement measures and provide support to the RSP throughout the project. Customer Financial Commitment is based on \$0.05 per sq ft up to \$12,000 towards implementation, once the planning phase report is accepted. If the customer still does not make the improvements within a mutually agreed upon timeline, they shall reimburse the utility for the costs incurred to date for their project.

No additional rebates will be available to Customer through this program (i.e., no energy rebates). However, if energy or water efficiency measures are identified that are beyond the scope of Efficiency Works BTU program, the Customer may seek to qualify those measures through Efficiency Works' standard and custom electric efficiency rebate programs or provided by their local Utility if not offered by Efficiency Works. Customers may be subject to a rebate threshold per Customer per calendar year. Any rebates received through Xcel Energy or other party as part of any Platte River program will not count towards the Customer's annual rebate threshold.

Participation Process

The Tier 2 Option participation process is outlined below.



Application Phase

Contact a qualified RSP or Utility or Efficiency Works Representative for help with application to get started. Pre-approval is required for all projects to be considered for funding in the BTU program. To receive pre-approval, submit completed Building Tune-up (BTU) application (Appendix A) and agreement prior to work being performed; including the following required pages: Page 1 - Customer Info, Page 2 - Project Pre-screening, and Page 3 - signed Building Tune-up Program Agreement. Note that Alternative Payment Recipient and second signature on the Agreement page are to be completed after the selection of the RSP if customer prefers the rebate to be paid directly to the qualified RSP. If RSP is already selected for the project, then this may be signed at the time submitting the application for pre-approval.

Electronic submittals are allowed by emailing the application and signature pages to buildingtuneup@efficiencyworks.org

Pre-approving applications is an important part of the process. When screening program applications, Efficiency Works will consider buildings with the following conditions to be placed in the Tier 2 Option of the BTU program:

- Building with more than 50,000 sq. ft, but less than 100,000 sq. ft of conditioned square feet with customer consenting to authorize changes to the HVAC system's operation
- The building shall have systems that are free of major problems requiring costly repairs or replacements, with no planned major system renovations or retrofits
- The HVAC system receives periodic preventative maintenance (e.g. filter replacement, coil cleaning, refrigerant charge, and belt tension checks) and demonstrates general functionality. Also, the facility should have accessible and up-to-date building documentation and records.
- Participants must express a commitment to be actively involved in the tune-up process through the following
 - Providing facility access and time for facility personnel and/or their HVAC/controls contractors to interface with the selected RSP
 - Providing and assisting with the reporting and collection of information pertaining to the building's tune-up
 - Spending \$0.05 per sq. ft up to \$12,000 to implement identified RCMs with an estimated total project simple payback of two years or less based upon electric and natural gas savings.

Once the application is received Efficiency Works will verify customer account number, installation address for submitted account number, valid equipment installation date, equipment eligibility and capacity, and potential incentive amount. Applications which

are incomplete or are not eligible to participate will receive an email, letter, or phone call describing to the customer the changes necessary to qualify for the program. Once the project is pre-approved, the customer or party submitting the application will receive an approval code authorize the initial preliminary site assessment to begin (i.e. Planning phase).

When the application is approved by Efficiency Works, the retrocommissioning process begins with the Planning Phase, which consists of identification of project objectives, targeting of systems for improvements, defining tasks and responsibilities, and a Retrocommissioning Plan is developed as a result. The Implementation Phase follows, in which the building owner or representative is responsible for implementing the mutually agreed upon measures (between Platte River and the Owner) noted in this report. Once the improvements are made in the Implementation Phase, their success is validated in the Verification Phase.

The retrocommissioning procedures focus on electric and natural gas energy savings opportunities with low cost implications. Capital measures that are identified through Efficiency Works Building Tune-up Program may be directed to Efficiency Works' prescriptive or custom rebate offerings.

Efficiency Works Building Tune-up Program does not address fire and life safety or basic equipment safety controls. Additionally, the program does not provide services for new construction or to meet commissioning requirements of other rebate programs offered by Platte River.

RSP Application phase deliverables are as follows:

- Completed BTU Application and signed agreement are submitted to Efficiency Works.
- Customer and selected RSP enter into an agreement and/or contract for scope of RCx services.

Planning Phase

Following the acceptance of a project into the program and selection of an RSP, work begins by establishing the scope and timeline for the balance of the project. Customer is required to have an agreement with the selected RSP before work is performed and Planning Phase begins. This Planning Phase typically takes about four to six weeks. Key activities include a project kick-off meeting with the owner representative, engineering or facility staff, RSP, and Efficiency Works and Utility representatives. A preliminary site assessment is completed by the RSP during this phase, where findings are used to generate the RCx Plan for the project and assess overall project feasibility. The RCx Plan establishes the general framework for the balance of the RCx activities. Upon its completion, a Planning Review meeting is held with the owner representative,

engineering or facility staff, RSP, and Efficiency Works and Utility representatives to review the scope of the plan. At the completion of the Planning Phase, the customer enters into the formal agreement with Efficiency Works if the project appears viable to commit to implementing the selected RCMs. The planning phase is separated into the following steps

- **Project Kick-off Meeting**

The initial project kick-off meeting is held soon after acceptance of the project application and the RSP is selected thereafter (if applicable). Key attendees include the owner's representative, facility and engineering staff, contractors, the selected RSP, Platte River, and/or the Utility representatives. The meeting is used to introduce key performers for the RCx project team and explain the timing and key steps of the project.

- **Site Assessment Activities**

Site assessment activities often follow directly after the kick-off meeting with the RSP conducting a preliminary site visit to understand key facility systems and their operation. Site assessment activities conducted by the RSP also involve:

- Consulting with the facility's personnel to understand their concerns and identify areas where additional focus may be warranted
- Reviewing the facility system documentation and utility bills

Facility operations, maintenance schedules, equipment control sequences, set points, control parameters, schedules, occupant activities, and component operation are also documented at this point in the project.

- **Identification of RCM's**

Utilizing the information gathered during the kick-off meeting, utility usage data, and from the site assessment, the RSP is responsible for identifying potential RCMs. For each RCM, the RSP will evaluate and document the following parameters:

- Annual electric and natural gas energy savings potential
- Average electric demand savings potential in Summer and Winter months
- Estimated implementation cost
- Savings persistence
- Impacts on building occupant comfort and process operations
- Installation of water measures – low flow aerators and pre-rinse spray valves (if applicable)

Savings calculations must be supported by field observations, actual equipment specifications, and operating conditions. Calculations based solely on rules of thumb or unsupported

- Retrocommissioning Plan

Using the information gathered and identified RCMs, the RSP develops the RCx Plan. The RCx Plan describes the building energy systems, identifies specific RCMs, estimates electric energy and demand savings, natural gas savings, and demonstrates project feasibility. The plan serves as the guiding document for the balance of the project. A viable RCx Plan is required before a Customer signs the BTU Plan Approval Form and for the project to continue under the program. A sample of the required RCx Plan template is included in Appendix G of this manual. The RCx Plan template will be updated, if necessary, to align with Xcel Energy's reporting requirement for an RCx study. Deviations from this template must be pre-approved in writing by Efficiency Works.

If identified savings opportunities fail to meet or exceed the project savings target, Efficiency Works may renegotiate a reduced scope of work and fee for the Implementation and Verification Phase with the RSP. If a project cannot demonstrate reasonable feasibility, the owner may be redirected towards another energy efficiency program offering from Efficiency Works. If this is the case, the RSP will be paid for Planning Phase services only. No additional work will be performed, or payments made.

- Planning Review Meeting

For approval of the RCx Plan, the Planning Review meeting is held with the owner representative, engineering or facility staff, RSP, and Efficiency Works and Utility representatives to review the scope of the plan, the impacts and economics of the identified potential measures. To help facilitate this meeting, RSPs are required to prepare the Customer Selection Form (Table A of the BTU Plan Approval Form of the application). This document will be utilized throughout the balance of the RCx process to communicate RCM opportunities and seek Customer approval to proceed with implementation. A sample of this form is provided in Appendix A of this manual.

At the completion of the Planning Review meeting, the customer reviews the potential RCMs, completes and signs the BTU Plan Approval Form; and provides initial indication to approve of the measures to be refined and/or implemented in the Implementation Phase. By signing the BTU Approval Form, the customer commits to spend a minimum of \$0.05 per square foot of building size up to \$12,000 for the selected RCMs identified in Table A: Customer Selection Form. Note: selected RCMs are to be placed in Table A: Customer Selection Form located in

RSP Planning Phase Deliverables are as follows:

- Attendance at Project Kick-off meeting
- RCx Plan Report (including the Building Site Assessment form if applicable)
- Complete Customer Selection Form in CTU Plan Approval Form
- Attendance at Project Planning Meeting and proposal of potential RCMs

- Customer signs BTU Plan Approval Form to authorize the implementation of the selected RCMs and committed funds prior to the Implementation Phase.

Implementation Phase Overview

The Implementation Phase consists of installing the recommended RCMs. This phase may require eight to twenty weeks and is conducted during times when affected building systems are operational.

The Customer is responsible for implementing the RCMs identified and agreed to during the Planning Phase. Upon completion, the Customer will notify Platte River that the measures have been installed.

During the Implementation Phase, the RSP, with assistance from the facility and engineering staff, will expand upon the site assessment activities completed during the Planning Phase to develop and implement the RCx measures. The principal RSP Implementation Phase activity includes working with facility staff to guide the RCx activities and identify additional RCMs.

The facility owner implements RCMs after the Planning Phase Report has been completed and accepted. A key requirement to the success of this approach is that sufficient information be collected by the RSP to document the baseline and estimate the RCMs' electric and natural gas energy savings potential before implementation begins.

The implementation costs used to calculate project economics under the program are based upon reasonable market costs as determined by the RSP and approved solely by Efficiency Works. Resources to obtain market costs include but are not limited to industry accepted project estimation resources, vendor quotes, or professional judgment. The Customer is afforded the flexibility to utilize in-house staff or an outside contractor to implement RCx measures implementation. Final implementation costs may vary from the estimated market costs; however, the market costs will be utilized to support the \$0.05 per sq ft up to \$12,000 contractual obligations.

During the Implementation Phase, the RSP works provides oversight with the Customer's implementation team to identify the recommended measures and provide recommendations to "fix" the problems. The implementation team includes the facility engineers, operational staff, and the mechanical, electrical, and controls contractors. The goal of this phase is to fully implement all agreed-upon RCx measures and stand ready for final verification.

Implementation of the RCMs is the sole responsibility of the Customer. However, the RSP is required to provide technical support during this phase for the Customer to implement the RCMs. A description of the Customer's role and the RSP's role in implementation is provided below.

- Customer Implementation funding commitment is a minimum of \$0.05 per sq ft, up to \$12,000, for the implementation of the selected RCMs. Examples may

include: mechanical/electrical contracting, professional engineering design, controls modifications, and installation of equipment that is required for the RCM. The Customer may choose to solicit these services from the RSP, in which case the RSP would be working under direct contract with the Customer and not Efficiency Works.

- RSP Implementation assistance is provided to Customers to guide them from a through the scope of work of the contractor required to implement each RCM. The main activity for the RSP will be answering technical questions. These costs are included as part

RSP Implementation Phase Deliverables are as follows:

- Ongoing RCM implementation support for customers
- Inspection Report/Punch List for installed measures
- Presentation of Implemented RCMs to customer

Verification Phase Overview

During the Verification Phase, the RSP revisits the site to verify that measures have been properly completed (e.g. new control strategies are functioning properly, repairs have been made, etc). The RSP updates the RCx Plan Report that summarizes the final findings and impacts from the project. The target timeline for completion of the Verification Phase is approximately three to ten weeks for a typical project. The verification phase is separated into the following steps:

- Verify RCM Implementation

Initial RSP verification activities will include a site visit to confirm the installation of the RCMs approved in the Planning Phase Report. The RSP will report these preliminary findings to Platte River. If discrepancies are found between the implemented RCMs and those agreed to with the building owner during the Implementation Phase of the project, Efficiency Works may require that all verification activities be halted until they are implemented by the Customer.

To confirm that the recommended RCMs were properly implemented and savings estimates are accurate, the RSP is required to complete the verification activities identified in the Planning Phase Report. The verification will be limited to spot measurements, visual checks, and/or interviews with the party responsible for implementation. Generally, the verification procedures follow Option A of the International Performance Measurement & Verification Protocol. Re-trending of the points on the BAS collected during the Planning Phase will only be conducted if directed and approved by Efficiency Works. As a general rule, trending will not be required for the Tier 2 verification phase.

Any discrepancies noted between the actual and recommended RCMs must be documented and presented in the Updated RCx Planning Report. It is essential that documented data be included in the report to support the final savings calculations and account for such implementation discrepancies. If discrepancies

exist, the associated savings are recalculated, and the revised savings for each measure are presented in the report.

- Updated Retrocommissioning Plan

The Updated RCx Plan Report serves as final documentation for each of the project's implemented RCMs. The purpose of this report is to document that the RCMs were properly implemented and document verified electrical demand, energy, and natural gas savings for each RCM. The results of the verification activities for each implemented RCM will be used by the RSP in preparation of this report. This report includes a summary of completed RCMs, a summary of the verification activities, closed out master list of deficiencies, and the final estimated costs and energy savings.

The updated RCx Plan Report is submitted to Efficiency Works for review and comment. Any requested changes are incorporated, and a copy of the approved report is presented to the Customer.

The RSP Verification Phase Deliverables are as follows:

- Update Retrocommissioning Plan Report

3.3 BTU PROGRAM TIER 3

The following section describes the targeted buildings, rebate structure and phases associated with the Tier 3 Buildings.

Targeted Buildings

The following typical characteristics are associated with the Tier 1 buildings:

- Typical building size greater than 100,000 sq. ft
- The facility shall be at least 2 years old
- The facility must have an existing and fully functional energy management system or building automation system (BAS), and direct digital control.
- BAS system requirements as follows
 - Ability to trend multiple data points and store them for a minimum of 2 weeks
 - Ability to monitor real-time operation on a graphical user interface (GUI)
 - EMS/BAS controls most of the facility's high energy consuming equipment
- Facility may have air handle units or multi-zone units and have a central plant consisting of more than one boiler and chiller and/or industrial processes

Rebate Structure

Efficiency Works pays 100% of the cost for the RSP to assemble the retrocommissioning plan, implementation support, and a brief verification summary report, but not direct implementation of selected RCMs. The RSP costs depending on scope and size of facility. The customer is required to hire and pay for a contractor or use in house staff to implement measures. Efficiency Works will not provide an energy rebate. Customer Financial Commitment is based on \$0.05 per sq ft up to \$12,000 towards implementation, once the planning phase report is accepted. If the customer still does not make the improvements within a mutually agreed upon timeline, they shall reimburse the utility for the costs incurred to date for their project.

Typically, the rebate is paid in part upon the deliverables of each phase: Planning Phase (15% of total rebate), Implementation Phase (70% of total rebate) and Verification Phase (15% of total rebate); and can be issued directly to the RSP if the customer chooses to do so on the BTU Application.

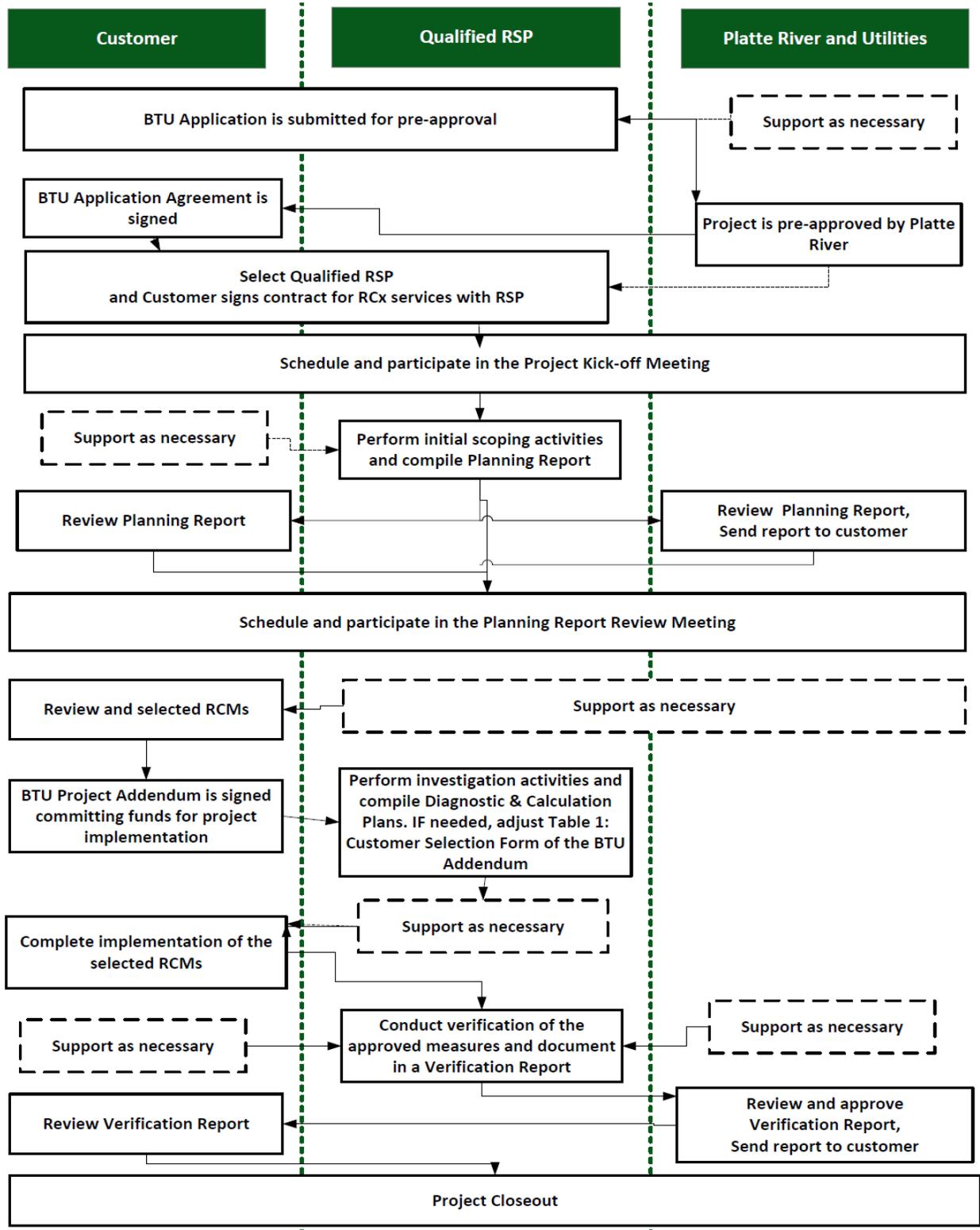
No additional rebates will be available to Customer through this program (i.e., no energy rebates). However, if energy or water efficiency measures are identified that are beyond the scope of Efficiency Works BTU program, the Customer may seek to qualify those measures through Efficiency Works prescriptive and custom electric efficiency rebate programs or provided by their local Utility if not offered by Efficiency Works. Customers may be subject to a rebate threshold per Customer per calendar year. Any rebates received through Xcel Energy or other party as part of any Efficiency Works program will not count towards the Customer's annual rebate threshold.

Typical RCMs for Tier 3 buildings are as follows:

- Reduce minimum outside airflow
- Correct economizer operation
- Eliminate simultaneous heating and cooling
- Reduce/reset supply air static pressure set points
- Eliminated chilled water short-circuiting
- Improve chiller or other equipment sequencing
- Reduce/reset condenser water setpoints
- Correct refrigerant charge
- Improve equipment scheduling
- Reduce air flow in Control Volume (CV) air handling systems
- Improve refrigeration system controls
- Improve process controls

Participation Process

The Tier 3 Option participation process is outlined below.



Application Phase

Contact a qualified RSP or Utility or Efficiency Works Representative for help with application to get started. Pre-approval is required for all projects to be considered for funding in the BTU program. To receive pre-approval, submit completed BTU application (Appendix A) and agreement prior to work being performed; including the following required pages: Page 1 - Customer Info, Page 2 - Project Pre-screening, and Page 3 - signed BTU Program Agreement. Note that Alternative Payment Recipient and second signature on the Agreement page are to be completed after the selection of the RSP if customer prefers the rebate to be paid directly to the qualified RSP. If RSP is already selected for the project, then this may be signed at the time submitting the application for pre-approval.

Electronic submittals are allowed by emailing the application and signature pages to buildingtuneup@efficiencyworks.org.

Pre-approving applications is an important part of the process. When screening program applications, Efficiency Works will consider buildings with the following considerations to be placed in the Tier 3 Option of the BTU program:

- Buildings with more than greater than 100,000 sq ft of conditioned square feet. The customer must permit and/or authorize changes to the system operations by a program-qualified RSP.
- Facility must be greater than 2 years old.
- The building shall be free of major problems requiring costly repairs or replacements, with no planned major system renovations or retrofits.
- The systems receive periodic preventative maintenance (e.g., filter replacement, coil cleaning, refrigerant charge, and belt tension checks) and demonstrate general functionality. Also, the facility should have accessible and up-to-date building documentation and records.
- Also, to qualify for the Tier 3 Option specifically, participants must express a commitment to be actively involved in the tune-up process. Active involvement will include:
 - Providing facility access and time for facility personnel to interface with the selected RSP.
 - Providing and assisting with the reporting and collection of information pertaining to the building's tune-up.
 - Spending \$0.05 per sq ft up to \$12,000 to implement identified RCMs with an estimated total project simple payback of two years or less, based upon electric and natural gas savings.

Once the application is received Efficiency Works will verify customer account number, installation address for submitted account number, valid equipment installation date, equipment eligibility and capacity, and potential incentive amount. Applications which are incomplete or are not eligible to participate will receive an email, letter, or phone call describing to the customer the changes necessary to qualify for the program. Once the project is pre-approved, the customer or party submitting the application will receive an approval code to authorize the initial preliminary site assessment to begin (i.e. Planning Phase).

When the application is approved by Efficiency Works, the retrocommissioning process begins with the Planning Phase, which consists of identification of project objectives, targeting of systems for improvements, defining tasks and responsibilities, and a retrocommissioning plan is developed as a result. The Implementation Phase follows, in which the building owner or representative is responsible for implementing the mutually agreed upon measures (between Efficiency Works and the Owner) noted in this report. Once the improvements are made in the Implementation Phase, their success is validated in the Verification Phase.

The retrocommissioning procedures focus on electric and natural gas energy savings opportunities with low cost implications. Capital measures that are identified through Efficiency Works BTU program may be directed to Efficiency Works prescriptive or custom rebate offerings.

Efficiency Works BTU program does not address fire and life safety or basic equipment safety controls. Additionally, the program does not provide services for new construction or to meet commissioning requirements of other rebate programs offered by Efficiency Works.

RSP Application phase deliverables are as follows:

- Complete BTU Application and Agreement are submitted to Efficiency Works
- Customer and selected RSP enter into an agreement and/or contract for scope of RCx services.

Planning Phase

The planning phase is separated into the following steps:

- Project Kick-off Meeting

The initial project kick-off meeting is held soon after acceptance of the project application and the RSP is selected thereafter (if applicable). Key attendees include the owner's representative, facility and engineering staff, contractors, the selected RSP, Efficiency Works, and/or the Utility representatives. The meeting is used to introduce key performers for the RCx project team and explain the timing and key steps of the project.

- Site Assessment Activities

Site assessment activities often follow directly after the kick-off meeting with the RSP conducting a preliminary site visit to understand key facility systems and their operation. Site assessment activities conducted by the RSP also involve:

- Consulting with the facility's personnel to understand their concerns and identify areas where additional focus may be warranted
- Reviewing the facility system documentation and utility bills
- Performing non-invasive measurements and functional tests as necessary to provide a thorough understanding of the facility's systems
- Completing a Building Site Assessment Form

Facility operations, maintenance schedules, equipment control sequences, set points, control parameters, schedules, occupant activities, and component operation are also documented at this point in the project.

- Identification of RCMs

Utilizing the information gathered during the kick-off meeting, utility usage data, and from the site assessment, the RSP is responsible for identifying potential RCMs. For each RCM, the RSP will evaluate and document the following parameters:

- Annual electric and natural energy savings potential
- Average electric demand savings potential in Summer and Winter months
- Estimated implementation cost
- Savings persistence
- Impacts on building occupant comfort and process operations
- Installation of water measures – low flow aerators and pre-rinse spray valves (if applicable).
-

Savings calculations must be supported by field observations, actual equipment specifications, and operating conditions. Calculations based solely on rules of thumb or unsupported assumptions are not acceptable.

- Retrocommissioning Plan

Using the information gathered and identified RCMs, the RSP develops the RCx Plan. The RCx Plan describes the building energy systems, identifies specific RCMs, estimates electric energy and demand savings, natural gas savings, and demonstrates project feasibility. The plan serves as the guiding document for the balance of the project. A viable RCx Plan is required before a Customer signs the BTU Plan Approval Form and for the project to continue under the program. A sample of the required RCx Plan template is included in Appendix G of this manual. The RCx Plan template will be updated, if necessary, to align with Xcel Energy's reporting requirement for an RCx study. Deviations from this template must be pre-approved in writing by Efficiency Works.

If identified savings opportunities fail to meet or exceed the project savings target, Efficiency Works may renegotiate a reduced scope of work and fee for the Implementation and Verification Phase with the RSP. If a project cannot demonstrate reasonable feasibility, the owner may be redirected towards another energy efficiency program offering from Efficiency Works. If this is the case, the RSP will be paid for Planning Phase services only. No additional work will be performed, or payments made.

- Planning Review Meeting

For approval of the RCx Plan, the Planning Review meeting is held with the owner representative, engineering or facility staff, RSP, and Efficiency Works and Utility representatives to review the scope of the plan, the impacts and economics of the identified potential measures. To help facilitate this meeting, RSPs are required to prepare the Customer Selection Form (located in the BTU Plan Approval Form of the application). This document will be utilized throughout the balance of the RCx process to communicate RCM opportunities and seek Customer approval to proceed with implementation. A sample of this form is provided in Appendix A of this manual.

At the completion of the Planning Review meeting, the customer reviews the potential RCMs, completes and signs the BTU Plan Approval Form; and provides initial indication to approve of the measures to be refined and/or implemented in the Implementation Phase. By signing the BTU Approval Form, the customer commits to spend a minimum of \$0.05 per square foot of building size up to \$12,000 for the selected RCMs identified in Table A: Customer Selection Form. Note: selected RCMs are to be placed in Table A: Customer Selection Form located in Addendum

RSP Planning phase deliverables are as follows:

- Attendance at Project Kick-off Meeting
- RCx Plan, including the Building Site Assessment Form
- Complete Customer Selection Form in BTU Plan Approval Form
- Attendance at Project Planning Meeting and proposal of potential RCMs

- Customer Signs BTU Plan Approval Form to authorize the implementation of the selected RCMs and committed funds prior to the Implementation Phase

Implementation Phase

The Implementation Phase consists of a detailed analysis followed by implementation of the recommended measures. It involves the detailed investigation of the RCMs identified in the RCx Plan, and further investigation to identify additional RCMs. The investigation component of this phase includes activities such as conducting detailed site assessments, diagnostic testing, and trending analyses to evaluate current facility operating procedures, equipment functionality, and to verify planning phase assumptions. Throughout the Implementation Phase, the RCx measures and associated costs, savings, and economic impacts will be updated and summarized in the Customer Selection Form. This phase may require eight to twenty weeks and is conducted during times when affected building systems are operational.

As RCx opportunities are finalized, the Customer will be asked to fund the implementation of such measures. The Customer is responsible for implementing the RCMs identified and agreed to during the Implementation Phase. Upon completion, the Customer will notify Platte River that the measures have been installed.

During the Implementation Phase, the RSP, with assistance from the facility engineering staff, will expand upon the site assessment activities completed during the Planning Phase to develop and implement the RCx measures. The principal RSP Implementation Phase activities include the following:

- Working with facility staff to guide the RCx activities and identify additional RCMs
- Gathering additional information to assess equipment operation
- Updating the Customer Selection Form
- Developing diagnostic testing and calculation plans for each RCM
- Estimating the potential electric and natural gas energy savings for identified RCMs
- Assessing the cost to implement the RCMs
- Assisting the customer's implementation team to implement the RCM
- Educating the implantation team on the ramifications of RCM and how to maintain the changes implemented
- Closing out/updating items either in a punch list or master list of deficiencies as they are mitigated

The facility owner typically implements RCMs after all RCM Diagnostic and Calculation Plans have been finalized. However, the facility owner is encouraged to implement selected RCMs as individual measures are finalized. A key requirement to the success of this approach is that sufficient information be collected by the RSP to document the baseline and estimate the RCMs' electric and natural gas energy savings potential before implementation begins.

The implementation costs used to calculate project economics under the program are based upon reasonable market costs as determined by the RSP and approved solely by Platte River. Resources to obtain market costs include but are not limited to industry accepted project estimation resources, vendor quotes, or professional judgment. The Customer is afforded the flexibility to utilize in-house staff or an outside contractor to implement RCx measures implementation. Final implementation costs may vary from the estimated market costs; however, the market costs will be utilized to support \$0.05 per sq. ft up to \$12,000 contractual obligations.

The implementation phase is separated into the following steps:

- Focused Assessment

A focused assessment of the energy using systems and equipment is necessary to build on the general site assessment done in the Planning Phase. The assessment focuses on problem areas identified by facility staff, identified RCMs, and potential new RCMs. At the facility level, the following information is typically collected and documented:

- Facility location, use, and operating/occupancy schedule
- Systems with highest electric/natural gas energy use and demand
- Significant control, operational, and maintenance problems
- Comfort problems
- Operations and maintenance (O&M) practices
- Major equipment sequences of operation

At the system and equipment level, the assessment involves collecting nameplate information and conducting a minimum standard set of diagnostic tests and parameter measurements. Standardized RCx forms for common equipment types are provided in Appendix F. The system and equipment assessments generally include the following information:

- Nameplate data
- Design and operational intent
- Actual operation (e.g. set points, schedule, sequence of operation)
- Actual operating parameters (e.g. temperature, pressure, flow)

Results from the assessment will be used to develop the Diagnostic and Calculation Plans, the Customer Selection Form, and a punch list or master list of deficiencies. The tasks outlined in the table below **Error! Reference source not found.** provide a summary of the typical investigation activities expected to be executed for major system components. This scope of work is provided as an example and may change for different facility types.

System or equipment	Survey minimum requirements
Chiller	<p>Document sequence of operations Sequence of Operation (SeqOp)</p> <p>Verify/justify SeqOp</p> <p>Document actual schematic</p> <p>Spot measure actual performance (kW/ton)</p> <p>Document setpoints</p> <p>Verify temperature and pressure sensor calibration</p> <p>Verify thermostat calibration</p> <p>Document operations and maintenance (O&M) procedures</p> <p>Collect trend data to identify operational problems and establish baseline operation</p>
Air Handling Unit	<p>Document SeqOp</p> <p>Verify/justify SeqOp</p> <p>Document system type</p> <p>Document nameplate ratings</p> <p>Document actual schematic</p> <p>Document temperature, pressure at control points</p> <p>Verify economizer operation (if present)</p> <p>Verify damper operation and sealing</p> <p>Verify temperature and pressure sensor calibration</p> <p>Verify proper chilled water, hot water, and/or steam valve operation</p> <p>Measure motor/fan load, flow, pressure</p> <p>Identify operating point on fan curve</p> <p>Verify inlet guide vane /discharge damper / Variable Frequency Drive (VFD) operation (if present)</p> <p>Document O&M procedures</p> <p>Collect trend data to identify operational problems and establish baseline operation</p>

System or equipment	Survey minimum requirements
Cooling Tower	Document SeqOp Verify/justify SeqOp Document system type Document nameplate ratings Document temperature, flow at control points Document O&M procedures Collect trend data to identify operational problems and establish baseline operation
Control System	Document SeqOp for the HVAC system, integrating the equipment SeqOps Verify/justify SeqOp Verify and sketch system schematic

- **Presentation of RCMs**

Following approval of the RCM Diagnostic and Calculation Plans by Efficiency Works, the RSP will update the Customer Selection Form. This form includes measure descriptions, energy savings, implementation costs, simple payback periods, and estimated completion dates. The Customer Selection Form also identifies three separate RCM bundles recommended by the RSP with an option for customization.

Together with the RSP and Efficiency Works, the facility representatives review the project recommendations. The bundle of RCMs to be implemented is agreed upon by all parties, taking into consideration factors such as comfort, safety, or liability as input by the participants in the meeting. Also, to be considered is the Customer's commitment to spending at least the minimum amount for the facility \$0.05 per sq ft up to \$12,000 for implementation of agreed upon RCx measures that result in a bundled estimated simple payback of 2 years or less. Although this meeting provides a singular formal communication of results, the RSP is also encouraged to review RCM status with the building ownership on an ongoing basis to facilitate a quick implementation timeframe.

- **Implementation Support**

During the Implementation Phase, the RSP works hand-in-hand with the Customer's implementation team to identify the recommended measures and provide recommendations to "fix" the problems. The implementation team includes the facility engineers, operational staff, and the mechanical, electrical, and controls contractors. As the Customer approves RCx measures, the implementation team will be asked to "fix" the items associated with the relevant measures. The goal of this phase is to fully implement all agreed-upon RCx measures and stand ready for final verification.

Implementation of the RCMs is the sole responsibility of the Customer. However, the RSP is required to provide technical support during this phase for the Customer to implement the RCMs. A description of the Customer's role and the RSP's role in implementation is provided below.

- Customer Implementation activities are specific to funding implementation of the recommended RCMs (\$0.05 per sq. ft up to \$12,000). Examples may include: mechanical/electrical contracting, professional engineering design, controls modifications, and installation of equipment that is required for the RCM. The Customer may choose to solicit these services from the RSP, in which case the RSP would be working under direct contract with the Customer and not Efficiency Works.
- RSP Implementation assistance is provided to Customers to guide them from a recommended solution to the physical installation of the RCM. These activities may take the form of troubleshooting recommended control sequences, suggesting alternative RCM strategies during implementation, commenting on alternative design solutions, and answering technical questions. These costs are included as part of the RSP's price for the implementation phase of the project.

RSP Implementation phase deliverables are as follows:

- Diagnostic and Calculation Plans for all RCMs
- Updated Customer Selection Form
- Presentation of implemented RCMs to the customer
- Ongoing RCM implementation support for customer

Verification Phase

During the Verification Phase, the RSP evaluates facility trending data (from the building EMS, facility sub-meters, or utility meter) and revisits the site to verify that measures have been properly completed (e.g. new control strategies are functioning properly, repairs have been made, etc.). The RSP prepares and submits the Verification Report that summarizes the final findings and impacts from the project. The target timeline for completion of the Verification Phase is approximately three to ten weeks for a typical project.

The verification phase is separated into the following steps:

- Verify RCM implementation
Initial RSP verification activities will include a site visit to confirm the installation of the RCMs approved in the Customer Selection Form. Activities will consist of visual inspections and functional testing/retesting as appropriate to ensure RCMs were completed as anticipated. The RSP will report these preliminary findings to Efficiency Works. If discrepancies are found between the implemented RCMs and those agreed to with the building owner during the Implementation Phase of the project, Efficiency Works may require that all verification activities be halted until they are implemented by the Customer.

To confirm that the recommended RCMs were properly implemented, and savings estimates are accurate, the RSP is required to complete the verification activities identified in the completed RCMs' Diagnostic and Calculation Plans. The verification may consist of data trending, spot measurements, visual checks, and/or interviews with the party responsible for implementation. Generally, the verification procedures follow Option A or Option B of the International Performance Measurement & Verification Protocol.

Any discrepancies noted between the actual and recommended RCMs must be documented and presented in the Verification Report. It is essential that documented data be included in the report to support the final savings calculations and account for such implementation discrepancies. If discrepancies exist, the associated savings are recalculated, and the revised savings for each measure are presented in the report.

- Verification Report

The Verification Report serves as final documentation for each of the project's implemented RCMs. The purpose of this report is to verify that the RCMs were properly implemented, and document verified electrical demand, energy, and natural gas savings for each RCM. Planning and results of the verification activities for each implemented RCM will be used by the RSP to prepare the Verification Report. This report includes a summary of completed RCMs, a summary of trending and functional testing, and the final estimated costs and energy savings.

The Verification Report is submitted to Efficiency Works for review and comment. Any requested changes are incorporated, and a copy of the approved report is presented to the Customer. A copy of the required Verification Report template is included in Appendix H of this manual. Deviations from this template must be pre-approved in writing by Efficiency Works.

RSP Verification phase deliverables are as follows:

- Verification Report
- Participation in presentation of Verification Report to customer if necessary

4. MULTIFAMILY PROGRAM

The Multifamily Program is designed to assist building owners and property managers in taking a comprehensive perspective on their buildings. The multifamily program offers:

- Facility assessments to provide a report with a list of efficiency opportunities
- Energy advising to provide assistance to complete a comprehensive upgrade
- Direct installs of efficiency measures

Multifamily properties with five or more units per building are eligible to participate. These customers must be an electric customer of the Town of Estes Park Light & Power Department, Fort Collins Utilities, Longmont Power & Communications, or Loveland Water and Power. Customers that utilize gas from Xcel Energy are also eligible for gas measures under the program. Market-rate buildings will be eligible to participate. Final eligibility will be confirmed during the application process.

Frequently asked questions

Q: Do multifamily assessments cost money?

A: Efficiency Works Business offers free multifamily facility assessments to eligible customers.

Q: What kind of information should I expect following a multifamily assessment?

A: Multifamily assessments can help identify ways to reduce operational cost and the environmental impact of existing buildings. The assessment will not only help identify ways the property can reduce energy, but also ways money and water can be saved as well. Upon identification of these efficiency opportunities the property has no obligation to complete them.

Q: What items are part of the direct install?

A: Depending on the property needs the direct install typically contains the installation of LED lamps and water saving devices throughout the residential units of the property.

Q: Can you recommend a contractor to help me with my upgrades?

A: We can provide a list of contractors that efficient equipment. Although we cannot specifically recommend any one contractor and would encourage you to get 3 quotes for your upgrade.

Application process

1. Download the assessment [application](#) from the Efficiency Works website.
2. Complete all fields to the best of your ability, if you have questions related to the application call 855-451-4467.
3. Save the document, then email it to xecomultifamily@franklinenergy.com.

Application instructions

1. Submit the application to xecomultifamily@franklinenergy.com.
2. An Efficiency Works representative will contact you to schedule the assessment.
3. The assessment will be completed by an Efficiency Works representative and take between 1-4 hours depending on the complexity of the facility.
4. An assessment report will be emailed to the participant detailing the efficiency opportunities observed with associated savings and estimated rebates.
5. Your Efficiency Works representative will schedule a time to go over the assessment report and answer any questions that you might have. At this time, your representative will schedule a date to complete the direct install portion of the service.
6. If you are interested in pursuing an efficiency opportunity beyond the direct installs, your Efficiency Works representative can help with technical analysis, contractor bid coordination, proposal review, or other steps of the Efficiency Works Business process.

Rebates

Energy efficiency upgrades being installed at multifamily properties with five or more units are eligible for the Efficiency Works Business Rebates Program. Simply select “Residential (Multifamily)” from the facility type drop down menu on the “General Info” page of the application and fill out the application as described in the [Rebate Program](#) section of this guide. For current rebates, visit the rebates page of the [Efficiency Works website](#) and download the most up to date version of the application.

5. MIDSTREAM COOLING

The Efficiency Works Business Program works directly with regional distributors to make sure customer have affordable high efficiency air conditioning units ready when they are needed. All customers need to do is ask their HVAC contractor for a high efficiency unit. If a customer is looking for ways to improve their existing air-conditioning unit or would like to explore evaporative cooling options Efficiency Works Business has technical resources and rebates available.

Frequently asked questions:

Q: Are there rebates available for air conditioners?

A: No, however there are rebates available for equipment to upgrade your existing air conditioner such as economizers and advanced roof top unit controls. There are also rebates available for evaporative cooling technologies.

Q: What is considered a high efficiency air conditioner?

A: High efficiency air conditioners are normally determined by their EER, SEER and IEER ratings. The higher the rating the more efficiency the unit. These ratings vary depending on the size of cooling unit. For specific high efficiency ratings contact Efficiency Works.

Q: How do I make sure I get the best pricing for a high efficiency air conditioner?

A: Efficiency Works recommends that you get 3 quotes on all new equipment. By receiving multiple quotes in helps ensure the contractors are providing their best pricing options.

Q: Can you recommend a contractor to help me with my air conditioner?

A: We can provide a list of contractors that install air conditioners. Although we cannot specifically recommend any one contractor and would encourage you to get 3 quotes for your upgrade.

Q: Why don't you offer rebates for air conditioners?

A: To keep our programs cost effective we work directly with regional distributors to make sure you have affordable high efficiency air conditioning units ready when you are. All you need to do is ask your contractor for a high efficiency unit. There are rebates available for equipment to upgrade your existing air conditioner such as economizers and advanced roof top unit controls. There are also rebates available for evaporative cooling technologies.

Q: How are contractors supposed to upsell high efficiency units if they do not have a rebate to offer?

A: The Midstream Cooling Program is designed to encourage the distributor instead of the contractor to upsell the high efficiency unit, so the contractor can offer a high efficiency unit at a reasonable cost to the customer.

Q: Rebates used to be available to customers, why did you take them away?

A: We continually evaluate our programs to keep them cost effective, so we began to work directly with regional distributors to make sure you have affordable high efficiency air conditioning units ready when you are. By working with the distributors to stock and upsell high efficiency air conditioning units, all customers will have the opportunity to install high efficiency AC at a reasonable cost.

Q: How do I know that I am taking advantage of the program?

A: In most instances you will not which is part of benefit of the program, we are doing all the work behind the scenes, so you don't have to.

6. FACILITY ASSESSMENTS

Efficiency Works Business program offers free facility assessments to identify opportunities that reduce operating costs and environmental impacts by analyzing existing building systems and equipment.

It is recommended that businesses take advantage of this free assessment if they are generally interested in saving energy, water, and money. The assessment will identify efficiency opportunities and potential projects that can be implemented now or in the future. There is no obligation to complete an efficiency project after receiving the assessment report.

Frequently asked questions:

Q: Do commercial assessments cost money?

A: Efficiency Works Business offers free commercial facility assessments to eligible customers.

Q: What kind of information should I expect following a commercial assessment?

A: Commercial assessments can help identify ways to reduce operational cost and the environmental impact of existing buildings. The assessment will not only help identify ways the business can reduce energy, but also ways money and water can be saved as well. Upon identification of these efficiency opportunities the business has no obligation to complete them.

Application instructions:

1. Download the assessment [application](#) from the Efficiency Works website.
2. Complete all fields marked with a red asterisk (*), and as many of the other fields as possible.
3. Save the document, then email it to business@efficiencyworks.org.

Application process:

1. Submit the application to business@efficiencyworks.org.
2. An Efficiency Works representative will contact you to schedule the assessment.
3. The assessment will be completed by an Efficiency Works representative and take between 1-4 hours depending on the complexity of the facility.
4. An assessment report will be emailed to the participant detailing the efficiency opportunities observed with associated savings and estimated rebates.
5. Your Efficiency Works representative will schedule a time to go over the assessment report and answer any questions that you might have.
6. If you are interested in pursuing an efficiency opportunity, your Efficiency Works representative can help with technical analysis, contractor bid coordination, proposal review, or other steps of the Efficiency Works Business process.

7. SERVICE PROVIDERS

Efficiency Works service providers have demonstrated their interest and ability in helping businesses complete efficiency projects. Listed service providers are included in a database that is searchable to potential customers. Efficiency Works does not exclude providers who are not listed in the database from participating in the Efficiency Works Business program, except for performing building tune-ups. If your company is interested in becoming an Efficiency Works Business service provider, see the list of qualifications below.

7.1 EFFICIENCY WORKS BUSINESS REBATES SERVICE PROVIDERS

Frequently asked questions:

Q: Do I have to be an Efficiency Works Business Service Provider to participate in the program?

A: Efficiency Works does not exclude providers who are not listed in the database from participating in the Efficiency Works Business program, except for performing building tune-ups.

Q: How do I become an Efficiency Works Business Service Provider?

A: After confirming eligibility found in the [Requirements](#) section, apply through the Trade Ally database.

Q: How do I become a “Preferred Vendor”?

A: Please see the [Requirements](#) section below.

Service provider progression:

New customers or contractors to the program are “Program Participants”. After a contractor completes the requirements described in the next section, they can progress to become a “Listed Service Provider.”

Requirements and benefits:

LISTED SERVICE PROVIDER

Example: Repeat contractors that have not yet met the requirements for premium.

Requirements:

- Complete a minimum of 1 project per calendar year
- Maintain a minimum customer rating of 3 out of 5
- Attend 1 EWB training per calendar year
- Complete the Trade Ally application* and maintain required paperwork

Benefits:

- Access to simplified web application
- Listed on the Trade Ally contractor list for customers to search for
- Access to marketing and branding materials

Service provider star ratings:

Efficiency Works performs customer surveys on 100% of completed projects. Service provider star ratings that are shown on the database are derived from customer survey responses from the last 5 quarters.

Application instructions

See the [Trade Ally](#) platform for application instructions or call Efficiency Works if you have questions.

Listing updates and details:

- Website:
 - Contractor ratings, and project counts will be updated on the website quarterly.
 - Project counts displayed on the website will be from a running 12 months.
- Average contractor ratings will be based on a 5-quarter running total.
- Training Participation:
 - Training participation will be based on a running 12 months with a 3-month grace period when found to be not in compliance.
 - Training participation will be based on sign in sheets for in person events and “quiz” results for online trainings.
- Energy Savings:
 - Energy savings will be based on a running 12 months with a 3-month grace period when found to be not in compliance.
 - Energy savings will be based on the total customer energy savings preapproved on each application.
- Survey response rate will be based on a running 12 months with a 3-month grace period when found to be not in compliance.

REFERENCES

1. ILLUMINANCE GUIDE

Illuminance should be taken into consideration when installing new lighting. The table below provides recommended levels of Illuminance (foot candle) for different space types; however, Efficiency Works does not guarantee the information is up to date or correct. This is merely a guide for quick reference of some general applications. Foot candle (fc) values listed below in are derived from the IESNA Lighting Ready Reference Guide (RR-03), A Compendium of Materials from the IESNA Lighting Handbook, 9th Edition. Reference your detailed applications in the current version of the Illuminating Engineering Society of North America (IESNA) Lighting Handbook.

Space Type	Recommended IESNA Illuminance Level (FC)	Space Type	Recommended IESNA Illuminance Level (FC)
Auditoriums	5 to 20	Lobby	5 to 10
Auto Repair	50 to 75	Retail – Sales Counters	30
Auto Body Shop	75 to 100	Retail – Circulation	5 to 10
Auto Showroom	50 to 75	Retail – General Display	30 to 50
Banks – General	10 to 20	Manufacturing	
Banks – Teller Stations	50	Assembly and inspection Easy	30
Barbershop/Salon	50	Medium	50
Church	20 to 25	Fine	75 to 100+
Office – Open and Private Intense to some computer use	30 to 50	Material Handling	30 to 50
Conference Rooms	30	Packaging, wrapping, labeling, shipping/receive	30
Classrooms and Reading	30 to 50	Reading on computers	10 to 30
Dining Areas	10 to 20	Restrooms	5 to 20
Engineering and Drafting	50 to 75	Stairwells and Hallways	5 to 10
Gymnasiums Recreational	30	Warehouse Inactive storage	5 to 10
Elementary/club	50	Big items/Loading docks	10
High school to competitive	80 to 100	Small items	10 to 30